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GEORGE H. SIMMONS, M.D., LL.D.

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RESUSCITATION APPARATUS

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During the past four or five years a number of mechanical devices for resuscitation from electric shock, drowning, and asphyxiation by poisonous gases have appeared on the market. Properly speaking, none of these devices is anything more than a means of supplying artificial respiration with air more or less enriched with oxygen. There has been a general failure to distinguish between a method for maintaining the pulmonary ventilation and methods (for practical purposes as yet undiscovered) for restoring the heart beat after fibrillation or standstill, and for counteracting the paralyzing effects of asphyxia on the nerve centers of the brain and cord. This has resulted in the term "resuscitation" apparatus being generally applied. It is important to keep in mind the limited character of this resuscitation.

The demand for such apparatus arises from the modern "safety first" movement. Any piece of apparatus which proved fairly effective for resuscitation would undoubtedly be a source of great financial profit to its manufacturers. Competition is already keen, and new forms of apparatus are demanding advertising space in medical journals.

As a result editors, superintendents of hospitals, mines, gas works, electric light and telephone companies, commissioners of city police and fire departments, persons in charge of swimming places, and others are writing in increasing numbers to the United States Bureau of Mines to ask as to the value of such apparatus in general, and as to the relative merits of the different kinds.

This paper is intended to supply such information. I have served as consulting physiologist to the bureau during the past three years, have examined for it such apparatus as has been submitted, and have cooperated with the engineers of the bureau in drawing up the regulations covering such matters. I was also a member of the Resuscitation Commission of the American Medical Association and the National Electric Light Association, which in 1913, with Prof. W. B. Cannon as chairman, studied and reported on resuscitation apparatus and methods, and which later made a similar report to the Bureau of Mines.¹

1. Report of the Commission on Resuscitation from Electric Shock, published by the National Electric Light Association, New York, 1913. Report of the Committee on Resuscitation from Mine Gases, Technical Paper 77, U. S. Bureau of Mines, Washington, 1914. Work of the Commission on Electric Shock, editorial, THE JOURNAL A. M. A., Nov. 1, 1913, p. 1637.

It is noteworthy that the control over the manufacturers of resuscitation apparatus indicated in the preceding paragraph has not had back of it any specific legislation. The approval or disapproval of the Bureau of Mines and of the National Electric Light Association, and the acceptance or rejection of advertisements by such magazines as THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, practically make or destroy the market for apparatus. Both in effectiveness and in flexibility, this method of control under disinterested expert advice and solely in the interest of the public seems far preferable to that by legislation, either national or by the separate states.

PULMOTOR

The first of the several forms of apparatus now on the market to attract attention was the pulmotor. In this device a tank of compressed oxygen was connected through a reducing valve with an injector, so that a considerable volume of air was drawn in, mixed with the oxygen, and the current directed through a hose to the face mask. It was generally believed by persons purchasing the pulmotor that pure oxygen, or air greatly enriched with oxygen, was supplied to the patient. This, however, was not the case, as the injector diluted the oxygen with ten or twelve times as much air. In various analyses the oxygen content of the gas supplied by the pulmotor was found to be about 28 or 30 per cent. As pure air contains 21 per cent., the oxygen enrichment was therefore not considerable. The purpose really served by the compressed oxygen was to supply the motive power which worked the apparatus. Compressed air would have been equally effective for this purpose.

The force of the air coming from the injector actuated an ingenious mechanical device by which a valve was alternately thrown in one direction or the other, so that air was blown to or sucked from the mask fastened over the patient's face. In order for this device to reverse, however, a considerable positive or negative pressure was necessary, and these pressures came just at those points in respiration at which they were most unnatural. Furthermore, in case of any obstruction to the flow of air, the positive and negative pressures necessary to reverse the apparatus were induced in such rapid succession that the suction and injection phases alternated too rapidly for the subject's lungs to be properly distended and deflated. This was liable to occur if for any reason there was an obstruction in the throat. Some part of the injector or reducing valve was also found liable to get out of order, thereby rendering the apparatus ineffective.

The objections to the pulmotor concerned not only its deficiencies as a means of administering artificial respiration, but also its extraordinary effect on public

opinion. Although its manufacturers, the Draeger Company, have shown themselves at all times during my experience with them to be a highly honorable and well intentioned business concern, nevertheless there has probably never been invented an apparatus which of its own accord aroused such extravagant and unfounded expectations among the general public. It was, indeed, impressive to see the apparatus working automatically. Coupled with the ignorance of most persons as to the distinction between mere unconsciousness and respiratory failure, and as to what part treatment can play in resuscitation, the interest which the pulmotor excited caused it for a time to receive such an amount of free advertisement through the newspapers as would undoubtedly have resulted in its being purchased almost universally within a few years. Public opinion in numerous cities compelled the gas, electric light and telephone companies, and the fire and police departments to purchase pulmotors. From the newspaper accounts of cases in which the pulmotor was employed, one would have supposed, and many persons, including even physicians, evidently did believe, that the pulmotor was practically capable of restoring the dead to life. It was described as "forcing oxygen in and sucking the poisonous gases out." For a while no one seems to have inquired why, in these processes, the lungs were not exploded, or the pulmonary blood sucked out through the trachea.

This exploitation was brought to a sudden stop by the report three years ago of the Commission on Resuscitation, adverse to the apparatus, or rather to the extravagant reports and beliefs current concerning it. In particular, the investigations of the committee showed conclusively that in at least a large percentage of the alleged resuscitations — especially from illuminating gas poisoning — the subject was breathing spontaneously before the apparatus was applied. Artificial respiration was therefore not needed and could not possibly have contributed materially to the patient's recovery.

LUNG MOTOR

The other devices thus far placed on the market are of a simpler type. The "lungmotor" consists of two pumps — to all intents and purposes, such pumps as are used to inflate bicycle or automobile tires. They are fastened together in such fashion that the down stroke forces air from one of the pumps into a mask held over the patient's face, while the up stroke withdraws some of the air from the patient's lungs into the other pump. An oxygen tank can be connected so that the air injected into the lungs can be enriched to any desired extent with oxygen.

The advisability of actively withdrawing air from the lungs is a matter on which there may at present be a reasonable difference of opinion. Such light as experiment can throw on the matter is afforded by the fact that some years ago an apparatus which worked in this fashion was invented by Prof. Hans Meyer of Vienna and was installed in a number of physiologic laboratories both in America and Europe. Apparently it has been generally discarded, and return has been made to the ordinary method of intermittent injection of air into the lungs with intervening periods for the elastic recoil of the chest to force the air out through a hole in the side of the tube leading to the mask or tracheal cannula. I am inclined to doubt, however, whether an active withdrawal of air with a pump of limited stroke has any very serious objections, since the suction ceases at the end of the stroke. Some years ago

in experiments with two pumps arranged in a manner similar to the "lungmotor," and worked quite violently, I observed no particular ill effects on the lungs. The manufacturers of the "lungmotor" claim that in drowning cases the suction feature is advantageous. The apparatus can be worked so as to use only the injection pump, by leaving the tube to the suction pump disconnected.

VIVATOR

Even simpler is the "vivator." It consists of one pump, which forces air through a tube to the mask held over the patient's face when the plunger is forced down, and of a valve which is opened to allow this air to escape during the upstroke of the pump. It is practically identical with a simple arrangement of an automobile tire pump which has worked satisfactorily for experiments requiring artificial respiration in my laboratory for the past ten years. It is, however, rather clumsy and noisy. It is possible that both with it and with the "lungmotor" a somewhat excessive positive pressure might be produced. To prevent this it appears advisable that in apparatus of the pump type there should be a blow-off valve or equivalent device, set to open under a water column pressure of 25 cm. (10 inches), and that when as in the "lungmotor" there is also a suction pump, there should be an inlet valve set to open under a pressure of 15 cm. (6 inches). It would be of advantage also if there were another valve on the mask which could be opened in order to test the capacity of the victim to maintain natural breathing without removal of the mask.

PULMOTOR MODEL B

Recently the Draeger Company has brought out an apparatus which they call the "Pulmotor Model B." Its motive power is supplied either by a tank of compressed oxygen or by a tank into which air is first pumped by the operator. The compressed gas, oxygen or air, passes through a tube to an injector where it aspirates a considerable amount of outside air and thus provides a sufficient current and pressure for artificial respiration. By means of a switch worked by hand the injector can be directed so that the current is blown through a tube to the face mask, or aspirates the air from it. The apparatus is in all essentials a pulmotor without the automatic feature, to which the committee mentioned above particularly objected, and which exercised for a time such a hypnotic effect on newspaper reporters and the public.

The "Pulmotor Model B," like the original form, appears not to be capable of supplying a high percentage of oxygen, as the injector necessarily draws in a considerable volume of air with which the oxygen is diluted. The mechanism of the apparatus is also rather delicate and liable to be put out of order by rough usage. On the other hand, in a hospital or laboratory where compressed air is available, or where a small air blower connected with an electric motor could be installed, for treatment in morphin cases or asphyxia neonatorum, or in the operating room, it is possible that "Pulmotor Model B" might prove a satisfactory and useful instrument. For the intern charged with maintaining respiration in a morphin case and with compressed air at hand, it would certainly have the advantage of being far less tiring than any other piece of apparatus now available.

In order to avoid any danger of excessive positive or negative pressure, it is recommended that there should be inlet and blow-off valves set to a positive pressure of

not more than 15 cm. (6 inches) water gage, and a negative pressure of 10 cm. (5 inches) water gage. The limits of pressure should be lower than in the case of pump apparatus because the patient's lungs may be subjected to the pressure for a longer time. The apparatus should also be made capable of feeding pure oxygen, or at least air largely enriched with oxygen.

OTHER APPARATUS

The latest but probably by no means the last apparatus to appear is the "life motor." This device has not yet come under my examination. It is claimed, however, by its manufacturers that it is an efficient and easily adjustable apparatus for administering artificial respiration, and for supplying oxygen or air enriched with oxygen.

There is really no limit to the number of devices of this sort which can be, and perhaps will be, got up: hand bellows, foot bellows, bellows run by a motor, pumps, single and double, acting directly or through an injector. The mechanical requirements are easily met. The important thing is that the apparatus should be of such a simple character as not to impose on the credulity of the ordinary man. All that any apparatus yet invented can accomplish is artificial respiration with air enriched with oxygen. The superiority of a mere pump over any automatic apparatus lies in its simplicity. The same men who regarded the pulmotor with awe and wonder remark, of the "lungmotor," "Why, you can blow up an automobile tire with that thing."

MANUAL METHOD VERSUS APPARATUS IN ARTIFICIAL RESPIRATION

Even in respect to a simple pump, evidence is accumulating that physicians, as well as laymen, are prone to overestimate what can be accomplished with apparatus. In consequence, the immediate application of manual artificial respiration is neglected, and thereby life is lost while the apparatus is being sent for and brought. Thus in a recent disaster in which an overcrowded vessel sank at its wharf, it appears that the victims when taken from the water, instead of being treated immediately by the prone pressure method, were carried some distance to a temporary hospital and were then treated with apparatus. Probably all of them were beyond recovery even when taken from the water; but it is significant of the overestimate placed even on so obvious a thing as a pump that some physicians are reported to have expressed surprise that the apparatus (lungmotors) effected no resuscitations.

On the scientific side there can be no doubt that in a man or animal in whom natural respiration has ceased but the heart is still beating, life can be maintained more easily and much longer by means of artificial respiration administered with a pump or bellows than by means of either the Sylvester or Schäfer manual methods. In all physiologic laboratories, apparatus for maintaining artificial respiration is provided. If an experiment is to be performed in which spontaneous breathing is eliminated (as under curare or after decapitation), no physiologist relies on his janitor or laboratory boy to keep the animal alive by squeezing the chest or working the fore legs.

The Resuscitation Commission found that although the prone pressure method of artificial respiration devised by Schäfer² is in nearly every respect superior to the Sylvester method, yet the claim of Schäfer that

by his method as much air can be administered even to an apneic subject as is obtained by the subject in normal breathing is not justified. It is true that in experiments on normal men, if the subject is not in apnea, as much air—in fact *exactly* as much and never appreciably more or less—is drawn in and forced out of the subject's lungs by the prone pressure method, as the subject would himself spontaneously breathe. It was, indeed, the noting of this fact which led me, while working on the commission, to discover that in a conscious, normal, not apneic subject, the subject's own respiratory center, rather than the exertions of the operator, determines the amount of pulmonary ventilation afforded by the prone pressure method. The operator squeezes air out of the lungs, but between the applications of pressure the subject's respiratory muscles draw in what he needs—no more and no less. In fact, the chemical control of respiration is strikingly exemplified by the behavior of a normal man under "artificial" respiration. On the other hand, after the subject has performed forced breathing and has thus brought himself into a condition in which there is no spontaneous activity of the respiratory center, the amount of ventilation obtained by the prone pressure method is markedly reduced.

Furthermore, it was found on animals in respiratory failure (induced by an excess of chloroform) that the amount of air, as measured by a spirometer connected with the trachea and recording on a smoked drum, which can be drawn in and forced out of the chest by manipulation of the fore limbs and squeezing of the chest and abdomen, gradually decreases as the muscles of the body lose their tonus. At first and while the tonus or elasticity of the muscles is still high, soon after spontaneous breathing has ceased, a very considerable movement of the spirometer can be induced. But after ten or fifteen minutes, when the body has become entirely flaccid, only a quite negligible movement of air in and out of the chest results, even from the most vigorous stretching and compression.³

While working on the Resuscitation Commission, Dr. Meltzer found that in dogs after abolition of muscular tonus by means of curare, the Sylvester method supplied a respiration sufficient to maintain the heart beat for only twelve minutes, while with the Schäfer method the shortest time was eighteen minutes and the longest thirty-one. With no treatment whatever, the heart would have continued to beat for from eight to ten minutes.

The most important scientific point in this connection, however, is the fact that from the moment when spontaneous respiration ceases, whether by drowning, electric shock, excess of anesthesia, gas poisoning or any other form of asphyxia, the probability of restoration by any method grows rapidly less as the minutes pass. The Resuscitation Commission, after considering the matter in the light of such evidence as is available, concluded that probably ten minutes is the extreme limit of time beyond which restoration is practically impossible. It is true that there are occasional popular reports of persons who are supposed to have been in the water or buried in a cave-in for a longer time than this, and who have been restored; but in such cases it is highly improbable that there was complete submergence or that the reports in other respects represent the actual facts. In the class of cases with which I am best acquainted, namely, those in which

2. Schäfer, E. A.: Harvey Society Lectures for 1907-1908, New York, 1909, p. 223.

3. Liljestrand, Wollin and Nilsson made similar observations (Skand. Arch. f. Phys., 1913, xxix, 198).

respiration fails under anesthesia in cats and dogs under experiment, the large majority have proved susceptible of restoration by the administration of artificial respiration, provided it was given immediately. Indeed, I have a strong impression that during the first minute after the cessation of breathing, the administration of manual artificial respiration is more effective than that by means of a pump or bellows, the reason apparently being that a slight assistance is given to the heart and circulation by the manual method which is not afforded by mere changes of air pressure in the lungs. Certainly both in the laboratory and operating room, in the great majority of cases the immediate application of manual artificial respiration is effective in restoring normal breathing. On the other hand, a delay of even two or three minutes has usually resulted in the failure of the efforts applied thereafter; and if the animal has been left without measures of resuscitation for five minutes after the cessation of spontaneous breathing, the subsequent efforts at revival have never been successful.

In the large majority of the reports of alleged restorations effected with apparatus, the statement that the apparatus was telephoned for and was rushed to the spot is a significant item. A telephone lineman touches a wire which has been crossed with a power line, and falls to the ground unconscious and apneic. A man who went to bed drunk in a cheap hotel is found in the morning with the gas turned on. A man in a trench in the street over a leaking gas pipe is overcome. A longshoreman falls into the harbor and is hauled out and laid limp on a wharf. Suppose that in such cases the rescuer runs to the nearest telephone. Apparatus is "rushed to the spot." If it arrives after the tenth minute (and it will seldom arrive so soon) the man is dead, and the vigorous working of the apparatus for the next hour succeeds at most in producing an emphysema in the corpse. Even in the unusual case in which the apparatus arrives and is applied in six or eight minutes, the chances of resuscitation are not nearly so good as they would be if the prone pressure manual method had been begun within thirty seconds after the accident.

In those cases in which apparatus was not applied until twenty or thirty minutes after the accident or after the patient was found — and such cases form the large majority of alleged cures — it is practically certain that the patient never ceased to breathe spontaneously, and that the apparatus contributed nothing material to his recovery. This was true of practically all the cases investigated by the Resuscitation Commission, and it is true of a number of cases which I myself have attended (as an observer) since the commission made its report. It is significant that the attending physician in some of the latter cases was inclined to attribute to the effects of apparatus recoveries which were clearly and solely the result of nature.

From these facts it seems fair to advise that breathing apparatus should be provided in those fields of work in which it can be at hand when an accident occurs, but not for cases in which it must be sent for. A reliable air pump for artificial respiration is an important part of the equipment of a mine rescue crew — not so much for the men rescued from an exploded or burning mine as for use on members of the rescue party who may be overcome. Artificial respiration apparatus could advantageously be kept at bathing beaches. It might also sometimes be useful for the men in a city fire department. In nearly any hospital

it is likely sooner or later to prove useful. Apparatus suitable for use on new-born infants should be introduced into every maternity ward. It does not appear, however, that *unless the employees of a gas, electric light or telephone company have been drilled in manual methods and warned not to wait for apparatus*, the purchase of apparatus will appreciably decrease the likelihood of fatalities outside of the central works. An apparatus kept at police headquarters to be sent in an ambulance is a waste of money and a probable increase of the hazards of life. The general training of policemen, firemen, and especially schoolchildren in the prone pressure method would save more lives than the purchase of any amount of apparatus.

As a means of partially counteracting the tendency to exaggerate the value of apparatus, the Bureau of Mines recommends that the directions which go with every piece of apparatus should include the description of the prone pressure manual method as given in Miners Circular No. 8, and that there should also be printed on the outside of the case containing the apparatus, in prominent characters, words to the following effect:

If spontaneous breathing has ceased and this apparatus is not already on the spot, administer artificial respiration by manual methods without the loss of a moment, and continue to do so until the apparatus is brought. Otherwise, life will be extinct before the apparatus arrives. Except to remove the patient from a locality containing irrespirable gases, never carry him to the apparatus; he will be dead before he gets there.

Finally, attention should be called to the value of oxygen inhalation apart from artificial respiration for men who have been "gassed" or overcome by smoke nearly or quite to the point of unconsciousness, but not of respiratory failure. For this purpose the method of feeding the oxygen through a funnel suspended some inches above the patient's face, as is done in some hospitals, especially in pneumonia and illuminating gas cases, is entirely inefficient and wasteful. Most of the gas blows or diffuses away, and the air inhaled is enriched by only 3 to 5 per cent. of oxygen. The proper administration of oxygen requires an apparatus similar in type to that by which nitrous oxid is usually given, except that there should be no rebreathing. It consists of a tank of compressed oxygen connected by a tube to a rubber bag of from 5 to 10 quarts' capacity, and a mask with an inspiratory valve connected with the bag and an expiratory valve to the outside air. An appliance of this sort is sold by some of the manufacturers of mine rescue apparatus, and should be included with all apparatus for artificial respiration. The gas tank, rubber bag and mask are obtainable in any large city, and are easily combined.⁴ Such apparatus would spare many a city fireman a bad headache and sometimes a weakened heart.

CONCLUSIONS

1. Universal training in the prone pressure manual method of artificial respiration will accomplish more for resuscitation from drowning, electric shock, and asphyxia than is possible by providing any amount of apparatus.
2. Artificial respiration with apparatus is superior to the manual method, in that the apparatus is capable of giving a normal volume of pulmonary ventilation while the manual method is not.

⁴ Illustrations and description may be obtained by application to the Bureau of Mines.

3. Nevertheless, the immediate application of a poor method is far more important than the application of a perfect method after a delay of even five minutes. The knowledge that apparatus is available is liable to result in a neglect of immediate manual treatment in order to have the apparatus brought from a distance.
4. Apparatus should be provided only in places in which it will be immediately available.
5. Since all that any apparatus yet invented affords is artificial respiration with air more or less enriched with oxygen, it should be of a simple type so as not to produce exaggerated ideas of its efficiency.
6. Oxygen inhalation should be used immediately in gas and smoke cases, but the apparatus employed should be such as will allow the oxygen to reach the patient's lungs in efficient concentration. Such apparatus should go with every artificial respiration device.
7. Investigation of the use of artificial respiration apparatus in asphyxia neonatorum is needed.

A STUDY OF OPHTHALMOSCOPIC
CHANGES IN NEPHRITIS*

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In this paper the tabulated histories which make up its major portion are abstracted from a series of observations made in the clinic of ophthalmic surgery of the University of Michigan, and are arranged in parallel columns in juxtaposition with the medical diagnosis and an abstract of the laboratory findings in each case. While some of the cases might possibly have been somewhat differently classified, the fact that the diagnosis was made in the clinic of internal medicine in connection with the symptoms and with the many other features which could not be presented within the limits of this paper has seemed to be a sufficient reason for accepting the medical diagnosis without question.

The conclusions and summaries are based exclusively on the tabulation of the features observed. While this study has been carried on with a full knowledge that the ground has already been repeatedly covered, the excuse for presenting it is that it has been

* Read before the Section on Ophthalmology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

stimulated by a desire for a grouping of the several features of fundus changes as seen in nephritis, with reference, first, to the pathologic changes in the retina as compared with those found in the kidney; second, to ophthalmoscopic features of diagnostic value, particularly with regard to early diagnosis; and third, to the differential diagnostic value of the ophthalmoscopic fundus lesions found in the different forms of nephritis. As a control, several cases of hypertension and a few miscellaneous cases presenting fundus lesions suggesting nephritis have been included.

An interesting didactic discussion of the fundus lesions seen in the various forms of nephritis and a digest of the literature of this subject have been recently made by Dr. A. E. Bulson¹ of Fort Wayne, Ind. In this paper Dr. Bulson mentions the fact that Sutton and Gull, Herrick, Edwards, Kelly, Rodner and others classify chronic nephritis as a part of a general angiosclerosis. This series of studies does not seem entirely to support this classification or the idea that radiating macular changes are common or frequent features of interstitial nephritis.

The cases included in this report have been divided into five classes, as follows: A, chronic interstitial nephritis; B, chronic nephritis; C, acute nephritis; D, hypertension, and E, miscellaneous cases.

Taking up the ophthalmoscopic notes, we find edema present in 93 per cent. of the cases. The fact that it was found in all cases of hypertension and in 96.7 per cent. of the cases of chronic interstitial nephritis seems to indicate a vascular rather than a nephritic origin. In the few cases of acute nephritis examined it was the least frequent, which tends to support such a conclusion. Its relation to the blood pressure does not appear, as it was present in the cases of chronic nephritis with lower blood pressure, quite as regularly as in other chronic cases of either parenchymatous or interstitial type: in the cases of acute nephritis when the blood pressure was low it was present in but 75 per cent., and in addition it was present in the one case showing rather high arterial tension. Congestion and slight swelling of the disk were present in 39.7 per cent. of the cases, being rather more frequent in chronic than in acute nephritis, but most frequent in hypertension.

All of the cases of chronic interstitial nephritis with swollen disks of 1 D. or more occurred in cases of marked increase in blood pressure. Especially is this

1. Bulson, A. E.: Ophth. Rec., December, 1915.

ILLUSTRATIVE CASES FROM TABLE 1.—SERIES A: CHRONIC INTERSTITIAL NEPHRITIS

Medical Findings and Diagnosis	Sex	Age	Vision		Ocular Findings
			O. D.	O. S.	
3. C. J. 12/2/12..... Diagnosis: Chronic interstitial nephritis; uremia; dilated heart; hydrothorax; radial and temporal vessels sclerosed. Urine: Large amount of albumin; granular and hyaline casts. Phenolsulphonaphthalein elimination, 7 per cent. in two hours. Blood: B. P., 150 to 190; R. B. C., 3,800,000; W. B. C., 12,700; Hgb., 45 per cent.; blood urea, 1.34 gm. liter.	F	48	5/10	5/6	O. D. Marked endarteritis; arteriovenous compression dilatation. Marked retinal edema; flame-shaped hemorrhages; exudative changes. Minute exudative spots in the macula. O. S. Rounded hemorrhages; glistening white spots, a few exudative changes and slight pigment change in the macula. Tortuosities of the macular vessels, one macular vessel silver wire. Otherwise same as O. D.
23. A. B. 3/15/15..... Diagnosis: Chronic interstitial nephritis; uremia; arterial sclerosis; hypertension. Urine: Large amount of albumin; many hyaline, granular and epithelial casts. Phenolsulphonaphthalein, no elimination in two hours. Blood: B. P., 175 to 180; R. B. C., 2,650,000; W. B. C., 8,800; Hgb., 31 per cent.; blood urea, 3.50 gm. per liter. Wassermann neg.	M	47	5/10	5/15	O. D. Disk swollen 3 D., edematous and markedly congested. Arteries much contracted; arteriovenous compression. Retina markedly edematous; deep and superficial hemorrhages about the disk and macula. Macula edematous. O. S. Disk is swollen 3 D.; marked edema with congestion, inflammatory infiltration and hemorrhages. Arteries are very small. Retina shows marked edema with numerous round, flame-shaped and superficial hemorrhages. Macula shows chorioretinitis with edema.

ILLUSTRATIVE CASES FROM TABLE 2.—SERIES B: CHRONIC NEPHRITIS

Medical Findings and Diagnosis	Sex	Age	Vision		Ocular Findings
			O. D.	O. S.	
1. G. M. 12/12/12..... Diagnosis: Chronic nephritis; secondary contracted kidney, interstitial type. Urine: Albumin, large amount; hyaline and granular casts. Phenolsulphonephthalein elimination, 34 per cent. in two hours. Blood: B. P., 250 to 216; R. B. C., 3,600,000; W. B. C., 11,200; Hgb., 66 per cent.; blood urea, 0.71 gm. per liter.	F	26	5/7	5/7	O. D. Nerve head swollen 4 D. Hemorrhages about the disk. Marked periarteritis; arteriovenous compression dilatation. Retina edematous in which tortuous veins are embedded; veins engorged. Macular vessels corkscrewlike; beginning star-shaped figure. O. S. Condition the same as O. D., swelling the same. More numerous and more extensive hemorrhages, both retina and macula.
6. A. M. N. 4/4/13..... Diagnosis: Chronic nephritis, late stage; mitral regurgitation. Urine: Large amount albumin; granular casts. Phenolsulphonephthalein elimination, 22 per cent. in two hours. Blood: B. P., 180 to 204; R. B. C., 4,400,000; W. B. C., 25,700; Hgb., 55 per cent.; blood urea, 0.80 gm. per liter.	M	47	6/5	6/5	O. D. Periarteritis; periphlebitis; vessels tortuous; marked endarteritis; arteriovenous compression. Retina edematous; several small hemorrhages; retinal sclerotic change above the macula. Macula granular and edematous. O. S. Marked perivascularitis; arteries very tortuous; endarteritis; arteriovenous compression. Retina hyperemic, marked edema. Macula edematous with beginning sclerotic change.

ILLUSTRATIVE CASES FROM TABLE 3.—SERIES C: ACUTE NEPHRITIS

Medical Findings and Diagnosis	Sex	Age	Vision		Ocular Findings
			O. D.	O. S.	
1. W. H. 3/13/13..... Diagnosis: Acute nephritis; paralysis from anterior poliomyelitis, attack four years ago. Urine: Albumin, present; granular casts. Phenolsulphonephthalein elimination; 70 per cent. in two hours. Blood: B. P., 125; R. B. C., 4,600,000; W. B. C., 14,500; Hgb., 75 per cent.	M	19	5/4	5/4	O. D. Nerve head congested and edematous. Marked perivascularitis; veins engorged; arteriovenous compression dilatation. Macula edematous. O. S. Disk more edematous. Some endarteritis; small veins tortuous. Condition practically the same in O. U.
4. A. B. 3/25/15..... Diagnosis: Subacute hemorrhagic nephritis; septic tonsils. Urine: Albumin, small amount; large numbers of red blood cells; hyaline and blood casts. Phenolsulphonephthalein elimination, 47 per cent. in two hours. Blood: B. P., 126; R. B. C., 6,720,000; W. B. C., 14,600; Hgb., 80 per cent.; Wassermann negative.	M	24	5/3	5/3	O. D. Disk normal. Slight endarteritis; slight venous engorgement. O. S. Disk slightly hyperemic. Endarteritis and slight venous engorgement.

ILLUSTRATIVE CASES FROM TABLE 4.—SERIES D: HYPERTENSION

Medical Findings and Diagnosis	Sex	Age	Vision		Ocular Findings
			O. D.	O. S.	
1. M. C. 12/19/12..... Diagnosis: Hypertension. Urine: Albumin, negative; no casts. Phenolsulphonephthalein elimination, 72 per cent. in two hours. Blood: B. P., 210 to 140; R. B. C., 4,700,000; W. B. C., 7,500; Hgb., 100 per cent.; blood urea, 0.36 gm. per liter.	F	48	5/5	5/6	O. D. Disk hyperemic. Retina hyperemic and edematous; one small hemorrhage. Arteriovenous compression; slight endarteritis. Small exudate in the macula. O. S. Disk more hyperemic. Macula edematous. Endarteritis; tortuous arteries and veins; no hemorrhages; one exudative change below the macula (old hemorrhage?).
6. T. A. S. 5/22/13..... Diagnosis: Hypertension; arterial sclerosis; chronic nephritis. Urine: Albumin, negative; hyaline casts. Phenolsulphonephthalein elimination, 61 per cent. in two hours. Blood: B. P., systolic 232, diastolic 185; R. B. C., 4,810,000; W. B. C., 9,650; Hgb., 85 per cent.; Wassermann negative.	M	78	5/20	5/7	O. D. Disk hyperemic. Veins engorged and tortuous, periarteritis; endarteritis; arteriovenous compression dilatation. Retina edematous; area of retinal change with swelling near the disk; localized detachment. White spots above the disk and the superior macular region. Two small linear hemorrhages. O. S. Disk swollen 1 D.; edematous and hyperemic. Perivascularitis; small hemorrhage near the disk; veins engorged; temporally the vessels are tortuous; arteriovenous compression dilatation. Retina edematous, some scattering hemorrhages and old hemorrhagic areas. Macula edematous.

ILLUSTRATIVE CASES FROM TABLE 5.—SERIES E: MISCELLANEOUS RETINAL CONDITIONS SUGGESTING NEPHRITIS

Medical Findings and Diagnosis	Sex	Age	Vision		Ocular Findings
			O. D.	O. S.	
1. L. F. 3/20/13..... Diagnosis: Secondary anemia from recurrent uterine hemorrhages. Urine: Albumin, negative; casts, negative. Phenolsulphonephthalein elimination, 59 per cent. in two hours. Blood: B. P., 170 to 190; R. B. C., 3,200,000; W. B. C., 3,900; Hgb., 39 per cent.; blood urea, 0.44 gm. per liter.	F	49	5/6	5/6	O. D. Periarteritis and endarteritis; veins irregular in caliber; arteriovenous compression dilatation. The retina is hyperemic and edematous; some localized sclerotic retinal changes below the macula. Macula edematous. O. S. Sclerotic retinal changes above and below the macula, also nasally. Slight choroidal changes; otherwise does not differ from O. D.
7. A. D. 4/17/15..... Diagnosis: Cerebral arterial sclerosis; moderate hypertension; myocardial degeneration; emphysema and chronic bronchitis. Urine: Negative. Blood: B. P., 130 to 172, both systolic; R. B. C., 5,400,000; W. B. C., 6,900; Hgb., 85 per cent.; Wassermann negative.	M	72	5/12	5/20	O. D. Disk somewhat swollen, edematous and congested. Arteries and veins irregular in caliber; endarteritis; arteriovenous compression dilatation. Retina and macula edematous. O. S. Essentially the same as O. D. Pupils unequal. Reflexes absent.

the case when the age of the patient is considered. The one instance in which this factor was least noticeable was Case 5, Series B; even this case showed a blood pressure from 168 to 142 mm. in a man of 50. Marked swelling of the disk of 1 D. or more in two cases of interstitial nephritis showed retarded phenol-sulphonaphthalein elimination with an excess of blood urea, a marked feature in Case 23. In the chronic nephritis cases showing swelling of the disk, the white blood cells were increased in the cases in which a blood count was made, though this feature was not so

dependent on the etiology of the kidney lesion, metabolic or blood toxic. In one case of hypertension in which there was some evidence of nephritis, arteriosclerotic type, the disk in one eye was swollen 1 D., elimination low limit of normal, blood pressure high.

Periarteritis was nearly twice as frequent in chronic nephritis as in interstitial, but why it should also be twice as frequent in hypertension as in interstitial is not easily explained.

Endarteritis was least frequent in acute nephritis, and equally infrequent in the other nephritic cases.

TABLE 6 (SUMMARY OF TABLES 1-5).—IMPORTANT FUNDUS LESIONS AND THE DIFFERENT TYPES OF CONSTITUTIONAL DISEASES GROUPED FOR COMPARISON

	Ocular Totals		A. Chronic Interstitial Nephritis		D. Hypertension		B. Chronic Nephritis		C. Acute Nephritis		E. Miscellaneous	
	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.
Total cases	73	100	30	41	13	17.8	18	24.7	5	6.9	7	9.6
Male	49	67	25	83.3	6	46	12	66.7	2	40	4	57
Female	24	33	5	16.7	7	54	6	33.3	3	60	3	43
Average age, years.....	49	....	54	....	57	....	41	....	22	....	53	....
Edema of the disk, retina or macula	68	93	29	96.7	13	100	16	88.8	4	80	6	85.7
Congestion or slight swelling of the disk	29	39.7	11	36.6	6	46	7	39	4	80	1	14
Swelling of disk 1 D. or more....	11	15	6	20	1	7.7	4	22	0	....	0	....
Periarteritis	24	33	7	23	6	46	8	44	1	20	2	28.5
Endarteritis	51	70	20	66.6	10	77	12	66.6	3	60	6	85.7
Irregular tortuous or contracted arteries	45	61.6	23	76.6	8	61.5	8	44	3	60	3	42.8
Silver wire arteries.....	12	16.4	9	30	2	15	1	5.5	0	....	0	....
Corkscrew vessels	7	9.6	3	10	1	7.7	3	16.6	0	....	0	....
Arteriovenous compression with or without dilatation.....	51	70	23	76.6	9	69	10	55.5	3	60	7	100
Veins, irregular, engorged or tortuous	48	65.7	16	53	12	92	11	61	5	100	4	57
Periphrlebitis	12	16.4	3	10	3	23	5	27.7	1	20	0	....
Venous thrombosis	1	1.3	0	....	1	7.7	0	....	0	....	0	....
Hemorrhages	39	53.4	22	73.3	7	54	9	50	0	....	1	14
Exudates and other retinal changes	23	31.5	12	40	6	46	3	16.6	0	....	2	28.5
Retinal detachment	4	5.4	1* 1†	6.6	2	15	0	....	0	....	0	....
Radiating or star-shaped macular changes	5	6.8	1	3.3	0	....	4	22	0	....	0	....
Other macular changes.....	22	30	13	43.3	6	46	2	11	0	....	1	14
Choroidal changes	15	20	6	20	2	15	4	22	0	....	3	42.8
Aneurysmal dilations and varicosities	3	4	1	3.3	2	15	0	....	0	....	0	....
Atrophic characteristics	25	34	10	33	6	46	7	39	0	....	2	28.5
Inflammatory characteristics	30	41	15	50	6	46	7	39	0	....	2	28.5

* Double. † Single.

noticeable in the interstitial type. In the parenchymatous form elimination was retarded and blood urea increased in three cases, a marked feature in Case 10. Although in this case the swelling was not great, there were typical radiating macular changes. The marked neuroretinitis in Series B, Case 17, may have been due, of course, to cerebrospinal syphilis, but there were typical radiating macular changes.

Macular changes were present in all of the choked disk cases in parenchymatous nephritis and in three out of six cases of interstitial nephritis. Three out of four of the former were of the radiating type, and one of the latter. Swelling of the disk was more frequently associated with poor elimination, nephritic toxemia; on the other hand, macular changes were more degenerative in type, possibly in part dependent

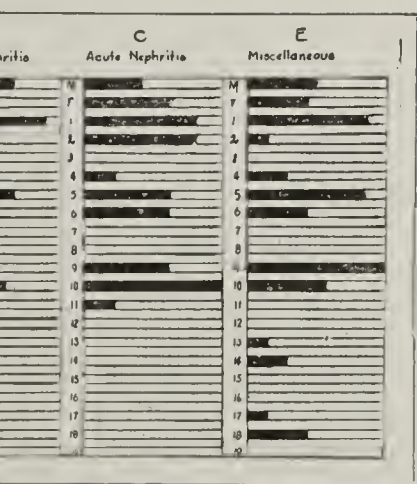


Chart 1.—Graphical representation of totals and percentages in Table 6. Each group represents the percentages of the features as they would appear in an equal number of cases: M, male; F, female; 1, edema of disk, retina or macula; 2, congestion or slight swelling of the disk; 3, swelling of disk 1 D. or more; 4, periarteritis; 5, endarteritis; 6, irregular tortuous arteries; 7, silver wire arteries; 8, corkscrew vessels; 9, arteriovenous compression; 10, engorged tortuous veins; 11, periphrlebitis; 12, venous thrombosis; 13, hemorrhages; 14, exudates, etc., retina; 15, retinal detachment; 16, radiating macular changes; 17, other macular changes; 18, choroidal changes; 19, aneurysmal changes.

It is not surprising that it should be more frequent in hypertension, as several of these cases showed evidence of general arteriosclerosis; that it should be so frequent in the miscellaneous cases is probably due to the fact that of these the first three cases showed high blood pressure; Case 4, rather advanced age; Case 5, syphilis; Case 6, degenerated kidney with low elimination, and Case 7, cerebral arteriosclerosis.

Tortuous or contracted arteries seem to have been mostly associated with high blood pressure, though they were relatively more frequent in the acute than in the chronic group. They are probably associated with the other vascular changes.

Silver wire arteries seem to be a feature of a late stage of interstitial nephritis, 30 per cent.; they were present in 15 per cent. of cases of hypertension. They

may be dependent on the cause of angiosclerosis rather than directly on increased blood pressure.

Corkscrew vessels in the macula were present in 10 per cent. of the interstitial and 16.6 per cent. of the chronic nephritis cases. They are probably due to long continued interference with the terminal circulation in the retinal vessels caused by the toxic substances present in the blood in nephritis rather than to increased blood pressure, for they were noted but once in the cases of hypertension and not at all in the other cases.

Arteriovenous compression was present to a marked degree, 70 per cent. Judging from its regular dis-

tribution throughout all five series, this feature would seem to be symptomatic of angiosclerosis rather than to be due to the poisons which cause the nephritis or the toxic substances resulting from the kidney lesions. Venous tortuosities and irregularities were relatively most frequent in the acute cases, but they were present in 65.7 per cent. of all, and in 92 per cent. of hypertension cases. They are probably caused by both toxic retention and angiosclerotic changes. The same observation might be made with regard to periphlebitis, though it was relatively quite infrequent. Hemorrhages were present in 53.4 per cent. of all cases. Interstitial nephritis showed hemorrhages in 73.3 per cent.; hypertension and chronic nephritis in 54 and 50 per cent., respectively. They were absent in the acute cases and present in a case of chronic

bronchitis—Series E, Case 4. In this case, although the blood pressure was only 135 mm. of mercury, and the urine was normal, there were distinct evidences of retinal angiosclerosis in the eye in which the hemorrhage occurred. This case was the only one in the series having a low blood pressure. In all the other cases of retinal hemorrhage, increased blood pressure was a prominent feature, excepting in some of the cases of chronic nephritis. Retarded or markedly deficient elimination was present in 70 per cent. of cases showing hemorrhages. They were more frequent in cases having a large amount of albumin than in those showing a small amount, in the ratio of 4:9.

TABLE 7.—PREDOMINATING RETINAL LESIONS

As Associated with the Following Laboratory Findings Relating to the General Disease:	High Blood Pressure	Moder- ate Blood Pres- sure	Normal or Nearly Normal Blood Pres- sure	Slow Elimina- tion	Normal or Fair Elimina- tion	Amount Albumin Moder- ate or Large	Amount of Albumin Smaller Absent	Low Red Blood Cell Count	High White Blood Cell Count
Number of cases of each feature (in boldface).....	53	8	5	21	16	31	35	19	13
A. Chronic interstitial nephritis, 30 cases.....	30	0	0	7	7	15	15	11	5
Congestion or slight swelling of disk.....	11	..	..	4	2	3	4	2	..
Swelling of disk 1 D. or more.....	6	..	..	2	..	6	..	3	..
Arterial changes and tortuosities.....	30	..	..	7	6	15	13	11	4
Silver wire and corkscrew arteries.....	8	..	..	3	2	3	7	5	2
Arteriovenous compression.....	23	..	..	5	6	9	12	6	3
Changes or tortuosities in veins.....	16	..	..	2	5	9	8	5	2
Hemorrhages.....	22	..	..	7	4	10	4	9	2
Exudates and other retinal changes.....	8	..	..	2	2	5	6	2	1
Radiating macular changes.....	1	..	..	..	..	1	..	1	..
Other macular changes.....	13	..	..	5	1	5	6	6	1
D. Hypertension, 13 cases.....	12	1	0	3	4	2	11	1	0
Congestion or slight swelling of disk.....	4	..	..	2	1	2	2	..	..
Swelling of disk 1 D. or more.....	1	..	..	..	..	..	..	..	..
Arterial changes and tortuosities.....	9	1	..	2	4	1	10	1	..
Silver wire and corkscrew arteries.....	4	1	..	1	..	1	2	..	..
Arteriovenous compression.....	5	1	..	2	3	2	8	..	..
Changes or tortuosities in veins.....	6	1	..	3	3	2	9	1	..
Hemorrhages.....	7	..	..	1	2	2	4	..	..
Exudates and other retinal changes.....	6	..	..	..	4	..	5	..	..
Radiating macular changes.....	..	..	..	..	..	..	..	..	..
Other macular changes.....	6	1	..	..	..	1	2	..	..
B. Chronic nephritis, 18 cases.....	10	7	1	9	4	12	6	7	5
Congestion or slight swelling of disk.....	3	2	..	2	1	3	2	1	1
Swelling of disk 1 D. or more.....	2	2	..	4	1	2	2	2	2
Arterial changes and tortuosities.....	9	5	1	6	2	11	6	7	4
Silver wire and corkscrew arteries.....	1	2	..	2	1	1	2	4	3
Arteriovenous compression.....	6	2	1	6	2	6	5	6	5
Changes or tortuosities in veins.....	6	2	1	6	2	6	5	5	5
Hemorrhages.....	5	4	..	5	2	6	3	4	3
Exudates and other retinal changes.....	1	1	..	2	..	2	2	1	1
Radiating macular changes.....	2	2	..	2	..	3	1	1	1
Other macular changes.....	2	1	..	2	1	2	1	1	1
C. Acute nephritis, 5 cases.....	1	0	4	2	1	2	3	0	3
Congestion or slight swelling of disk.....	..	..	3	..	..	1	2	..	2
Swelling of the disk 1 D. or more.....	..	..	..	..	..	..	..	..	..
Arterial changes and tortuosities.....	1	..	4	2	1	2	3	..	2
Silver wire and corkscrew arteries.....	..	..	..	..	..	..	..	..	..
Arteriovenous compression.....	..	..	3	1	1	1	2	..	2
Changes or tortuosities in veins.....	1	..	4	2	1	2	3	..	3
Hemorrhages.....	..	..	..	..	..	..	..	..	..
Exudates and other retinal changes.....	..	..	..	..	..	..	..	..	..
Radiating macular changes.....	..	..	..	..	..	..	..	..	..
Other macular changes.....	..	..	..	..	..	..	..	..	..

tribution throughout all five series, this feature would seem to be symptomatic of angiosclerosis rather than to be due to the poisons which cause the nephritis or the toxic substances resulting from the kidney lesions.

Venous tortuosities and irregularities were relatively most frequent in the acute cases, but they were present in 65.7 per cent. of all, and in 92 per cent. of hypertension cases. They are probably caused by both toxic retention and angiosclerotic changes. The same observation might be made with regard to periphlebitis, though it was relatively quite infrequent.

Hemorrhages were present in 53.4 per cent. of all cases. Interstitial nephritis showed hemorrhages in 73.3 per cent.; hypertension and chronic nephritis in 54 and 50 per cent., respectively. They were absent in the acute cases and present in a case of chronic

Retinal detachment was present only in interstitial nephritis and hypertension. In one case the detachment was bilateral and rather extensive; in the other cases the detachment was small, and occurred in only one eye. All these cases showed a distinctly high blood pressure. In the two detachment cases in which the elimination test was made, Cases 3 and 6, Series D, the result gave the low limit of normal.

Macular changes were mentioned in connection with the cases of severe optic neuritis; there remain, however, a few interesting features. The radiating type so commonly mentioned as characteristic of nephritis was present in only 6.8 per cent. of all cases. Of these, it was present in 22 per cent. of the chronic nephritis cases, and in only one, or 3.3 per cent. of the interstitial nephritis cases. In the latter case, Series A,

Case 14, the blood pressure was high, elimination retarded, blood urea increased. In two of the cases found in chronic nephritis there was high blood pressure; three showed marked swelling of the disk; in the fourth the disk was congested. Elimination was low and blood urea increased or high in the cases in which this test was made. Radiating macular changes may therefore be said to be nephritic toxic with high blood pressure and angiosclerotic changes uniformly present.

Other macular changes were found to be the most prevalent in interstitial nephritis, 43.3 per cent., and in hypertension, 46 per cent. They were a feature of 11 per cent. of chronic nephritis. In the interstitial type, high blood pressure was present in every case of a typical macular change. The majority of these cases in which these tests were made showed low elimination and high blood urea. From these cases it would seem that as regards etiology, both radiating macular changes and atypical macular changes are nephritic toxic and angiosclerotic, associated with high blood pressure, but that the former are more common in chronic nephritis, while the latter are more common in interstitial nephritis and hypertension.

The choroidal changes noted are not easy to account for, but as they were more prevalent in interstitial nephritis and hypertension, they are probably angiosclerotic in origin, though a definite sclerosis of the choroidal vessels was made out in but one case, one of interstitial nephritis. They were noted in three of the cases in Series E, where they seem to have been associated with no particular type of lesion.

The thirty cases showing changes of an inflammatory type include the cases of optic neuritis, exudative retinitis, macular exudates, etc.

They seem to have considerable relation to a retarded elimination, increased blood urea, and frequently to an increase in the white blood cells.

Atrophic changes apparently have less significance than inflammatory changes, and are more difficult to explain in these groups. In the main they were associated with high blood pressure and fairly good elimi-

As far as this series goes aneurysmal dilatations appear most frequently in cases of angiosclerosis with hypertension.

Table 7 and Chart 2 were made for the purpose of showing the relation between the more prominent laboratory features of the different types of nephritis and the more common or characteristic fundus lesions found in each type. Inasmuch as edema was so generally present, it was not thought best to take up this

feature in Table 7. Choroidal changes are found in such a large number of general conditions that they hardly seem to be a distinctive feature of nephritis; they are also omitted. The remaining eighteen findings are combined under ten headings and placed under the captions of Series A, B, C and D. Next the ophthalmoscopic features of these subdivisions are correlated to the most interesting laboratory findings.

The number of acute cases presented in this series is far too small to warrant definite conclusions being drawn; in the cases examined, however, there were almost no lesions other than edema and slight vascular changes. The diagnostic or prognostic value of such ophthalmoscopic findings seems to be very slight.

In the cases of interstitial nephritis the serious retinal changes seen in high blood pressure are numerous and significant, and the fact that these are, to a large extent, dependent on angiosclerosis seems to be established by the occurrence of these lesions in much the same relative frequency in hypertension. The much smaller percentage, 55.5, of high blood pressure in the cases of chronic nephritis is worthy of notice, especially when we find nearly as large a percentage of serious retinal lesions in the seven cases

having moderately increased blood pressure. In the one case of chronic nephritis having a nearly normal blood pressure the lesions were practically the same as those seen in acute nephritis, which is also a fact in the one case of moderately increased blood pressure in Series D, hypertension, with the single exception of a silver wire artery observed in this case. These facts

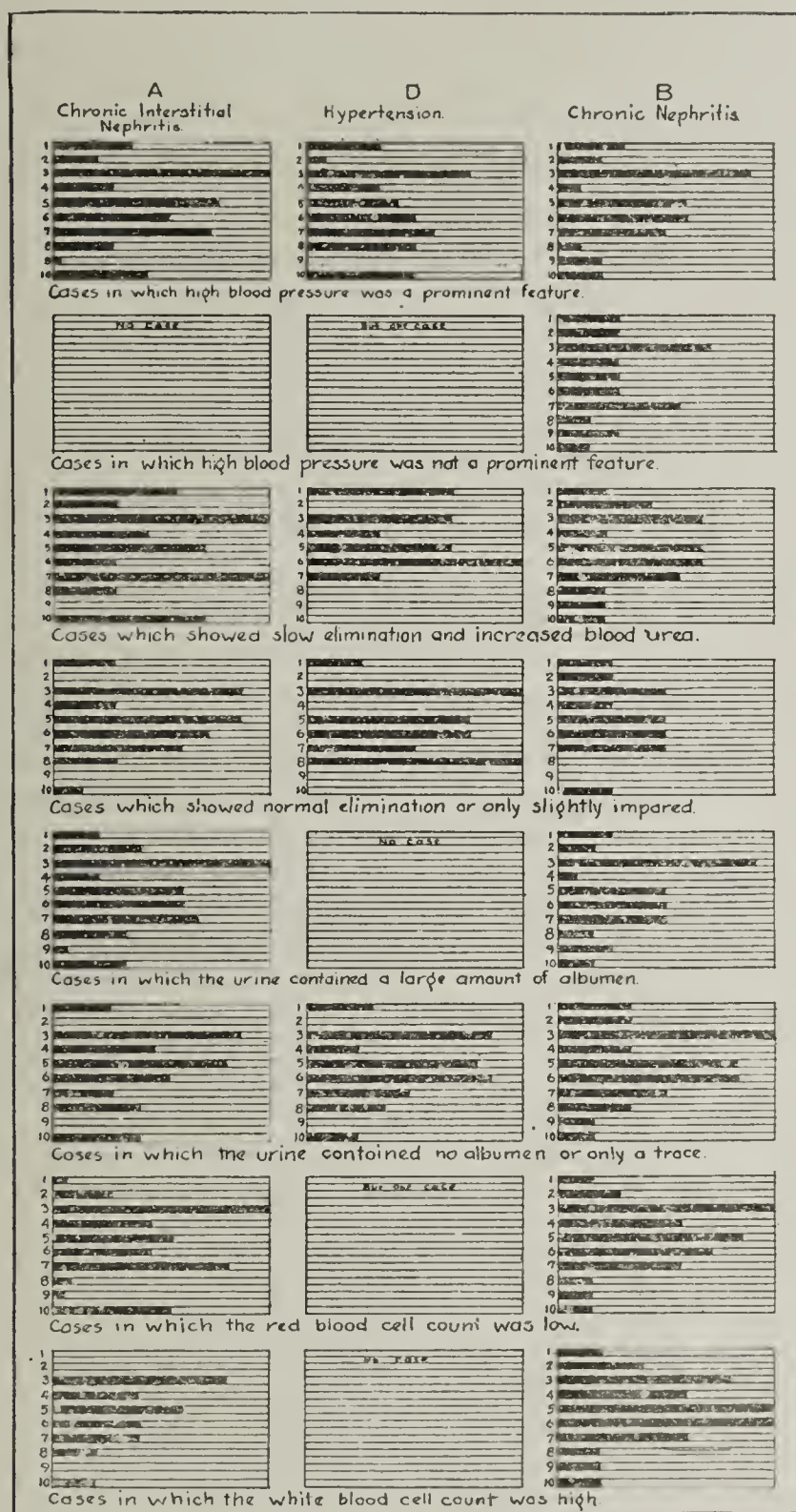


Chart 2.—Graphic representation of totals and percentages in Table 7. Each group represents the percentages as they would appear in an equal number of cases, the grouping being based on the laboratory findings in the general examination instead of the diagnosis: 1, congestion or slight swelling of disk; 2, swelling of disk 1 D. or more; 3, arterial changes and tortuosities; 4, silver wire and corkscrew arteries; 5, arteriovenous compression; 6, changes or tortuosities in the veins; 7, hemorrhages; 8, exudates and other retinal changes; 9, radiating macular changes; 10, other macular changes.

support the belief that many of the serious fundus lesions of nephritis are, in part at least, dependent on some other factor than angiosclerosis.

Pursuing this subject further, the striking fact appears that three out of four cases of so-called choked disk were seen in chronic nephritis with slow elimination, while but two out of six similar cases, marked swelling of the disk, were seen in slow elimination in interstitial nephritis, and none in hypertension. A similar distribution of fundus lesions in chronic nephritis appears in cases showing slow elimination; less than one fourth of Series B had normal or fair elimination, and if one choked disk, one silver wire artery and two cases with hemorrhagic lesions may be excepted, good elimination seems to be protective of the fundus in chronic nephritis. In interstitial nephritis good elimination appears to offer less protection, for there were seven cases in each class, that is, in slow elimination and normal elimination, and there were nearly as many retinal lesions in the one as in the other, although the lesions were slightly more numerous in the cases in which elimination was slow; for example, there were two cases of choked disk and nearly twice as many hemorrhages in the latter condition, which goes to show that even in angiosclerotic cases, toxemia often plays a significant part.

From the standpoint of the amount of albumin found in the urine, there are in interstitial nephritis fifteen cases in which the amount was large, and an equal number with a small amount. All the cases of choked disk found in interstitial nephritis were present in cases in which the albumin was in large amount. The silver wire and corkscrew arteries were more numerous with a small amount of albumin, while hemorrhages were much more numerous where the amount was large. In chronic nephritis, on the other hand, there were twice as many cases with hemorrhages having a large amount of albumin. Two cases of choked disk were found in both large and small amounts of albumin. Of the other fundus lesions found in albuminuria, hemorrhages seem to have been about equally distributed, although they were relatively a little more frequent in small amounts of albumin than in large; this perhaps goes to show that when considered in relation to both angiosclerosis and slow elimination, toxemia and its results in the production of fundus lesions are not closely related to the amount of albumin found in the urine in any given case. Albuminuria does not appear to have had much if any significance in the cases of hypertension, and almost none at all in the acute cases seen.

Low red blood cell count, as indicating relative anemia, is of more than passing interest. Three of the six cases of choked disk in interstitial nephritis, two of the four cases of choked disk in chronic nephritis, 50 per cent. of each, showed this feature; silver wire arteries and hemorrhages were also, though in less striking degree, features of low red blood cell count. The one case of relative anemia in hypertension showed nothing striking.

Only five cases of interstitial nephritis, 16.7 per cent., showed an increased white blood cell count. The lesions seen in this series could all be attributed to angiosclerosis. On the other hand, there were five cases of chronic nephritis, 27.7 per cent., having a high white blood cell count. Choked disk appears here in two cases, 50 per cent. of the cases found in chronic nephritis. Silver wire or corkscrew arteries

were also relatively numerous, though there was but one case showing hemorrhages. Three out of the five cases of acute nephritis had a relatively high white blood cell count: there were no cases of relatively low blood red cell count in this series. There seemed to be no relation between either the red or white blood cell count and the ophthalmoscopic features of acute nephritis.

The relation between the histopathology of the renal lesions of nephritis and that of the fundus lesions found with the ophthalmoscope in nephritis and hypertension is quite as interesting as the relation between these findings and the features of nephritis already discussed. In each case we have an organ made up largely of highly differentiated epithelial cells, differing widely as to embryologic origin, but each bound together by a supporting framework, and each having a rich and peculiar type of vascular organization and blood supply.² As in diseases of the kidney, so in diseases of the retina, the changes which take place are of a degenerative type, often dependent on the associated or preceding vascular changes.

Edema, which was common to all classes and almost constantly present, occurs in the earliest stages of retinitis as a diffuse edema affecting the disk, retina and macula. It gives rise to a watery haziness or opalescence, with increase in the retinal depth as measured by the ophthalmoscopic parallax. Later, localized edema may occur in the retinal substance forming cystic spaces, which may become filled with hyalin or fat derived from the degenerating arterioles with subsequent formation of cholesterol crystals. When the spaces become large and distended, they may rupture externally, giving rise to subretinal fluid with detachment. As a result of the pressure, edema and intracystic exudate, the nerve elements degenerate, the fluid filling the spaces changes to hyalin, and more or less well defined white spots or areas develop. In the severe types, endothelial leukocytes may penetrate the hyaloid boundary and lead to the formation of white bands; or in more severe cases to proliferating retinitis.³

The vascular changes on which the retinal changes, to so large a degree, depend, are generally the result of hyalin necrosis with fat formation due to changes in the intima. Endarteritis is followed later by deposits of lime salts in the necrotic areas of the intima. The perivascular changes are due either to albuminous exudate followed by hyalin deposits in the perivascular sheaths, or to a peculiar type of hyalin degeneration seen in other parts of the central nervous system, in which there is deposited around the wall of the artery minute droplets of hyalin which fuses to form a complete sheath for the vessel; the cause of this formation is not known; calcification often occurs.⁴ Hemorrhages when small may undergo complete absorption through the activity of the endothelial leukocytes. If large, the blood pigment may be partially absorbed through the same means, while fatty degeneration of the coagula followed by cholesterol formation and the development of cystoid spaces, with hyalin and other changes, may lead to permanent white patches more or less associated with unabsorbed irregularly arranged blood pigment.³

2. Although the choroid is not a part of the retina, it is the source of nutrition for the outer retinal layer.

3. Parsons: Pathology of the Eye, iv, 1298

4. Mallory: Principles of Pathology and Histology, p. 444.

Leaving the retinal side of the picture and turning to the kidney lesions, we find here also that vascular changes are frequently the predominating feature of the several forms of the disease, with, in addition, the peculiar degenerative processes which take place in the various tubules. Here too we see hyalin and fatty changes in the vessel walls, and in addition, in the epithelial cells of the tubules. While amyloid appears in the vessel walls, I find no mention of its appearance in retinal disease; as amyloid, however, appears to lead to hyalin thickening with gradual occlusion of the vessel lumen, it might be found in the retina also in cases in which an artery becomes obliterated. Amyloid appears first in the glomeruli and the smaller arterioles, and later forms around the tubules, leading to colloid and hyalin degeneration of the epithelium of the tubules.

In the toxic form of acute tubular nephritis, marked necrotic changes are seen in the epithelium of the tubules, associated with inflammatory reaction, lymphocyte infiltration, leukocyte migration, etc. Inasmuch as this type of cases was so nearly absent from the series under consideration, no retinal relation need be discussed; but inasmuch as similar changes sometimes take place in the heart and liver in toxic conditions, it seems not unlikely that the same definite relation may sometimes be established.

Toxic glomerular nephritis presents certain peculiar features in which we have (a) the capsular type with inflammatory exudates into the capsular space and degeneration of the capsular epithelium, or in some cases proliferation of the capsular epithelium, and (b) the intracapillary type in which the glomerular capillaries are involved, with intracapillary fibrin formation and the accumulation of leukocytes, without much epithelial involvement. Inasmuch as the types of glomerular nephritis are due to toxins which often have a general distribution, and as they are more or less of an inflammatory character, one might expect that an associated reaction in the retina would also take on an inflammatory character, as would be shown by neuroretinitis, papillitis, periarteritis, periphlebitis, exudates, etc. In the clinical classification of chronic nephritis, in which there were several cases showing toxemia, etc., inflammatory retinal changes appeared to be prominent features.

In chronic interstitial nephritis there is present endarteritis affecting the inner fibrous layer and the endothelium, such as occurs in the vessels in general arterial sclerosis. The necrotic process attacks the cells of the intima, particularly the fibroblasts, necrosis occurs, and the endothelial leukocytes are set free. When regeneration occurs there is an overproduction of new elements with consequent narrowing of the vessel. If the endothelial cells degenerate, fibrous thrombi may follow, leading to irregular thickening and localized occlusion of the vessel; secondary sclerosis and disappearance of glomeruli follows. When the occlusion is rapid, hemorrhage into the glomeruli may result. The vascular changes are followed by degeneration and atrophy of the renal epithelium, with contraction and apparent increase of the connective tissue elements.⁵

In the latter part of this paragraph the intimate relation between the destructive effects of the vascular degeneration in the kidney and in the retina can be forcibly expressed by substituting the words retinal

elements or retina for glomeruli, and the same words for renal epithelium, as follows: secondary sclerosis and disappearance of the retinal elements follows. When occlusion is rapid, hemorrhage into the retina may result. The vascular changes are followed by degeneration and atrophy of the retinal elements. Note the relatively large number of features 13, 14, and 17, Chart 1, in chronic interstitial nephritis and hypertension.

ABSTRACT OF DISCUSSION

DR. ALBERT E. BULSON, Jr., Fort Wayne, Ind.: The fundus lesions that may accompany persistent high blood pressure and the various types of nephritis are due to the presence of toxic substances in the blood. The character and extent of the retinal lesions depends on the virulence of the toxic substances, the stage of the angiopathic disease, and the resistance offered by the vascular structures of the eye. In chronic Bright's disease we may find in the retina any or all of the changes resulting from vascular disease. In the class of cases characterized by edema, with abundant albuminuria and cylindruria, we are more apt to have marked hyperemia and exudation in the retina, whereas in cases with marked cardiovascular changes, relatively slight albuminuria and cylindruria, and abundant urine of low specific gravity, the retinal changes are more apt to be of the degenerative type, and present sclerosis of the arteries, full and tortuous veins, hemorrhages and atrophy. In the early stages of nearly all cases we have more or less hyperemia and exudation. The fundus changes in chronic Bright's disease are ophthalmoscopically indistinguishable from the vascular degenerative changes that may occur as a result of infection in scarlatina, measles, erysipelas, malaria, syphilis, and lead poisoning; and the ophthalmoscopic picture of so-called acute albuminuric retinitis is the same as that presented by the chronic form of retinitis in the exudative stage, but without the arteriosclerotic changes. Even the macular star or radiating exudates around the macula, formerly thought to be pathognomonic of Bright's disease, have been found in syphilis. It is suggested, therefore, that while the fundus changes in any case of symptomatic retinitis may suggest strongly the nature of the general disease, they cannot alone be considered as strictly diagnostic. Even the presence of albumin and casts in the urine is subject to great variation, and the existence of advanced nephritic changes may not be evidenced by the finding of either albumin and casts in one or even more samples of urine. It is in this latter class of cases that the retinal lesions, while in themselves suggestive of the underlying cause, must await the discovery of other clinical findings before becoming of diagnostic importance. The earliest lesions are not those embraced in the well known picture of albuminuric retinitis, but the less pronounced lesions which when made the basis of more extended study of the case lead to a diagnosis that may mean prolongation of the life of the patient. In the final analysis, therefore, the fundus lesions that we commonly see in angiopathic disease and described in connection with nephritic cases, even though strongly suggestive, are of diagnostic and even prognostic importance only when considered in connection with the history and other clinical findings, and the latter may require repeated chemical and microscopic examinations of the urine, repeated blood pressure findings, and exhaustive blood examinations.

DR. E. E. BLAAUW, Buffalo: Nephritis is not so much an anatomic study as a study of function. At present the viewpoint has reference to the retention of sodium chlorid, or the retention of urea in the blood stream, conditions entirely different from interstitial nephritis. The question of vascular disease should be entirely distinct from nephritis. With changes in the urine there may be changes in the kidney, but the etiologic factors are entirely different. In 125 cases we found only five cases of fundus changes, which shows that it needs a great many more cases to come to a percentage decision.

5. Mallory: Principles of Pathology and Histology, p. 567.

DR. EDWARD J. BERNSTEIN, Kalamazoo, Mich.: Will the author please explain what he means by hypertension, and by high blood pressure? Many of us are under the impression that hypertension means high blood pressure. I should like to ask how the author arrives at a differential diagnosis in nephritic troubles when there are neither casts nor albumin in the urine.

DR. G. E. DE SCHWEINITZ, Philadelphia: It is worth while to emphasize that the so-called diagnostic or characteristic eyeground of nephritis is not really a characteristic eyeground. I believe that there is a period in the progress of nephritis which we may call what the French speak of as the incidence of nephritis. It consists in a curious change in the nerve head. It is important also to emphasize the fact that we are not yet prepared to speak of the diagnostic eyeground in relation to the clinical symptomatology. Because a man has some retinal changes he must not be condemned to death in one year or eighteen months. He may die within such period after changes have been found with the ophthalmoscope, but not necessarily so. Under modern treatment prolongation of life to many months and even years is possible.

DR. S. D. RISLEY, Philadelphia: We should speak of these retinal changes as being a toxic retinitis instead of a nephritic retinitis, because these same changes are present in kidney disease and other toxic affections. They may be associated with cardiovascular disease which is associated with kidney affections and with other nutritional diseases. It is a very rare case of glycosuria in which we do not find this toxic retinitis present.

DR. EDWARD JACKSON, Denver: Conservatism in prognosis is a good thing to cultivate. A case in point is that of a man with very marked instability of the nervous system, vascular retinal changes, typical, as we supposed, of high blood pressure. He took up golf and has devoted two or three afternoons every week to it, where he had done nothing of the kind before. He has been under my observation some six years and prognosis from a retinal examination today would be entirely favorable. Another case typical of vascular change happened in a woman of 60. That patient lived without any particular change of habits for over six years, with gradual deterioration of vision but with not much other change that could be connected with the retinal condition. A third case is that of a medical friend who accidentally, in good health, discovered that he had a systolic blood pressure of 235 mm. He has been able to reduce it to 180. He is comparatively young—under 40. He has changed his method of life largely, but continues in good health, and with very little change in his retinal vessels.

DR. WALTER R. PARKER, Detroit: One interesting fact elicited by this work was the relation of the swelling of the nerve in every case to, or its association with, faulty elimination. No matter where we classify it, we have faulty elimination when there is swelling in the retina and in the nerve head.

DR. GEORGE SLOCUM, Ann Arbor, Mich.: We classify diseases by the grouping of symptoms as based on clinical observation. A patient with chronic interstitial nephritis will live to be old. Patients with chronic nephritis with large white kidney seldom live to be old. Of course no case of chronic nephritis exists a long time without vascular changes. We must always await the laboratory diagnosis in the great class of cases. No internist makes a diagnosis of nephritis, or even of the type of nephritis, until he has made a careful study of his laboratory findings; not from one examination, but a series of examinations.

As to what is hypertension as contrasted with high blood pressure, if we have high blood pressure existing by itself, with no other discoverable predominating feature, I understand it has been the custom in the clinic to diagnose hypertension; otherwise the case was diagnosed according to the features found by laboratory study. As to how to make a differential diagnosis in the various forms of nephritis when neither casts nor albumin are present, I am unable to answer that question. Inasmuch as these cases were diagnosed in the clinic of internal medicine, I did not think it

necessary to go into the diagnosis. One point you will note, that the only ophthalmoscopic feature that appeared in the nephritis cases was radiating macular changes. In our clinic a number of years ago we had a case of radiating macular figure as typical as could be, and at last report the patient was alive and well. There were no laboratory findings; at least, no nephritis was present in this case, but it was striking that the radiating macular figure was present in one eye only. Other cases of similar type have appeared, but as to their subsequent histories I am not informed.

PARENCHYMATOUS DISEASE OF THE LIVER A CAUSE FOR RISE IN PORTAL BLOOD PRESSURE

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In attempting an explanation for ascites in hepatic cirrhosis, we must consider the blood pressure and minute volume of flow in the aorta and cava. If the pressure and flow of blood in the aorta and cava are unchanged, then obviously the only hydraulic considerations are those which may affect blood pressure within the portal vein.

There is an abundance of evidence from pathologic sources to prove that ascites may be caused by stenosis of the portal trunk from pylephlebitis. In many instances of hepatic syphilis, ascites is due solely to this source. If the portal pressure is gradually raised during a long period of time, anastomoses form which may be sufficient to keep the portal pressure sufficiently low to prevent ascitic accumulations. But these factors alone are not sufficient to explain why some cirrhotics of the liver are attended with ascites and others are not, when the entire group of ascitic cases are uncomplicated with disease of the radicles, trunk or large branches of the portal vein. Pathologic histology fails to explain why only one of two cirrhotic livers may produce ascites. So far as gross appearances and histologic findings go, we lack an explanation for ascites in the amount and distribution of fibrous tissue throughout the liver.

From our clinical experiences in the study of pylephlebitis and portal anastomoses with tributaries to the cava, it seems clear that a rise in pressure in the portal vein must precede ascites. Here, however, we encounter experiences which are very disconcerting to this view of ascites if we see in a rise of portal vein pressure only an expression of obstruction to the portal flow from fibrous tissue formation. Every clinician sees patients with typical alcoholic cirrhosis who will have ascites which accumulates very rapidly. The ascitic fluid is drawn off one or more times, and, in spite of the fact that there is no demonstrable change in the hepatic signs, the patient will live for some years without a return of ascites.

There is then some temporary alteration in the liver which causes ascites. Thus far I have never read of any direct evidence which goes to prove that these transient periods of ascites are dependent on a coincidentally transient rise in portal pressure. The rise in portal pressure with its consequent ascites cannot bear any relation to fibrous tissue formation. The cause must lie in some other source of resistance to the portal flow of blood.

The portal cirrhosis in cases of this kind proceeds uninterruptedly, and the source for increased portal pressure and ascites must obviously be sought else-

where than in the cirrhotic process. F. C. Herrick¹ made a comparative study of the minute-volume flow through the portal vein and hepatic artery in normal livers and in the livers of interstitial hepatitis removed at necropsy. Herrick found that interstitial hepatitis did not cause any obstruction to the flow of normal salt solution or defibrinated blood. Perfusion of the portal vein of cirrhotic livers gave as large a minute-volume flow as that procured from perfusion of normal livers. He did not find, however, that the anatomic interrelation between portal vein branches and hepatic arterial branches was very different in cirrhotic livers from the interrelation between the vein and artery of normal livers. In cirrhotic livers the portal pressure rose much higher under the influence of elevated pressure in the hepatic artery than it did in normal livers.

Herrick's experiments show that there is a different relation between the hepatic arterial branches of the portal vein from that which exists normally. But what vitiates the significance of his results is the fact that the minute-volume flow through the hepatic artery in Herrick's dead livers was in all cases greater than the minute-volume flow through the portal vein. In life the reverse is true, the minute-volume flow through the portal vein being twice as large as the arterial minute-volume. This disparity between the results of postmortem perfusion and the measurements of minute-volume blood flow in vivo can be accounted for by a loss of vasomotor arterial tone in the dead livers. In the portal vein, however, the vasomotor supply to the intrahepatic branches is very feeble. Although Herrick does not offer a satisfactory explanation for the portal vein pressure in hepatic cirrhosis, he does show that the interstitial fibrous tissue of a portal cirrhosis will not account for an elevation in pressure within the portal vein.

The state of the liver cells and edema of the liver have been neglected in considering the causes for rise of the portal pressure in hepatic cirrhosis.

The clinical histories of hepatic cirrhosis contain periods of subacute exacerbations of symptoms from the biliary and portal systems, for example, transient cholemia with transient ascites. During these subacute exacerbations the liver increases much in size and becomes tender to pressure. As cholemia and ascites subside, the liver grows smaller and is no longer sensitive to pressure. There has always been a lack in the chain of evidence, however, to prove that these transient ascites are really associated with an elevation of pressure in the portal vein.

We recently had in our wards at Lakeside Hospital a patient who supplies the wanting link in the chain of evidence to prove that these attacks of subacute parenchymatous hepatitis are actually accompanied by a rise in portal blood pressure.

REPORT OF CASE

CASE 1.—F. K., man, aged 35, had used alcoholics in excess during his adult life. Three weeks before he was admitted to the hospital he noticed that his feet, legs and abdomen were swollen. He stopped work and quit drinking alcoholics for a few days and the swelling disappeared, whereupon he resumed work and also the use of beer and whisky. Ten days before entering the hospital the swelling in his lower extremities and abdomen returned, and he became jaundiced for the first time.

When admitted to the hospital, the patient was jaundiced, there was edema of the feet, legs and scrotum, and a great

amount of ascitic fluid behind which a large hardened liver could be palpated a hand's breadth below the costal margin. There was no free fluid in the pleural or pericardial sacs, and there was not the slightest evidence to indicate any disturbance in the cardiovascular or pulmonary systems. The right auricle and left ventricle were not enlarged. The blood pressure was 130 systolic and 90 diastolic. The temperature was 102. The urine contained bile pigment and bile salts and a slight trace of albumin. In the sediment were a few hyaline and granular casts. There was a well developed caput medusae in the supra-umbilical region. Midway between the umbilicus and the ensiform cartilage to the left of the median line was a veritable bulbus venosus over which there was a palpable thrill and a loud venous hum.

Two days after entering the hospital the abdomen was tapped, and 8,000 c.c. of a clear yellow serum removed. The specific gravity was 1.005, albumin 4.5 gm. per liter, and there were 180 cells per cubic millimeter.

The cells were largely mononuclear. The blood was drawn from a vein into a 1 per cent. potassium oxalate solution and centrifuged. The plasma was deeply tinged with bile pigment, and when dialyzed from a collodion sack against equal parts of alcohol and water, the dialysate contained both bile pigment and bile salts. The plasma gave no reaction to the paraldehyd test for urobilin, but the urine contained an abundance of urobilin as well as both bile pigment and bile salts. The stool was dark colored and gave a reaction to urobilin which was still visible spectroscopically when the daily stool was diluted to 1 liter with water and a part of this mixture was again diluted 1:2,500 with water. The concentration of bile pigment in the plasma was much greater than in the ascitic fluid. The blue-green band between the coagulum and plasma which occurs when nitric acid is poured beneath the plasma was very marked, but when the nitric acid contact test was made on the ascitic fluid the color band was very faint. The patient's fever rose as high as 102 November 11, the day of admission. On November 12 and 13, the temperature rose as high as 103 and 100, respectively. The blood contained 5,180,000 red blood corpuscles, 6,400 white blood corpuscles, and hemoglobin 85 per cent. (Tallqvist).

Between November 13 and 22 the temperature declined to normal and remained normal for the remaining four days that the patient was in the hospital.

Several notable things occurred during the interval between November 13 and 22. The venous hum over the caput medusae was unaffected by the removal of the ascitic fluid. It was quite as loud after the intra-abdominal pressure was relieved as it was before the tapping; but by November 22, nine days after the tapping, the murmur and thrill over the caput medusae were gone, although the venous anastomoses were as plainly visible as before. In the interval of nine days above referred to, the ascites entirely disappeared. The liver grew much smaller. The liver border ascended three finger breadths so that the lower sharp edge was palpable only about an inch below the costal margin at the nipple line. The left and right lobes of the liver diminished proportionately in size, and all liver tenderness was gone. After the third day, there were no longer any casts or albumin in the urine. All these changes occurred independently of any alteration in the size of the heart or change in blood pressure in the aortic system. November 17 the urine still contained bile salts and bile pigment, but the urobilin content of the stool was enormously increased, as the retention of bile in the blood had ceased and a marked hypercholia was instituted as the liver began to eliminate the large amount of bile and bile salts which had accumulated in the blood. The patient was greatly improved in all symptoms, and the stool showed the test for urobilin in dilutions of 1:44,600, whereas on entrance the test showed only in dilutions as high as 1:2,500. The patient was evidently recovering from his acute hepatitis, and the liver was recovering its biliary function. November 22, nine days after admission, the urine no longer contained bile salts or bile pigment, nor were there any biliary elements found in the urine during the remainder of his stay in the hospital, which terminated November 26.

1. Herrick, F. C.: Jour. Exper. Med., 1907, ix, 93.

November 26, the murmur and thrill over the caput medusae were gone, and there was no free fluid in the abdomen or edema elsewhere in the body. The liver was much diminished in size. The jaundice was much less marked, there was no choluria, and the oxalate plasma showed a great diminution in the cholemia. There was still sufficient bile pigment to give the nitric acid contact test, and the dialysate from the plasma gave Hammarsten's test for bile pigment; but Pettenkofer's test for bile salts in the plasma dialysate was negative.

COMMENT

In the size of the liver, the improvement in the cholemia and recovery from choluria, and the great intestinal hypercholia and recovery from ascites, we have the clinical picture of recovery from a subacute hepatitis. Coincidentally with this improvement, the murmur and thrill in the caput medusae disappeared. The murmur in the caput medusae is due to two factors, namely, the conformation of the venous channel and the velocity of the blood stream. The character of the blood was unchanged, and the conformation of the veins remained the same; the only change was in the velocity of the blood in the anastomotic veins. The velocity of the blood in this location was an expression of the disparity between the pressure in the portal vein and in the superior vena cava. It indicated the transit of blood from a field of high pressure to a field of low pressure. When the portal pressure diminished with recovery from subacute hepatitis, the disparity between the portal vein and cava pressures grew less and the velocity of the venous current diminished sufficiently to make the thrill and murmur disappear. The effect of posture on the venous hum at the bulbus venosus in the right supraclavicular region illustrates with what delicacy the critical point of velocity in the venous stream is determined at which a murmur will develop.

If a patient who has a venous hum of anemia sits upright, the hum will be loud at the bulbus venosus. If the patient is slowly let down from the upright toward the recumbent position, an angle of inclination will be found at which the murmur ceases. If the patient sits upright, the murmur is very loud in a given instance. When the patient is let down toward the horizontal position, the murmur will still be loud when the trunk forms an angle of 35 degrees with the bed. If he is let down further so that the trunk forms an angle of 30 degrees with the bed, the murmur is no longer audible. The angle at which the murmur will disappear varies in different cases, but in all cases the critical point at which the murmur disappears is sharply defined. The transition from a loud murmur to silence over the bulbus venosus occurs within a change in inclination of the body of a very few degrees. In nearly all cases of anemia, the murmur ceases before the patient reaches the horizontal position. I have found only two exceptions to this rule, and they were both in patients who had anemia due to lead poisoning and who, in addition to their anemia, had an elevation of systolic and diastolic blood pressures, due to hypertonus of the splanchnic arteries. In both these cases the murmur was still loud when the patients were in the horizontal position. The murmur did not disappear until the foot of the bed was elevated about 2 feet from the floor. This of course involves the question of minute-volume flow through the encephalon attending splanchnic arterial hypertonus. However this may be, the observations prove that employment of gravity shows how delicately the velocity of the

venous current determines the appearance or disappearance of the venous hum.

To return to our cirrhotic liver patients: In the caput medusae there was a loud venous hum and palpable thrill before and after the ascitic fluid was withdrawn; without any alteration in the hydraulics of the systemic blood flow, the murmur disappeared coincidentally with recovery from the subacute parenchymatous hepatitis, and furthermore, after recovery from all the signs of acute hepatitis, there was no return of the ascites. It seems, therefore, that we have very good proof that subacute parenchymatous hepatitis in the course of chronic interstitial alcoholic cirrhosis may cause sufficient elevation in portal blood pressure to produce a large ascitic accumulation which does not reaccumulate when the portal pressure is lowered.

In Case 1, the liver was enlarged and sensitive. The tenderness on pressure was due to the bursting tension of Glisson's capsule and not to perihepatitis. The liver was equally sensitive over the entire breadth of the right and left lobes, and there was no perihepatic friction palpable or audible. The ascitic fluid had all the characteristics of a transudate.

In Case 2, there was an acute afebrile disease of the liver accompanied by ascites and intense jaundice and attended with grave signs of intoxication ascribable to impairment of hepatic function; but, during the height of the disease, the consistency of the liver was diminished and there is evidence to show that the tension of Glisson's capsule was less than normal during the period in which ascites accumulated.

REPORT OF CASE

CASE 2.—A man, aged 21, admitted to Lakeside Hospital Oct. 12, 1911, and discharged Dec. 19, 1911, had been observed to have jaundice two weeks prior to admission. The patient was confined to bed only one week before he was brought to the hospital. On admission there was intense jaundice, an abundance of bile in the urine, and the stools showed no indication of a want of bile. The pulse was 52. The heart was not enlarged; the systolic arterial pressure was 130, and the diastolic pressure 90. The temperature was 98. The liver was enlarged and slightly sensitive to pressure. The hepatic area of dullness in the nipple line extended from the fifth rib to 3 cm. below the costal margin. The hepatic edge was easily palpated, and the liver was sensitive to pressure. The spleen had an enlarged area of percussion dullness, but did not reach quite to the costal margin. The abdominal wall was rather firm, and did not admit palpation of the splenic border. The subsequent clinical course shows further progress in hepatic disease to the point where marked hypocholia, ascites, hemorrhages, acidosis and violent convulsions all developed. During this period there were no evidences of cardiac or renal impairment. Then followed signs of recovery with a transient increase of cholemia, which had subsided during the hypocholic period.

During the period of maximum severity of the disease, when hypocholia, hemorrhages, ascites and convulsions all developed, the liver diminished in consistency, and had a lowered tension of Glisson's capsule.

During the subsequent period of recovery, the liver regained its original size and consistency. In this case of acute hepatitis, ascites developed during a period of maximum hepatitis when the volume of the liver was apparently diminished and tension on Glisson's capsule was lessened, whereas in Case 1, ascites developed during a period of subacute hepatitis during which period the liver was enlarged and the tension on Glisson's capsule was evidently much increased.

The following are extracts from the bedside notes:

October 14: Test carbohydrate meal removed one hour after eating showed free hydrochloric acid 8, total acidity 38, benzidin reaction negative, lactic acid negative.

October 15: Stool light brown, no parasites or parasite eggs in the stool. No fat or blood cells. Urobilin present in abundance.

October 17: Vomited 400 c.c. after a meal of toast, oatmeal and milk. Acid to litmus. Hydrochloric acid deficit 24. Total acidity 59.

October 19: Although there is no abdominal distention from gas or meteorism, the hepatic area of dulness is much diminished and the liver is no longer palpable. The epigastrium is retracted. In the nipple line, there is hepatic dulness only from the sixth to the eighth ribs. From this point, the distance from the eighth rib to the costal border is 7 cm. In following the seventh interspace from the costal margin there is no hepatic dulness encountered until the anterior axillary line is reached. The liver seems to have fallen in on itself. It has receded from the boundaries of the abdominal wall and is no longer palpable.

Vomited coffee ground material. Free hydrochloric acid 12. Total acidity 50. Benzidin ++++. Bile +.

October 21: Liver dulness the same. Splenic dulness 4.5 cm. above costal margin. No hemorrhage. Vomited once yesterday. Patient is stuporous.

November 3: Redness and swelling of left eardrum; bulging; lanced; serum discharged. Pain subsided November 2 and 3. There was an elevation of temperature to 100. The fever promptly subsided after the paracentesis was performed.

November 5: Free fluid demonstrable within abdominal cavity.

November 7: Three liters of serum removed by paracentesis of the abdomen. The fluid was bile stained, and slightly cloudy; specific gravity 1.009; no coagulation on standing; benzidin reaction negative; bile ++. The cells consisted of 80 per cent. mononuclear and 20 per cent. polynuclear. There were only 126 cells per cubic millimeter.

November 11: Twenty-four hour urine was collected: Total nitrogen 9.072 gm.; ammonia 1.242 gm.; urica 6.272 gm.; ammonia 13.6 per cent. of total nitrogen; urica 69.1 per cent. of total nitrogen.

November 15 to 17: All traces of bile have disappeared from the urine, nor did bile again appear in the urine.

November 22: There is a large amount of fluid in the abdomen. Jaundice has almost disappeared. The hepatic dulness has again returned, and the liver is now palpable at the costal border. The spleen is also palpable at the costal margin.

November 22: The patient had three violent epileptic convulsions during the day. From the following day the patient began to show signs of improvement.

December 8: Jaundice has returned. Liver palpable 1 inch below the costal margin. The spleen is at the costal margin.

December 19: Jaundice is no longer perceptible. The spleen is no longer palpable. No return of ascites.

Twenty-four hour urine on the day of discharge from hospital, December 19: amount 2,310 c.c.; ammonia 0.957 gm.; ammonia 5.04 per cent. of total nitrogen.

With the exception of two days when the patient had an otitis media there was no fever. There was never the slightest evidence of any renal disease, or cardiovascular impairment. The clinical picture was clearly that of an acute degenerative process in the liver. Although the large amount of ammonia eliminated in the urine at the time of the convulsions indicates an acidosis, there was no hyperpnea. The character of the ascitic fluid was decidedly that of a transudate.

COMMENT

It may justly be said that there is insufficient direct evidence of an elevation of portal pressure in the second case, but it was this experience which suggested one or two possible sources for the ascites, namely, either an elevation in portal pressure on account of an acute hepatitis, or merely a hydrops peritonei which happened to be the only collection of extravascular serum because of some modification of chemistry of the blood.

In the first case we were dealing with an old interstitial hepatitis which renders the liver inelastic. An acute toxic hepatitis causing an increase in the parenchymatous volume under such conditions would create a higher pressure within the enclosure of Glisson's capsule than would the same degree of parenchymatous enlargement when it occurs within the enclosure of a normal Glisson's capsule with normal and less resistant interstitial tissue.

The behavior of the audible hum and palpable thrill in the caput medusae in the first case is clear and direct evidence of elevation of portal pressure due to parenchymatous hepatitis in the presence of an old interstitial hepatitis.

In the second case, the evidence of the elevation of portal pressure due to parenchymatous hepatitis in a liver otherwise normal is inferential, but there are many experiences reported in perfusion of the liver which strongly suggest the possibility of some chemical source for this increase in resistance to portal blood flow.

The first case may be explained on the purely physical basis of parenchymatous enlargement within an unyielding capsule and interstitial framework of the liver, but the second case demands another explanation.

Whatever the cause may be in the second case, the two experiences show how important it is to consider the part parenchymatous disease of the liver may play in the diagnosis and treatment of ascites from hepatic origin.

PROTEOSE INTOXICATION

INTESTINAL OBSTRUCTION, PERITONITIS AND ACUTE PANCREATITIS *

G. H. WHIPPLE, M.D.

SAN FRANCISCO

This communication deals with the etiology of the intoxication which develops in intestinal obstruction, general peritonitis and acute hemorrhagic pancreatitis. It has been demonstrated¹ that the intoxication of intestinal obstruction is due to a primary proteose which may be precipitated by five volumes of 95 per cent. alcohol or by half saturation with ammonium sulphate. It is comparatively easy to isolate the poison from closed loops of the intestine. This proteose is very toxic and 100 mg. may suffice to poison fatally a 15 pound dog.

Peritonitis and pancreatitis have some clinical features in common with acute intestinal obstruction. At times there may be some difficulties in differential diagnosis. We propose to show that the intoxication in these three conditions is due in large part to toxic proteoses. There may well be other substances concerned, but I believe that the proteose is the most important factor in the toxic reaction following peritonitis and pancreatitis.

It may be objected that when a toxic proteose is isolated from a closed loop of intestine this substance is not actually concerned in the intoxication. For example, it cannot be demonstrated in the blood. But when a toxic proteose is isolated from the exudate of a general peritonitis, no valid reason can be

* Read before the Association of American Physicians, Washington, D. C., May 9, 1916.

* From the George Williams Hooper Foundation for Medical Research, University of California Medical School.

1. Whipple, Rodenbaugh and Kilgore: Jour. Exper. Med., 1916, xxiii, 123.

given why this substance is not concerned in the associated intoxication. Absorption from the peritoneal cavity is known to be very rapid, and any soluble substance like a proteose will be absorbed into the blood stream with alacrity. We can show that a peritoneal exudate contains a toxic proteose which is precipitable by five volumes of 95 per cent. alcohol and closely resembles the proteose isolated from closed intestinal loops. It gives the same biologic reaction when injected into animals.

Further, it can be shown conclusively that this proteose is not due to bacterial activity, as a toxic proteose can be demonstrated in a sterile peritonitis caused by turpentine, aleuronat or bile. It seems safe to assume, therefore, that the proteose must be derived from the proteins of the host. In a general peritonitis due to bacteria the same proteose can be isolated, and it is logical to suppose that here too the proteose may be derived from the tissues or tissue proteins of the host.

A sterile hemorrhagic pancreatitis may be produced by the injection of bile into the pancreatic duct. The clinical picture of intoxication under these conditions is familiar and is very like that of acute intestinal obstruction. During the first twenty-four hours after the operation the animal may be killed, the pancreas rapidly ground up in water, the mixture centrifugalized and the supernatant fluid poured into five volumes of 95 per cent. alcohol. This precipitate contains much albumin which can be removed by heat in a faintly acid solution. The slightly opalescent filtrate can be concentrated and tested in animals to show the presence of a toxic proteose. The amount of proteose here is not great as compared with the amount in an intestinal obstruction, but this difference may be due to the great difference in rapidity of absorption. It is possible that the proteose is absorbed from the pancreas almost as rapidly as it is formed. Jobling² has brought indirect evidence to show that there is a proteose intoxication in acute pancreatitis.

Considerable data³ has been published recently to show the rise in noncoagulable nitrogen of the blood in many conditions of intoxication, especially in acute intestinal obstruction. The noncoagulable nitrogen may rise from a level of 25 mg. per hundred c.c. of blood to 100 or even 200 mg. There is no lack of eliminative power in the kidneys to account for this. Acute proteose intoxications due to the injection of a pure proteose into a normal dog may show a rise in noncoagulable nitrogen from 25 mg. per hundred c.c. of blood to 40 or 60 mg. within three or four hours. A similar rise in blood noncoagulable nitrogen may be found in association with general peritonitis, whether sterile or septic, and acute hemorrhagic pancreatitis.

Experiments have been carried out to explain the rise in noncoagulable blood-nitrogen in these conditions — intestinal obstruction (including closed loops of intestine), general peritonitis and acute hemorrhagic pancreatitis — and also in pleurisy and abscess formation (Cooke, Stearns and Whipple, unpublished). Dogs kept in metabolism cages during starvation after four or five days show a constant urinary nitrogen elimination per twenty-four hours. If a small dose of pure proteose is given intravenously there will be a great increase in the urinary nitrogen elimination

— perhaps much over 100 per cent. increase per day, and the increase lasts over three to five days. The greatest increase appears usually on the second day after injection and not during the first twenty-four hours as would be expected. This nitrogen must be derived from the tissues of the animal, and it is to be emphasized that the catabolism and increased elimination lasts for days. The rapid rise in blood noncoagulable nitrogen may last only a few hours following the injection and is usually best seen in fatal cases in which the tissue destruction is extreme. But all the evidence points to catabolism of the hosts' tissues due to the proteose intoxication as explaining the high nonprotein nitrogen of the blood.

In like manner, a dog on starvation with a uniform urinary nitrogen excretion will show a great rise in nitrogen elimination if a closed loop of intestine is produced. The rise may be much over 100 per cent. elimination in twenty-four hours, and may last many days. A certain type of simple duodenal obstruction can be produced with which there will be little or no vomiting and no dehydration. In such cases animals may show over 200 per cent. increase in urinary nitrogen elimination per twenty-four hours, and death in six or eight days may show a blood noncoagulable nitrogen well over 100 mg. per hundred c.c. of blood.

Similar experiments may be performed on dogs with uniform nitrogen excretion when a pancreatitis, peritonitis, pleurisy or sterile abscess has been produced. The same prompt rise in nitrogen elimination will follow the inflammation. It is not to be considered for a moment that this reaction means simply a disintegration of tissue at the site of inflammation and an elimination of the nitrogen from this tissue only. We are dealing with an increase of 2 or 3 gm. of nitrogen per twenty-four hours which can scarcely be accounted for by injury of the local tissue. We assume that the injury of the local tissue gives rise to toxic proteoses which are absorbed into the blood and injure the entire organism, causing among other things a considerable destruction of tissue protein in all parts of the body and the resultant increase in blood noncoagulable nitrogen followed by a great rise in urinary nitrogen.

These toxic proteoses isolated from the intestine, from the peritoneum and from the pancreas have certain biologic reactions in common, but give no specific reactions by which we can differentiate them. They give no anaphylactic reactions in guinea-pigs, no precipitins, no complement fixation. It has been shown⁴ that the blood of dogs injected repeatedly with proteose cannot destroy the toxic proteose, whereas the tissues of such animals can rapidly destroy such proteoses, *in vitro*.

The proteose concerned in the intoxication of intestinal obstruction is resistant to digestion by intestinal mucosa, and pancreatic and tissue ferments. We have not yet determined whether the toxic proteoses concerned in hemorrhagic pancreatitis and general peritonitis possess the same resistance to digestive enzymes.

Any animal injected with one proteose becomes resistant not only to this proteose but also to other proteoses. For example, proteose from human material when injected into a dog will give tolerance to any of the proteoses obtained from the intestine or peritoneum of the dog or cat. This holds for all proteoses tested by us.

2. Petersen, Jobling and Eggstein: Jour. Exper. Med., 1916, xxiii, 491.

3. Cooke, Rodenbaugh and Whipple: Jour. Exper. Med., 1916, xxiii, No. 6.

4. Whipple, Stone and Bernheim: Jour. Exper. Med., 1914, xix, 144.

It is important to note that dogs with long continued obstruction or closed intestinal loops will survive lethal doses of pure proteose with but few clinical symptoms of intoxication. Dogs recovering from a sterile pleurisy or peritonitis also show a definite resistance or tolerance to subsequent proteose injections. All this evidence strengthens the argument that a proteose intoxication is present in these various conditions.

Other conditions in which inflammation and pus formation or tissue destruction are conspicuous may be considered in which it is possible that toxic proteoses may be concerned. We have made experiments with sterile pleurisy, considered as identical with peritonitis, and with sterile abscess formation, but do not care to report our findings at this time. Infarcts, pneumonia and many other conditions are interesting possibilities which are being studied.

I feel confident that sufficient evidence has accumulated to show that there is a definite proteose intoxication in intestinal obstruction and allied conditions, in general peritonitis, either septic or sterile, and in acute hemorrhagic pancreatitis. I believe that the proteose intoxication is the most important factor in the general intoxication noted in these conditions. The detailed experiments will be published in the near future.

THE USES OF THE DESICCATION METHOD IN OPHTHALMOLOGY

WITH SPECIAL REFERENCE TO EPITHELIOMAS OF LIDS, CANTHI AND CONJUNCTIVA:
REPORT OF CASES *

WILLIAM L. CLARK, M.D.
PHILADELPHIA

The success obtained in some ophthalmologic lesions by the desiccation method is my reason for relating as clearly and briefly as possible what has been achieved up to the present time.



Fig. 1.—Round cell sarcoma of lower lid; condition before excision.



Fig. 2.—Recurrence two weeks after excision; treated by desiccation at this stage.

Details concerning this method have already been published.¹ In the present paper only those points will be emphasized that seem essential for a proper understanding of the application to ophthalmology.

* Read before the Section on Ophthalmology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Clark, W. L.: The Desiccation Treatment of Congenital and New Growths of the Skin and Mucous Membranes, *THE JOURNAL A. M. A.*, Sept. 12, 1914, p. 925.

The desiccation method is one by means of which certain congenital or new growths may be reduced by employing heat of just sufficient intensity to desiccate, but not to carbonize them. This heat is best generated by means of a high frequency electric current, which is subject to accurate regulation. I have been unable to produce a current possessing the proper qualities for eye work from any apparatus except a high speed static machine equipped with suitable accessories for transforming the static into a high frequency current.

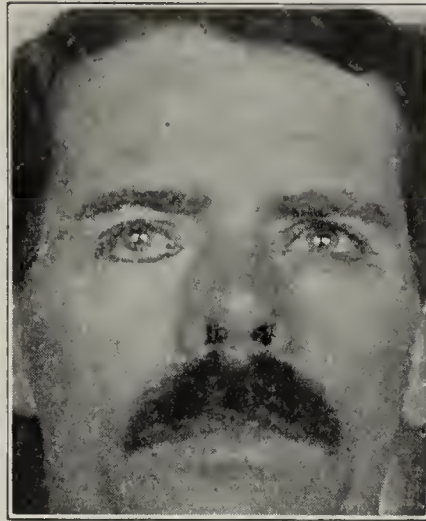


Fig. 3.—Condition one month after one desiccation treatment.

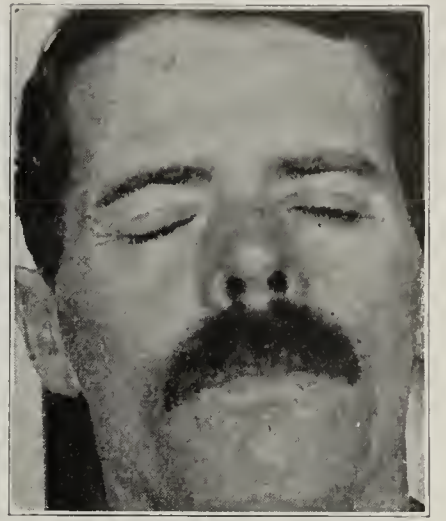


Fig. 4.—Same as Figure 3 with eye closed. Slight recurrence at inner canthus nine months after responded to another treatment.

The current thus produced has been found to be smoother and subject to more refined regulation than that generated from an induction coil or transformer. This difference in quality of the static and the coil current differentiates desiccation from destructive fulguration.

The technic for eye applications is as follows: The patient reclines on an operating table which is grounded, if made of metal; otherwise grounding is not necessary. The area desired to be treated is anesthetized locally by the means that seems best for the case under treatment. For the conjunctiva, a 4 per cent. solution of cocain, and for the lids the infiltration of a 1 per cent. solution of novocain and epinephrin are satisfactory. The current is tested so that the desired thermic intensity may be produced. An extremely fine steel needle set in a suitable insulated holder is the best applicator for ophthalmologic growths. It is an advantage to have an assistant make and break the current at given signals, so that the operator may give his whole attention to the work in hand. The needle is not usually thrust into the tissue, but just allowed to brush it. The depth of desiccation depends on the time of contact and the driving power of the current. These can be regulated. An eye speculum or chalazion clamp may be used to expose the lesion better, as may a fixation forceps to keep the eyeball or lids steady. No arbitrary rules can be given for this application, for different cases demand variation in treatment, and a successful technic must be developed by practice.

The desiccation method is peculiarly adaptable to ophthalmologic growths, because of the ease of application and great refinement of control. It is possible to desiccate a minute growth or pigmentation even on the cornea without danger of penetrating to an undesirable depth. Likewise part or whole of one or both eyelids may be removed with precision. Furthermore, cartilage, periosteum or bone in proximity to or com-

prising the orbit may likewise be devitalized by desiccation, provided these structures are directly accessible.

After a growth has been converted into a dry mass by the treatment, it is usually curetted away or excised immediately after desiccation; but sometimes it is better to allow it to slough. Conjunctival growths become macerated by the lacrimal secretion and slough quickly. There should be no bleeding. A good cosmetic result follows the desiccation treatment, because no sutures are necessary and the cicatrix does not show

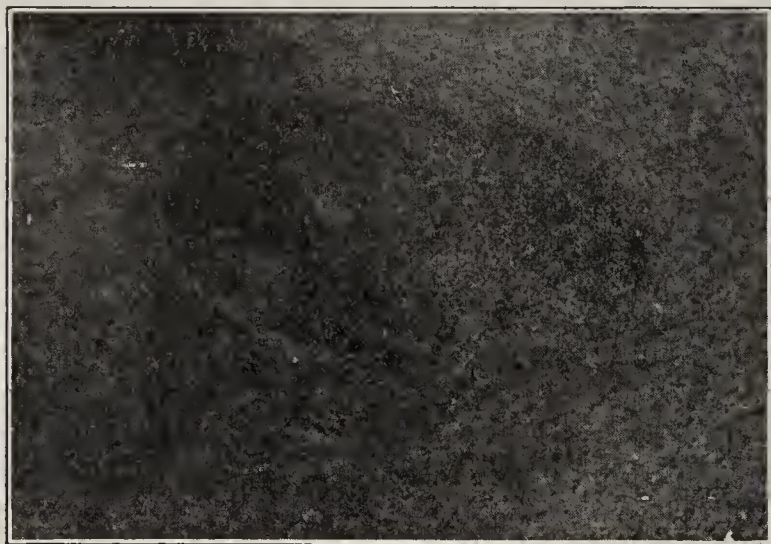


Fig. 5.—Photomicrograph from growth shown in Figure 1.

a tendency to contract as after cautery, electrolysis or, indeed, excision. Infection has never been observed after this treatment, and blood and lymph channels are sealed. A fact worthy of special note is that in case of epitheliomas of the lids, it is not always necessary to desiccate quite all the malignant tissue, as the heat penetration is sufficient to cause a retrogression and final disappearance of the remaining cancer cells, while the normal tissue recovers. On account of this property possessed by the desiccation method, it is often possible to add to the cosmetic result, and to prevent exposure of the eyeball, with its incident dangers.

My experience with the desiccation method in ophthalmologic growths covers a period of seven years, and comprises the lesions mentioned in the accompanying tabulation.

LESIONS TREATED BY AUTHOR

Lesions	Number
Epitheliomas of the lids, canthi, conjunctiva and adjacent cutaneous surfaces (localized).....	84
Epitheliomas of the lids, canthi and conjunctiva, and involving sinuses or orbit (very advanced).....	8
Round cell sarcomas of lids (localized).....	2
Melanosarcomas of palpebral and bulbar conjunctiva, and cornea	4
Angiomas of lids.....	11
Pigmented and other moles, and warts of lids.....	46
Xanthoma palpebrarum	17
Lupus erythematosus of lids.....	3
Pterygium	2
Granular conjunctivitis.....	5
Corneal ulcers.....	3
Total number of lesions treated.....	186

Epitheliomas of the lids, canthi, conjunctiva and adjacent cutaneous surfaces, as the brow, nose and cheek, are in a large percentage of cases of the basal cell type, and therefore of low grade malignancy and slow of progression, and they seldom metastasize. This is not the case with epitheliomas of the prickle or cuboid cell types which are frequently found in mucous membranes such as the lips, tongue and buccal surfaces as well as in the skin of the extremities,

etc. These usually progress rapidly and metastasize early. In the case of basal cell epitheliomas, local attack if thorough should result in permanent relief in practically all cases, while with the prickle or cuboid cell epitheliomas wide ablation and dissection of all adjacent glands is imperative, and even when this is done the results are, as all know, far from satisfactory. Knowing, then, that the great majority of ophthalmologic epitheliomas are of low grade malignancy, it seems a duty to choose, from the various methods of treatment, one that insures a good cosmetic result as well as at least an equal chance of cure.

It has been found that the desiccation method possesses these combined advantages. It is quite true that even the basal cell type may progress to a fatal termination; but this, I believe, is due to long neglect or improper treatment.

I have hitherto refrained from comparing the respective merits of methods employed by various advocates for the treatment of these lesions, but the time has come when I feel justified in doing so.

ADVANTAGES OF THE DESICCATION METHOD

The desiccation method has the following advantages over operative surgery in localized basal cell epitheliomas in ophthalmologic regions:

1. Eradication is at least as thorough, and no sutures are necessary. It is a well known fact that sutures often favor recurrences.
2. There is less chance of recurrence because blood and lymph channels are sealed.
3. In case of recurrence, which sometimes happens, the lesion may be treated again without materially lessening the chances of ultimate cure or cosmetic result.
4. There are better cosmetic results, because of the absence of contracted cicatrix.

Advantages over radium and the Roentgen rays are:

1. One treatment is usually all that is necessary.
2. There is a better standardization of dosage.

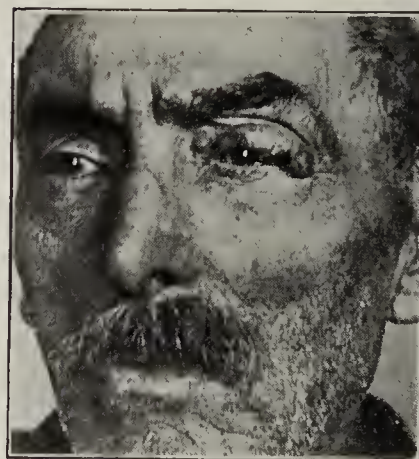


Fig. 6.—Epithelioma of upper lid, involving cartilage.

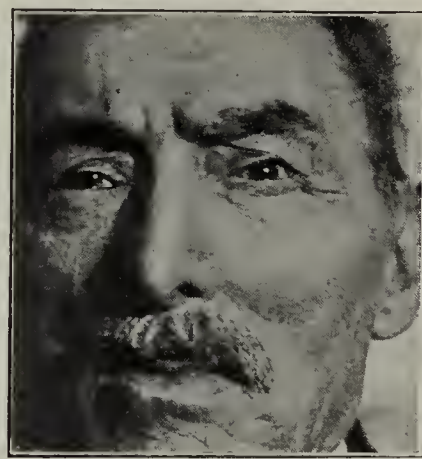


Fig. 7.—Result of one desiccation treatment; cartilage conserved; no recurrence in six months; note absence of contracted cicatrix.

3. Action is confined to the area under treatment, and hence there is less danger of impairing the vision or the vitality of adjacent tissues.

4. The effect of desiccation is constant, while that of radium and the Roentgen rays is variable in different cases. It has been observed in every case where the Roentgen rays were used previously without success, that the results have not been as prompt as when desiccation alone had been employed. This seems to be due to impairment of vitality of tissues by the continued use of the Roentgen rays.

Advantages over the cautery, carbon dioxid snow, liquid air, arsenic or zinc chlorid plasters or other escharotics are:

1. There is devitalization of growth with one application and immediate removal of the growth.
2. There is greater precision of application and certainty of thoroughness.
3. There is less danger of stimulating growths by inadequate destruction.
4. There is conservation of normal surrounding tissue.



Fig. 8. — Epithelioma of lower lid, inner and outer canthus, and malar region.



Fig. 9. — Result of three desiccation treatments; no recurrence in fifteen months.

5. There is less inflammatory reaction and discomfort to the patient.
6. There is less danger of symblepharon as a secondary complication.

Advantages over electrolysis or zinc mercury ionization are:

1. Desiccation destroys, from without inward, with an even distribution of destructive action.
2. It is more rapid in action and less painful.
3. There is no danger of dizziness or syncope.
4. Healing is more rapid.

It is not to be understood that the foregoing methods are always to be condemned, for in competent hands excellent results have been obtained by them all; but experience has taught me that desiccation possesses greater advantages, compared point for point, than any of these methods for the treatment of the lesions under discussion.

RESULTS IN LOCALIZED EPITHELIOMAS

Of the eighty-four cases of localized epitheliomas, the average age of the patients was 52 years. The youngest was 28 years. Biopsies were made in twenty-one cases, and these all proved to be of the basal cell type. In the remaining sixty-three cases, the clinical diagnosis was clear; hence a pathologic examination did not seem necessary or prudent, because a patient is more or less jeopardized from a curative and cosmetic standpoint by incising the growth and would to a certain measure defeat the object of desiccation. A biopsy, therefore, was performed only in such cases as seemed doubtful.

Of the cases treated, one has not recurred in six years, two in five years, two in four years, five in three years, seventeen in two years, and twenty-seven in one year. Fifteen have not recurred in periods ranging from three to eleven months. Those under one year will not be considered in computing percentage. There were six recurrences within one year and four within two years. Of these ten cases that did recur, six patients have remained well one year or

more after a second treatment. Two cases recurred a second time within a year, but the patients have remained well for a year or more after a third treatment. Two recurred a third time within one year; one of these patients is apparently well after six months, and the other is under treatment at the present time. Two of the remaining five patients died within a year, and at time of death there was no recurrence. The remaining three I have not up to the present time been able to follow. Deducting the fifteen cases in which less than a year has elapsed since treatment, the two patients who died and the three cases unaccounted for, a percentage will be computed from sixty-four cases. Fifty-four have not recurred in from one to six years, which is 84.375 per cent. of cases in which there has been freedom from recurrence one year or over after one treatment. If the ultimate results of the cases that recurred and received a second or third treatment are taken into consideration, the percentage of apparent cures, using freedom from recurrences one year or over as a basis, will be raised to 96.875 per cent. It is possible that the three cases unaccounted for would raise the percentage even higher. With knowledge learned from mistakes and more thoroughness of technic gained from experience, and also with the success obtained with basal cell epitheliomas in other parts of the body, which is not recorded in this paper, I believe that practically all patients with basal cell epitheliomas can be permanently cured, or if in a small percentage there is a recurrence, they may be treated with at least an equal chance of cure as before the first treatment.

Eight cases of very advanced epitheliomas involving sinuses or orbit were treated by desiccation for palliative effect only. Six of these cases were recurrences after operative surgery, and continued radium or Roentgen-ray treatment. The other two had been treated by Roentgen rays only. At the time these patients applied for treatment, they were absolutely inoperable. Much was done to relieve pain and stay the progress of the disease. No cures were accomplished or expected in these cases.

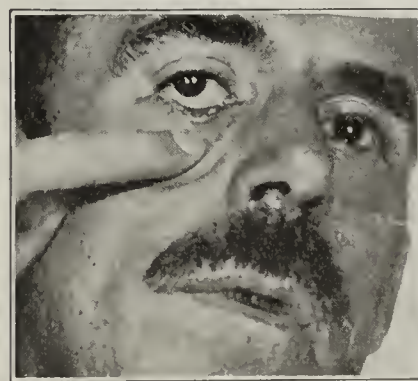


Fig. 10. — Epithelioma of lower lid and inner canthus, involving cartilage.



Fig. 11. — Condition after one desiccation treatment; no recurrence in eight months; note absence of contracted cicatrix.

Two cases of advanced round cell sarcoma of the lids were treated, one on the upper right lid of a girl baby aged 8 months, that had recurred two weeks after excision. There was a diversity of opinion in this case as to the diagnosis. One pathologist reported it as a round cell sarcoma, while the other was doubtful. At any rate, there has been no recurrence eight months after one desiccation treatment with very slight deformity.

The other case was a round cell sarcoma of the lower right lid of a man aged 45 years. The diagnosis

was confirmed by pathologic examination. This was also a recurrence two weeks after operation. One desiccation treatment cleared it up with practically no evidence of deformity other than absence of cilia. Nine months after treatment a growth the size of a pea reappeared at the inner canthus. This was treated by desiccation three months ago, and it is too early to report the ultimate result.

Four cases of melanosa sarcoma were treated. Two of these involved the palpebral and bulbar conjunctiva, and consisted of several slightly elevated pigmented growths showing a tendency to merge. In one, opera-

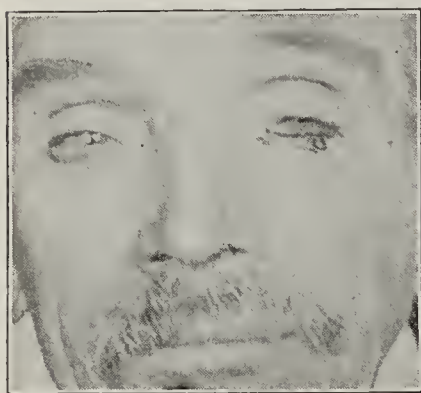


Fig. 12. — Epithelioma of lower lid and outer canthus, involving cartilage.

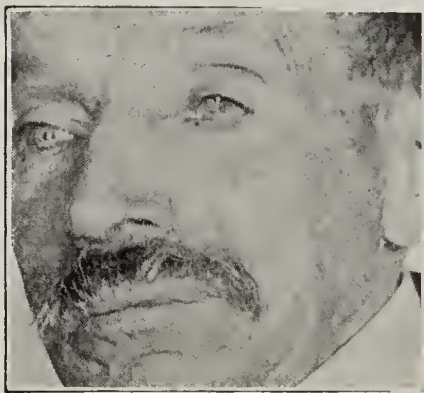


Fig. 13. — Condition after one treatment; no recurrence in seven months.

tion had been performed with recurrence. In one case there was no recurrence in ten months, but in the other there is a slight reappearance of pigmentation in one small area, and will be treated again. The other two cases were very much alike and consisted of elevated pigmented growths about three-eighths inch in diameter, involving the bulbar conjunctiva and cornea. The diagnosis was confirmed by pathologic examination. These cases were treated in the same week. There has been no recurrence in either case in four months.

BENIGN LESIONS

Lesions such as warts, moles with flat or pedunculated bases and xanthoma, even though they are on the margin of the lid and involving the palpebral conjunctiva, are easily removed with one desiccation treatment without noticeable scarring. There have been no failures in a total of sixty-three cases treated.

Erectile cutaneous or subcutaneous angiomas also respond to one application, if the desiccation is carried deeply enough to obliterate the blood lakes, and a good cosmetic result is the rule. There were two unsatisfactory results in eleven cases, the cause of which was failure to desiccate deeply enough.

Three cases of lupus erythematosus of the lids responded to one desiccation treatment.

Five cases of chronic granular conjunctivitis were each very much improved by one desiccation treatment. An ophthalmologist who observed one result said that as much had been accomplished by this treatment as could be accomplished in three months with silver nitrate.

Two cases of pterygium complicating epitheliomas of the inner canthi were successfully treated by desiccation. Another case, in which there were eight recurrences after operation, was treated by this method, but sufficient time has not yet elapsed to tell whether or not there will be a recurrence. Slight symblepharon resulted in this case.

Three cases of indolent corneal ulcer that had resisted ordinary remedial measures responded to one desiccation treatment.

CONCLUSIONS

1. Desiccation is a successful treatment for localized basal cell epitheliomas of the lids and canthi, both from a curative and a cosmetic standpoint.

2. In advanced epitheliomas of these regions when sinuses or orbit are involved, complete success is not certain because of the inaccessibility of the diseased tissue, and is applied for palliative reasons, when operation fails or is contraindicated.

3. The results thus far in round cell and melanosa sarcoma of the lids and conjunctiva have been good, but a sufficient time has not elapsed in any case to determine ultimate results.

4. Success is assured in benign growths of the lids, such as angiomas, warts, moles, xanthoma and lupus erythematosus.

5. Desiccation may be used to advantage for the treatment of pterygium.

6. The method is valuable in the treatment of granular conjunctivitis and corneal ulcers.

7. Symblepharon usually does not follow desiccation.

8. There is no danger of applying the desiccation treatment to growths on the cornea, as it is under perfect control.

NOTE.—Other photographs of epithelioma cases clear enough for publication, showing freedom from recurrence for over one year, have been published before, and hence are not available at this time. For this reason, only comparatively recent pictures can be shown.

1809 Chestnut Street.

ABSTRACT OF DISCUSSION

DR. S. LEWIS ZIEGLER, Philadelphia: High frequency desiccation for the removal of accessible growths is applicable whether the new growth is malignant or benign. The advantages which this procedure will present to ophthalmic surgeons are (1) the simplicity of the technic; (2) the rapid healing without scar tissue; (3) the low percentage of recurrence. The disadvantages are (1) the elaborate and costly apparatus necessary to obtain the best results, and (2) the danger of too deep destruction of tissue unless the operator is skilful and thoroughly trained in this special field of work. Dr. Clark recently treated for me a case of angioid growth on the forehead, the result of traumatism many years ago,

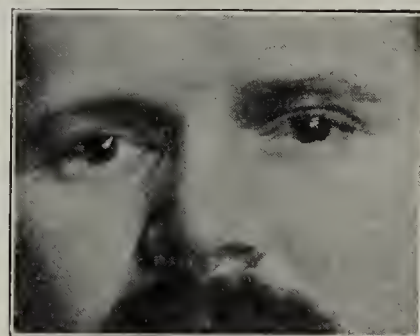


Fig. 14. — Angioma of upper lid. Fig. 15. — Result of one treatment.

but which had recently begun to show malignant characteristics. The result following a single treatment has been very satisfactory, and scarcely a mark is now visible. The possibility of removing growths from the cornea and sclero-corneal limbus is of great interest to us. This of course requires very careful technic. The rugae and granulomas of chronic trachoma will often yield to this technic and thus save us more extensive operative interference. I hope soon to try its efficacy in a case of keloid following a traumatic pterygium. It is also possible that a method may be devised of introducing the needle into the lacrimal sac and of so regenerating its lining that excision will not be necessary. I have no doubt that many other uses will suggest themselves as we continue to study the possibilities of this procedure. I am especially interested in the fact that the technic

of this procedure shows the advantages of the principle of high voltage and low amperage, a principle that I have long since advocated in the application of the galvanic current to the eye; and also that it tends to conserve tissue and thus yield a good cosmetic result, which requirement was the aim of my galvano-cautery operation for ectropion and entropion.

DR. W. C. POSEY, Philadelphia: I have followed a number of the cases shown and Dr. Clark has treated others for me. In a number of cases, xanthoma cleared away after one application of the method, leaving absolutely no scar. Two other cases of diffuse sarcoma of the conjunctiva were cleared away. In the first case, one in which there had been a recurrence after primary operation on the growth some ten years previously, a second recurrence five years afterward was cleared away, I think, after two sittings. The other case, an isolated sarcoma of the conjunctiva of the lower lid, yielded to one sitting. A case of diffuse injury to the cornea, in which there was a diffuse haze of the epithelium and subepithelial tissues which persisted for several weeks after the use of dionin and yellow oxid, cleared away in forty-eight hours in large measure following one application of this method. The method is of very great value in neoplasms of the lids, obviating doing extensive plastic operations and avoiding the resulting scar.

DR. W. L. CLARK, Philadelphia: One point I probably did not make clear. In treating the cornea I do not use a stream of sparks. When a stream of sparks is used through a spark gap the action is quite superficial. It should never be used in a stream on the cornea. The needle is just allowed to brush the tissue, the merest, faintest contact. If this were not done it would be impossible to concentrate it on a certain point. There is some spreading in fan shape. You must have the needle in direct contact. It is not necessary to have two poles; just one.

BISMUTH PASTE IN CHRONIC SUPPURATIVE SINUSES AND EMPYEMA

INCORRECT TECHNIC AS A CAUSE OF
FAILURE IN ITS APPLICATION *

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The prevalence of suppurative sinuses has greatly diminished during the past decade. This is due partly to our ability to prevent their formation by treating cold abscesses and joint diseases more scientifically, and partly to the employment of the newer and more effective methods of treatment of sinuses when they already exist.

The present war in Europe, however, will result in a tremendous increase in this class of cases. I am informed that Dr. Alexis Carrel, from one of the field hospitals of France, that nearly every case of gunshot wound is infected before it reaches the hospital. Dr. Carrel further reports that these gunshot and shrapnel wounds are followed by suppurative sinuses, and that there are thousands of such cases in France. No doubt, the other belligerent countries are having the same experience, so that after the war is over there will remain for years an army of invalids with these chronic suppurations.

It is principally for this reason that I am tempted again to present the subject of treating this class of cases.

Ten years have elapsed since the bismuth treatment of suppurative sinuses and abscess cavities was intro-

duced into surgery. During these years this method of treatment has been given a most thorough and impartial trial. When first introduced, surgeons in this country and abroad readily took up the method, because it appealed to them as a rational treatment, and because my report contained such surprisingly successful results. Besides, the material at hand was plentiful, and patients were willing to submit to any form of operative or nonoperative treatment which gave the slightest prospect for a cure.

Shortly afterward there came reports from the various clinics. Some surgeons showed far better results than my own, others less favorable results, and in the hands of a few the procedure was more or less a failure. Undoubtedly these reports represent only a fraction of the cases in which the treatment was employed, for many country practitioners who used the bismuth treatment did not report their results. The accompanying table presents the statistics recorded in the literature.



Fig. 1.—Injection of sinuses from tuberculous hip, showing narrowing of channels of preexisting abscess cavities.

This series of 527 cases (319 nose and throat cases excluded), from so wide a range of sources, gives an average of 80.64 per cent. of cures, the lowest being 12.5 per cent., and the highest, 100 per cent.

How can we explain the lack of uniformity in results? To ascertain this I have made observations in clinics here and abroad, I have conferred and corresponded with surgeons, and finally I have come to the conclusion that faulty technic is the chief cause of failures.

At the North Chicago Hospital, where the method was started in 1906, we have had exceptional opportunities for treating suppurative sinuses and abscesses with this method, the material now amounting to over 1,800 cases, which includes almost every variety of suppurative disease. No doubt, we committed many blunders before our technic was perfected; but I feel that with accumulated experience and from what I have learned through my own mistakes and those of others, I am now in a position to outline for the pro-

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

fession a technic which will assure good results to those who will follow the rules.

I shall at this time make no reference to the statistics of my own results. The members of the profession are not so much interested in what the author of a method can do, as in what they themselves are able to accomplish.

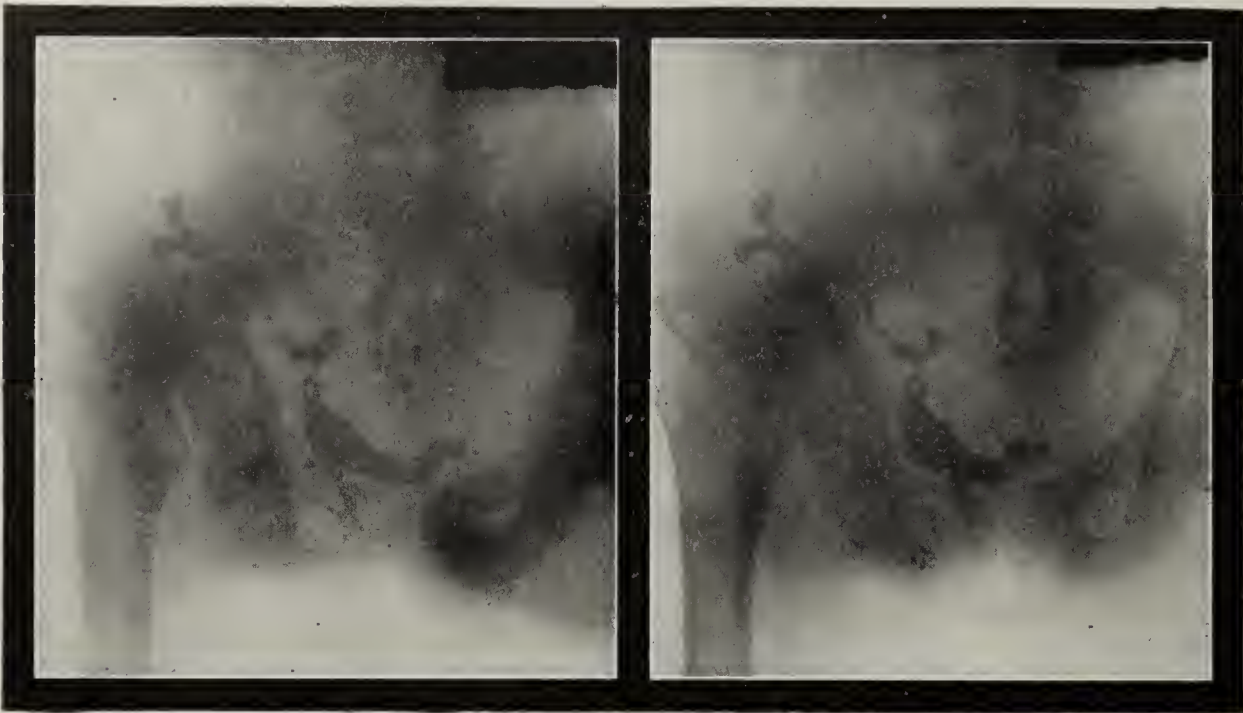


Fig. 2.—Rectal fistula, originating from hip joint disease; coexisting paravesical abscess.

PATHOLOGY OF SINUSES

In order to carry out the treatment rationally and intelligently, one must be familiar with the pathology of suppurative sinuses and of the manner in which they originate.

We must bear in mind that a sinus is nothing more than a contracted abscess cavity. Its formation usually takes place in the following manner:

After an abscess has formed, the increasing pressure of pus within the pus cavity will undermine the tissues in various directions, until the abscess has

reached a place near the surface of the body or some hollow organ, such as the intestine or bladder, where it will break through and empty its contents. The usual route is along the muscle sheaths or fascia, the abscess opening at times quite a distance from its origin. In one of my cases a psoas abscess opened above the clavicle, and the resulting sinus was thought

for a time to be a broken-down tuberculous gland, until the paste injected into it escaped from a second sinus near the sacrum. This cleared up the diagnosis.

After an abscess has emptied its contents, a shrinkage of the walls takes place so that after a time only a narrow channel, or sinus, remains. Sometimes these channels undermine the tissues to such an extent that a complex network of sinuses results. This fact is illustrated in Figure 1, representing a hip-joint disease in which the abscess perforated the acetabulum and undermined the pelvic fascia.

When small abscesses lock themselves off, they empty their contents in different regions. This explains the multiplicity of openings. I have seen as many as forty openings resulting from a knee-joint tuberculosis.

Sinuses frequently open into the bowel or bladder in addition to other openings on the skin, and thus fecal matter or urine may escape from the skin sinuses. Recently I published the report of a series of such cases, and desire to cite two of unusual interest, one illustrating a urinary, and the other a fecal fistula, and the technic to be employed in such cases:

STATISTICS FROM THE LITERATURE

Author	No. of Cases	Condition	Percentage of Cures
Ochsner, Chicago	20	Tuberculous sinus	55
Ridlon and Blanchard	17	Tuberculous sinus	53
E. G. Beck, Chicago	192	Collective report	64
Robitschek, Minneapolis	9	Tuberculous sinus	55
Don, Edinburgh	...	Tuberculous sinus	17
Rosenbach, Berlin	4	Tuberculous sinus	50
Dollinger, Budapest	16	Tuberculous sinus	12½
J. C. Beck, Chicago	319	Nose and throat cases	22
Pennington, Chicago	17	Rectal fistulas	76
Baer, Baltimore	12	Tuberculous sinus	33½
Stern, Cleveland	4	Tuberculous sinus	100
Steinman, Munich	5	Tuberculous sinus	20
Bogardus, U. S. A.	1	Tuberculous sinus	100
Vidakovich, Russia	2	Empyema	100
Nemanoff, St. Petersburg	6	Empyema	100
A. J. Ochsner, Chicago	14	Empyema	85
E. G. Beck, Chicago	11	Empyema	82
Ely, New York	14	Tuberculous sinus	43
Hines, Cincinnati	9	Tuberculous sinus	89
Cuthbertson, Chicago	1	Intestinal fistula	100
Sandor, Sag., Budapest	2	Otologic	100
Heitz, Boyer, Morens, Paris	11	Renal sinuses	73
Zollings, Zurich	25	Tuberculous sinus	54
Schober, Philadelphia	5	Tuberculous sinus	80
Gessner, New Orleans	4	Tuberculous sinus	50
Schmid, Vienna	15	Tuberculous sinus	30
Rivera, Porto Rico	8	Tuberculous sinus	75
E. Goror, Paris	3	Tuberculous empyema	66
Reichelfelder, Washington	4	Tuberculous empyema	75
Brandes, Kiel	29	All varieties of sinuses	76
R. Beck, Chicago	58	Alveolar sinuses	54
R. Beck, Chicago	9	Empyema antrum	66
Collective reports from 19 dental surgeons in U. S. A.	39	Alveolar sinuses	74
Collective reports from 19 dental surgeons in U. S. A.	4	Empyema antrum	100

CASE 1.—Rectal and urinary fistulas resulting from hip-joint disease and spinal tuberculosis.

I. B., woman, aged 35, had developed hip-joint disease and spinal tuberculosis at the age of 9. After a number of years of conservative treatment, abscesses formed around the hips and in the lumbar region. Several of these were incised and others opened spontaneously. At the age of 20 she had ten discharging sinuses. During the past ten years she had



Fig. 3.—Rectal fistula, originating from hip joint disease; ischium absent, destroyed by tuberculosis.

undergone a number of surgical operations, none of which were of avail. At the age of 28 she joined the Christian Scientists, and became a most devoted disciple of that cult, receiving their constant treatment for eight years.

I saw her in 1909; she could not walk but could manage to get out of a very low bed to urinate about every half hour. The cystitis was the result of a perforation of a sinus into the bladder. Another sinus perforated into the rectum and another about 1 inch from the anal opening.

Here we have a coexistence of a hip and spinal tuberculosis which has produced a rectal and vesical fistula, a most distressing combination.

The bismuth treatment had the effect of closing both the fecal and the urinary fistulas, but several of the suppurative sinuses persisted. The patient was soon able to be up and walk for blocks, and resumed her worship at the nearest Christian Science church. In all sincerity she attributed her improvement to her faith in Christian Science. In order not to hurt my feelings, she declared that I myself was a Christian Scientist, but was not aware of the fact.



Fig. 4.—Flexion and extension in healed out hip joint disease after injection; head of femur absent. See roentgenogram (Fig. 3).

CASE 2.—Hip-joint disease causing pararectal abscess and fecal fistula; twenty years' suppuration; closing of fecal and suppurative fistulas with bismuth injections.

C. T. H., man, aged 30, had had a right hip-joint disease since childhood. At 10 the necrosed head of the femur was removed; several sinuses leading to the hip-joint remained, which kept on discharging for the past twenty years and required dressing twice daily. His health was naturally very much deteriorated.

I saw him in January, 1913. He felt a swelling in the perineum and pain in the rectum. On account of high temperature, I opened this pararectal abscess and evacuated a

large amount of pus. Inserting my finger into the cavity, I felt and removed three small spicules of bone. I noted that this cavity communicated with the bowel higher up and discharged a large amount of malodorous pus mixed with fecal matter. This fecal mixture kept discharging for weeks, so that a semblance of cleanliness could not be maintained.

Bismuth injections were begun, and the closure of the fecal as well as the suppurative rectal channels was accomplished in a remarkably short time. The patient gradually improved in general health, but not all the sinuses closed. Injections were repeated at intervals of a month, and small spicules of bone extruded themselves from time to time.

At present he reports that only one sinus near the hip is open, discharging only a few drops of serous material, and that he is able to work on the farm. Figure 3 illustrates injected sinuses.

Comment.—1. Radical surgical interference in such a case is strictly contraindicated.

2. Small sequestrums are frequently the cause of continued suppuration and must be removed.



Fig. 5.—Rectal fistula, proved by bismuth injection to be a tuberculosis of the eleventh dorsal vertebra.

3. Hip-joint disease may at times cause pararectal abscesses and may be mistaken for a rectal fistula.

4. A fecal fistula will often heal while the pus discharge continues. A diseased process higher up is usually present.

SINUSES MISTAKEN FOR RECTAL FISTULAS

About 20 per cent. of all cases of diagnosed rectal fistulas are not rectal fistulas at all, in the true sense of the word, but are sinuses which resulted from spinal tuberculosis, hip-joint disease or intrapelvic abscesses. This statement may surprise a good many, but I am able to confirm it by a series of over a hundred cases. The gravitating abscesses happen to open so near the rectum as to be mistaken for rectal fistulas.

In a series of 138 cases of hip-joint disease in my own practice, which I recently tabulated, I find six

cases in which a rectal fistula (?) resulted from hip-joint disease, and the communication between the hip-joint and the rectal fistula is illustrated in every one of them. I cite one of the cases in this connection:

CASE 3.—*Hip-joint disease complicated with fecal and pararectal sinus and paravesical abscess; closure after bismuth injections.*

C. V., man, aged 26, had been well to the age of 14, when he suddenly developed a severe pain in the right knee. A day later the pain shifted to the hip. The trouble was diagnosed as rheumatism (?).

Abscess in the hip followed and was opened at home; a drainage tube was inserted, and a secondary infection took place. Two years later the patient was operated on in Iowa City. After operation the sinus remained closed for five months, but spontaneously reopened. Thereafter sinuses appeared in different regions of the hip, and finally a pararectal abscess formed, which was opened and drained.

He came to me in January, 1912. The right limb was about $3\frac{1}{2}$ inches shorter than the left. Bismuth paste was injected, and after three injections all sinuses closed. Two weeks later the patient could walk around without crutches, which he had not done for years. He remained well for two years, but in December, 1913, suddenly developed a severe pain in the region of the lumbar vertebra. He kept on getting worse, the pain extending anterior to the bladder. He had frequent urination, vesical tenesmus and great tenderness over the bladder. He returned to Chicago immediately, and I found a bulging over the old pararectal scar. I incised it and evacuated about a pint of reddish pus, which was mixed with fecal matter. It was thus evident that communication must have existed between the rectum and this abscess.

The injection of bismuth revealed a most instructive condition. The paste filled out all the pararectal sinuses which originated from the old hip-joint disease, and communicated with them. There is a side branch which through a narrow channel turns forward, anterior to the bladder, and fills up a cavity about 3 inches long and about an inch wide. This can be observed only in the stereoscopic roentgenogram. A single plate gives rise to a false interpretation (Fig. 2). After two more injections the secretions became serous; fecal matter, as well as pus, stopped discharging, and the patient regained his health with unusual rapidity, and is perfectly well today.

Comment.—The instructive features in this case are: 1. It proves that hip-joint disease can produce a fistula around the bladder and is likely to perforate into the bladder. 2. A fistula which opens near the rectum may originate in the hip-joint. 3. Such cases as this may be regarded as inoperable and still curable by this simple method of injection. 4. There is one remarkable phase of this case: In spite of entire destruction of the hip-joint, the patient has perfect motion and normal strength in his limb. There is a shortening of about $3\frac{1}{2}$ to 4 inches. He can stand on the affected limb as long as on the sound one. There is the same amount of flexion as in the healthy limb, although the entire head of the femur has been destroyed and absorbed (Fig. 4).

That a sinus resulting from a spinal tuberculosis may be mistaken for a rectal fistula is clearly illustrated by the following case:

CASE 4.—A man, aged 53, developed what was thought to be a pararectal abscess twelve years before I saw him. It was incised, and a fistula remained. During the next twelve years he had three extensive operations for rectal fistula, the last resulting in incontinence of feces.

I saw him in July, 1913, in London, Canada. He had been on a cot for nearly two years. The discharge was so profuse that he had to be dressed three or four times a day in order to preserve a semblance of cleanliness. The rectum was gaping, so that one could inspect about 4 inches without a speculum.

A week later he came to Chicago. I injected the pararectal sinus with bismuth paste and took a roentgenogram (Fig. 5). This revealed the fact that the supposed rectal fistula originated in the eleventh dorsal vertebra and caused multiple abscesses and sinuses in the abdomen, all communicating with the rectal sinus.

This was evidently a case of tuberculous spondylitis, the psoas abscess opening near the rectum.

The therapeutic result was very satisfactory. The sinuses began to close, the patient gained rapidly in weight, and three months later he left the hospital with only one sinus in the rectum discharging a small quantity of pus.

ADVANTAGES OF THE BISMUTH METHOD

Having now a clear picture in our minds as to the origin and formation of fistulas and sinuses, we appreciate why some of our operations in the past have not produced the desired results. To dissect a fistulous tract of only a few inches' extent, such as we find in the ordinary cases of rectal fistula, may be feasible, but to attempt the dissection of a network of fistulas, such as are shown in these roentgenograms, is obviously impossible. Most surgeons can recollect

cases in which they have attempted this and had to give up in despair, after one or two hours of work.

In the employment of the bismuth method, we have two advantages: first, it helps to avoid useless operations, and second, it produces results without operation.

The method in question has been described in my previous publications, but I shall here briefly refer to the *modus operandi*. It consists of injecting a quantity of bismuth paste¹ (liquefied by heating in a water bath) into the opening of a sinus until one feels reasonably certain that all the ramifications have been filled. The paste thus injected will rapidly thicken and remain in the sinuses long enough to permit the taking of a roentgenogram. The bismuth, having the physi-



Fig. 6.—Supposed hip joint disease, appearing to be a paranephritic abscess, with subsequent injection, proved to be a tuberculosis of the twelfth dorsal vertebra (see Fig. 7).

1. This paste is composed of: bismuth subnitrate, 30 parts, and yellow petrolatum, 70 parts.

cal properties of producing a shadow on the sensitized plate, will give a clear picture of the existing channels of sinuses. If a set of stereoroentgenograms are viewed, the sinuses appear more distinctly, and their relations to the surrounding structures can be satisfactorily estimated. Such pictures will convince even the most skeptical of the value of this diagnostic method. In former years we relied on the probe and colored fluids as pathfinders of these sinuses, but such means may be used as guides only during an operation, as one can readily understand that a probe could never reach the depth of the sinuses shown in these roentgenograms.

When a sinus is very long and tortuous, the paste should be injected in a liquid state, so that it will flow readily into every part of the tract. If there is more than one opening, the paste is liable to escape from the nearest one and thus miss the remaining channels. To avoid this technical error, the mouths of all the other sinuses should be compressed by an assistant, by placing the finger tips against these openings, so that the liquid will flow in other directions, filling up all channels of the sinuses. It is essential that every crevice should be filled at one injection; otherwise there will be a recurrence of suppuration.

A striking example is given in the following case, showing how easily one could miss the focus of infection by faulty technic:

CASE 5.—*Tuberculous spondylitis first mistaken for hip-joint disease, then for a perinephritic abscess, and finally proved to be tuberculosis of the spine.*

A. C., woman, aged 25, developed two years ago pain in the lumbar region. Two months later there was a great deal of pain in the right hip and knee. Below the greater trochanter a fluctuating abscess appeared, which was opened and drained by her physician. She developed high fever, night sweats, became much emaciated and was unable to move. This condition persisted two years, when she was brought to me for treatment with a diagnosis of hip-joint disease and a discharging sinus.

The diagnosis was based on the fact that the abscess opened near the hip, that there was pain in this region, and a contracture of the limb toward the median line, such as very often follows hip-joint disease.

A roentgenogram, before the injection, demonstrated that the hip-joint was free from disease. An injection of bismuth paste, as shown in Figure 6, proves that the sinus extended from the opening on the outer side of the right thigh, along the adductor muscles, underneath Poupart's ligament, following the psoas muscle sheath toward the region of the kidney. In this region there was an accumulation of a large quantity of paste. A stereoscopic roentgenogram indicated that we had to deal with a perinephritic abscess, which had

gravitated and opened at the external side of the right hip.

An operation was decided on to produce counterdrainage for the existing perinephritic abscess, and under local anesthesia the abscess was opened and large quantities of pus and paste escaped. The patient, however, did not improve, and quantities of pus kept discharging. I became suspicious that we had not yet struck the right place, and therefore decided to inject the abscess cavity in the lumbar region and carefully prevent the escape of the paste through the original sinus at the hip. This was done by using a large syringe containing 2 ounces of the paste in very liquid state, and compressing the channel above Poupart's ligament by external pressure during the injection, thus forcing the paste into other directions.

To my surprise, I found that the paste passed through the twelfth dorsal vertebra into another abscess on the left side. This is shown clearly in Figure 7. The abscess on the left side in the region of the kidney was then opened and drainage produced.

Even with this additional drainage the patient kept on declining and for a time we thought she could not live; but the injections were continued at intervals of one week for the period of a year. Special care was taken to reach the focus in the twelfth vertebra.

A gradual improvement took place, and now, three years later, the patient is able to be up and about, with a slight discharge from one sinus.

COMMON TECHNICAL ERRORS

What are the technical errors usually committed by practitioners?

1. The bismuth may not be sufficiently incorporated with the petrolatum and the paste therefore contains small lumps of pure bismuth, which interfere with the injection of the narrow sinuses. A little water accidentally dropped into the mixture will produce a solution similar to that of curdled milk. The paste in such a state is unsuitable for the treatment.

2. The mixture is not heated sufficiently to become liquefied. As a result, part of the tract becomes clogged and many of the ramifications are not reached at all.

3. The instruments are often improvised and not suitable for this form of treatment.

4. Undue force is used in the injection, tearing the tissues and forcing the paste and pus into freshly produced wounds. This may cause serious complications.

5. An incomplete filling of the entire sinus tract is the most common error, which is responsible for more failures than any other cause.

6. The sinuses are injected too frequently by some practitioners.

7. Patients are at times allowed to dress their own wounds, reinfection usually following.

8. Physicians at times do not give the paste sufficient opportunity to do the work. Results are not always immediate. Patience and persistence are essential factors in the success of the bismuth paste treatment.



Fig. 7.—Proof of origin in twelfth dorsal vertebra by second injection.

METHOD OF PROCEDURE

For practical purposes the procedure in the average case is here given. Let us take, for example, a case of tuberculous coxitis of long standing, with multiple suppurative sinuses:

1. Preliminary to the treatment, a set of stereoroentgenograms of the affected region is taken, to make sure that there are no foreign bodies or sequestrums present. If they were present, they might be overlooked after the bismuth



Fig. 8.—Osteomyelitis of radius with twelve suppurating sinuses.

had been injected, because the shadows produced by the bismuth would obliterate the shadow of the foreign body.

2. Bacteriologic examination of the secretion is the next step. Smear preparations, cultures, and, in some instances, inoculation of guinea-pigs, are made.

3. The sinus is now ready for injection. No attempt should be made to irrigate the sinuses with antiseptic solutions, nor should any drying out process be tried. The skin surrounding one of the sinuses is washed with alcohol, and the tip of the glass syringe, which has been filled with the liquefied paste, is placed firmly against it, and the paste slowly but firmly forced into its channel until it is seen to escape from the nearest opening. Then the finger is quickly placed against this opening to prevent the escape of the paste, and the injection is continued until the patient begins to complain of some pressure. If there are many openings, an assistant must occlude all of them with his fingers during the injection, in order to be certain that all the branches of the sinuses have been filled.

4. After the injection another set of stereoscopic roentgenograms is taken, which will give a clear picture of the entire network of sinus tracts and sometimes be the means of tracing the path to the focus from which the disease originated.



Fig. 9.—Sequestrum of radius.

5. A sterile bandage is then applied and the patient put to bed, for a few hours, or a few days, depending on the severity of the case. In subsequent treatments the patients are usually allowed to walk about immediately after the injection.

6. The first dressing is done the following day. If the discharge, which before injection was creamy or profuse, has changed to a serous consistency, it is to be regarded as a favorable sign, and a microscopic examination will usually prove it to have become sterile. If the discharge is sterile, the sinuses need not be reinjected unless they later become

reinjected. It is not intended that the paste remain in the sinuses. It will gradually exude, and within a week only traces may be found by fluoroscopic examination or by roentgenogram.

7. Should the discharge persist and remain purulent, the injections should be repeated at intervals of from five to six days for a reasonable length of time (from four to six weeks), and if after this period there is no appreciable improvement, one must search for the cause. A sequestrum may be present, or the focus of the suppuration be in such location as to be inaccessible to the paste, as, for instance, in the cancellous structure of long bones.

In such cases, either the foreign body must be removed, or, as the case may be, the infected cancellous structure of bone curetted, and the bismuth injections resumed.

For illustration of case with sequestrum, I cite the following:

CASE 6.—*Osteomyelitis of ulna, with twelve sinuses and sequestrums.*

Miss F. B., aged 17, had diphtheria at the age of 8, and has had chronic tonsillitis ever since. Three years ago a swelling developed in the right wrist, but gradually the entire arm was undermined with pus, and abscesses formed which were incised and drained. The elbow joint became ankylosed, and the sinuses persisted in discharging.

The patient came with the request to have the arm amputated above the elbow.

Examination, Aug. 9, 1915, revealed the right forearm and wrist and above the elbow studded with twelve suppurative sinuses, discharging foul and creamy pus (Fig. 8). The elbow was entirely ankylosed, the fingers and wrist stiff and swollen. There was a swelling about 3 inches in diameter

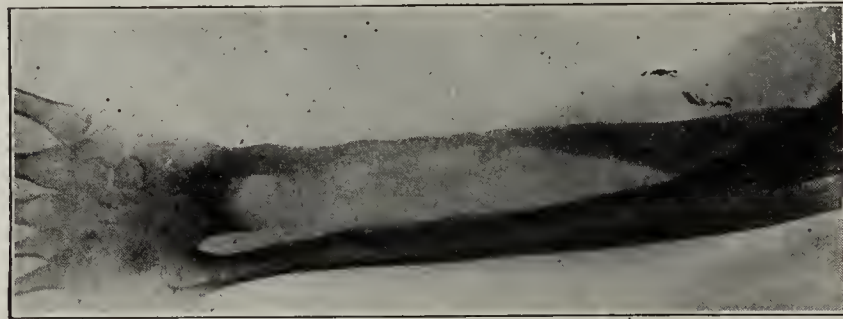


Fig. 10.—Sequestrum removed, showing a strip of radius preserved for regeneration of bone.

on the left side beneath the scapula, fluctuating and red on the surface, and also a discharging sinus on the right ankle.

Stereoscopic roentgenograms (Fig. 9) showed distinctly a large sequestrum of the ulna, taking in almost the entire length of the bone.

A conservative operation was decided on, instead of amputation. Under general anesthesia the sequestrum was removed through a long incision, and the larger part of the diseased ulna was removed, except the external border and the articular joints at the wrist and elbow, which were left in order to preserve the contour of the arm and leave enough healthy bone for regeneration (Fig. 10).

The essential point in the after-treatment was to treat the wound open. Not a single stitch was put in, and the wound was packed with gauze. Three days later the gauze was removed and the entire cavity filled up with bismuth paste and bandaged. The incision gradually closed by contracture of the wound edges.

The remaining sinuses on the flexor surface were injected, and all healed within a few weeks, so that the patient has at present a useful arm, without any suppuration (Fig. 11). She has developed strength in the muscles, and can perform all housework, lifting heavy articles, such as chairs (Fig. 12), but she still has an ankylosis in the elbow, which we shall try to remedy by subsequent plastic operation.

The sinus on her right ankle was injected once and healed out, and the cold abscess underneath the scapula was treated with the prophylactic method, which I advocate, the abscess being incised and 5 per cent. bismuth paste being injected, and it healed promptly. (Patient exhibited.)

PREVENTION OF BISMUTH POISONING

Great care should be taken not to retain too large a quantity of the paste in large pus pockets for too long a time, because of the possibility of gradual absorption of the bismuth, which is liable to produce toxic effects and even fatal poisoning.

In 1909 I reported the first case of this form of poisoning.² At that time I warned the profession against the indiscriminate use of the paste, and this, no doubt, put many on guard who thought that bismuth was an entirely harmless substance. The occurrence of this accident has deterred many surgeons from employing the bismuth treatment, and since poisoning can be avoided, it would be deplorable that an otherwise useful method should not be employed on this account. Although the bismuth treatment is now used more extensively than ever before, there has not appeared in the literature any case of bismuth poisoning for the past few years. That this complication may be avoided is evident from the fact that in our series of over 1,800 cases treated at the North Chicago Hospital, we have not had a single fatal case.

It is, of course, possible that there are persons who have an idiosyncrasy against bismuth and a special susceptibility to its absorption, and may develop toxic effects from bismuth in small doses; but such cases must be very exceptional, when we stop to consider that in 1,800 of my own cases, not a single patient had this idiosyncrasy. Are we to discard an otherwise useful method because of the possibility of encountering such a case? Certainly not; we do not discard ether or anesthesia because there are fatalities on record from its employment.

Should toxic symptoms appear, the paste must be removed by washing out the cavities with warm olive oil. The sterile oil should be injected and retained from twelve to twenty-four hours, in order to produce an emulsion with the bismuth mixture. This emulsion should be withdrawn by means of a catheter or suction syringe. After its removal, all symptoms will promptly disappear. Scraping out the paste with a scoop is a dangerous procedure, because it opens new channels for absorption.



Fig. 11.—Final result after bismuth injections.

SUMMARY

1. Failures in the application of bismuth paste are principally due to faulty technic or carelessness.
2. The treatment has passed its experimental stage, and the results obtained by surgeons all over the world warrant its more general employment.
3. Stereoroentgenograms should be employed to control the treatment and to prevent useless operations.
4. Bismuth poisoning can be avoided, and is now a rare occurrence.

2632 Lake View Avenue.

2. Beck, E. G.: Toxic Effects from Bismuth Subnitrate, *THE JOURNAL A. M. A.*, Jan. 2, 1909, p. 14.

ABSTRACT OF DISCUSSION

DR. ALBERT J. OCHSNER, Chicago: In discussing cases that are suitable for treatment with bismuth paste injections we must first consider the mechanical conditions present. Canals extend in a number of irregular directions, with usually enlargements at various points, and little lakes here and there. The progress of the disease is by pressure, pressure necrosis or gravity pressure. Surgery alone cannot discover all these canals and lakes, but the bismuth injection does; hence Dr. Beck's treatment is of such great value. In the



Fig. 12.—Illustration of strength and function of the healed forearm.

first place, he produced a condition favorable for disposing of granulation tissue; second, he disposed of accumulations which increase in amount and continue the pressure necrosis unless removed. Third, bismuth possesses a certain antiseptic quality, as does also the petrolatum, because it has been shown that microbes cannot live when they are mixed up with fatty substances. Now regarding the application of the treatment: Whenever a surgeon has told me that he has not been successful in the use of Beck's paste, I have invariably found that he has not applied the paste in the manner that Dr. Beck has told us it should be applied. I have seen it applied so that instead of merely filling these spaces it would tear the tissues and force the septic material into new spaces. No wonder the patients had an elevation of temperature afterward and their condition became worse! From their point of view the treatment did no good. It is essential, therefore, to inject the paste very slowly and continuously so that it will fill not only the nearest spaces but all spaces, taking the place of the septic material, substituting antiseptic material from which there is no absorption for septic material. Scarcely a day passes that we do not use the paste in our hospital and the results are just as Dr. Beck has described them.

DR. EMIL G. BECK, Chicago: The formula we use now is: 30 per cent. subnitrate of bismuth; 70 per cent. petrolatum. In empyema cases I have lately used a 10 per cent. mixture, with very gratifying results. There is no advantage in substituting the subcarbonate for the subnitrate of bismuth in order to avoid bismuth intoxication. Either preparation is liable to produce this complication if used carelessly. Such complications should occur extremely rarely. In my own series of 1,800 cases not a single fatal case has occurred.

Changes in the Diet.—Most of us can recall the days when meat or eggs, or both, formed an indispensable part of the early meal, in the United States. At present there are signs everywhere, at least among those classes which are not engaged in more vigorous muscular work, of a simplification of this meal by the exclusion of meat and the substitution of cereals and fruits. This is an approach to the traditional breakfast of continental Europe. It is not easy to analyze the underlying causes for such dietary changes; they are not solely physiological nor economic in origin.—Mendel, *Changes in the Food Supply and Their Relation to Nutrition*.

SUBLUXATION OF THE HEAD OF
THE RADIUSREPORT OF A CASE AND ANATOMIC
EXPERIMENTS *

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While much has been written on subluxation of the head of the radius, the fact remains that no satisfactory explanation of what produces and maintains the deformity has been given. It is hoped that the following history and the succeeding experiments will throw light on the subject.

A boy, aged 5, fairly well developed, was pulled across the floor by his left hand while playing with his brother. The following morning, Jan. 1, 1914, he was brought to me. The hand was in nearly complete pronation, and the forearm slightly flexed and held in front of him. He complained of pain in the elbow; there was no swelling, no redness, no heat. Attempts at supination were painful and were resisted; pronation caused no pain. There was tenderness over the head of the radius. Flexion of the forearm was painful. Several attempts at supinating the hand suddenly resulted in a slight click, felt by the thumb palpating the radial head, and motion in all directions was at once free and painless. The arm was carried in a sling for one day.

The following summer, in a fit of anger, the boy hooked the fingers of his two hands together and, while pulling in this position, subluxation of the right elbow occurred. Immediate careful examination showed the same characteristic pronation and slight flexion of the forearm as in the first instance. No attempt at reduction was made, but the patient was sent away with instructions to return later when a roentgenologist could be seen. He did not come back, for while playing the arm suddenly "became all right."

The accident happened a third time in May, 1915. The patient sat on a chair with his hands clasped in front of one knee, his forearms slightly flexed, rocking back and forth on the buttocks. Suddenly he had pain in his left elbow and could no longer use the arm. The hand was in pronation with the forearm slightly flexed, as in the two preceding instances. A roentgenogram was taken. While an examination was being made, the arm was suddenly free of pain and motion was normal. In the second and third instances no dressing of any kind was used. The roentgenograms show the head of the left radius to be about half the thickness of the epiphysis farther from the capitellum than the right.

In going over the clinical records of Washington University Dispensary and the St. Louis Children's Hospital for the past five years, I have been unable to

find any record of a subluxation of the radial head among over 14,000 surgical and orthopedic cases. I am inclined to believe it occurs more frequently than would appear from this, for I have seen one other case myself.

Most of the work on the subject was done previously to 1889, principally by the French and German writers, 400 cases having been reported. Van Arsdale in that year reported 100 cases and gave a complete bibliography. A great many experiments were done on children's bodies by a number of men who proved that the lesion is a slipping of the radial head out of the annular ligament. They thought that the injury was due to a sudden pull on the extended forearm, the hand going into pronation as the injury took place. Some authorities think forced pronation is a factor, but such men as Stimson do not believe this to be the case. All observers heretofore have asserted that the lesion could not take place while the biceps was contracted, and no one has produced it on an adult body.

The hand is held in nearly full pronation, but "exactly how it is held so as to allow some rotary motion no one professes to say" (Cotton). Gardner,⁵ in 1837, and Rendu,¹⁷ in 1841, thought that the tuberosity of the radius was caught behind the ulna. Van Arsdale said it was due to the eccentric shape of the radial head, the epiphysis of which became pushed to one side and impinged on the ulna.

In an attempt to clear up the matter, if possible, a number of experiments were made on twelve arms from material in the anatomic laboratory of the Washington University Medical School. In every instance the bones were practically free of muscles, but the ligaments

were intact. While trying forcible traction on the first arm the annular ligament could be seen to spring inward; but on attempting powerful adduction, the external lateral ligament ruptured. Of the remaining eleven elbows a subluxation of the radial head was produced in six. In each of these six the annular ligament always slipped over the head when the hand was pronated. One case with the hand in this position resulted in failure. In the remaining four, the ligament tore during traction while the hand was supinated.

All the standard textbooks on anatomy give the shape of the radial head as round. Measurements of 100 specimens show the one diameter to be 1.5 mm. greater, on an average, than the other. In some bones the difference is as much as 3 mm. The long diameter is always in the same sagittal plane as the interior portion of the tuberosity of the radius. The explanation for the lesion occurring with the hand pronated is

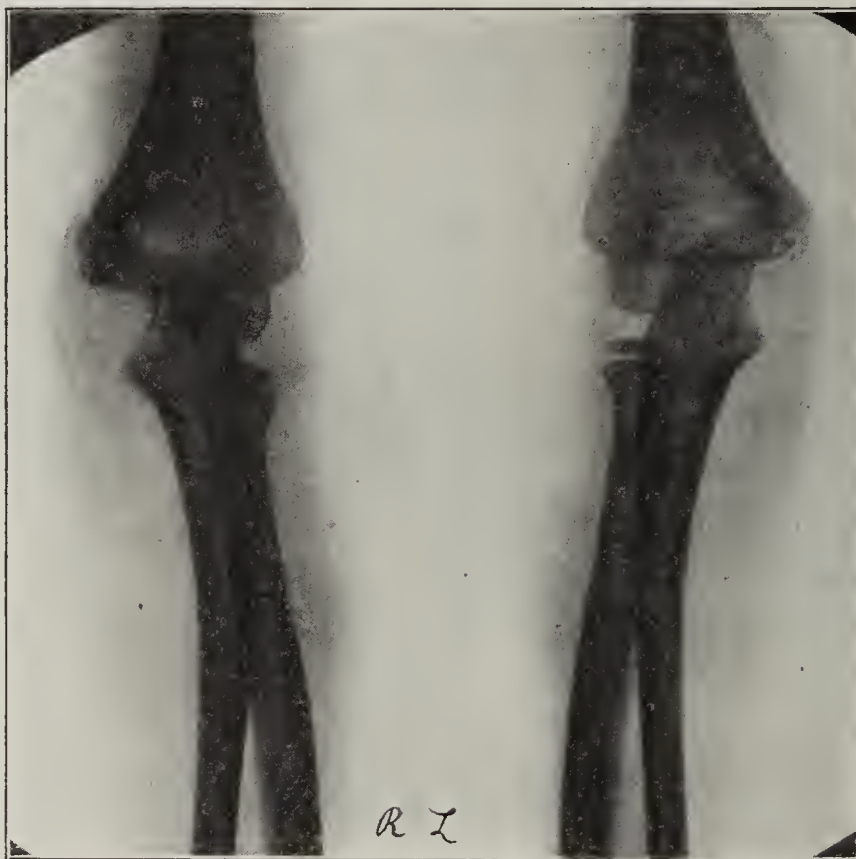


Fig. 1.—Lateral view of right and left elbows.

* Read before the Washington University Medical Society, April 24, 1916.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

5. Gardner: London Med. Gaz., 1837, xx, 878.
17. Rendu: Gaz. méd. de Paris, 1841, p. 301.

as follows: Anteriorly, from the neck of the radius to the head, the rise is an abrupt one. Any traction with the hand supine pulls the ligament against this. Laterally and posteriorly the ascent is quite gradual, so that in pronation the ligament lies over this part and is stretched until it suddenly slips over the head.

The first successful demonstration gave a typical picture: forearm slightly flexed and pronated, some further pronation possible, supination resisted. The specimen was left until the following afternoon. The lateral ligament and the inner part of the annular ligament were stretched very tightly. Grasped between them was the lesser diameter of the radial head, the greater diameter being anteroposterior. My thought was that the lateral ligament and the outer part of the annular ligament were what held the bone fixed; therefore the inner part of the annular ligament was cut first. The head was very slightly loosened. Then on cutting the lateral ligament the head was immediately freed. Internally on the edge of the radial head was an indentation caused by the taut ligament. It was in line with the anterior portion of the tuberosity, which, with the hand in pronation, lies behind the medial line. One hundred and twenty degrees around posteriorly from this point, on what would ordinarily be the medial surface of the head, but which in this position was slightly external and in line with the posterior part of the tuberosity, were two other indentations caused by the lateral and annular ligaments. They were 1 mm. deep and 3 mm. apart, extending completely across the circumferential articulation, slanting from above, downward and backward, at an angle of 45 degrees with the long axis of the bone.

To make certain that the inner part of the annular ligament was not holding the head, the lateral ligament was cut first in one case. In the other four cases, the inner part of the annular ligament was cut first. One case, left for fifteen minutes after the radial head had been pulled out of the annular ligament, had a single indentation laterally at the point where the specimen which had been left twenty-four hours had two. The one indentation was, of course, more shallow than the two.

The tuberosity of the radius had nothing to do with the deformity, for a knife blade was easily inserted between the two bones at that point.

To make sure that the wrist or interosseous membrane had nothing to do with the deformity, in the last five successful subluxations, the lower end of the radius and the shaft were freed from the ulna. Moreover, to be certain that I had produced the lesion described by other writers, and being convinced of the cause of the pronated position, one radial head was subluxed, and then replaced by supination three or four

times before the ligaments were finally cut to complete the experiment.

In order to lessen the chance of error, measurements were made with calipers.

I have found no mention in the literature of a case in which the injury was produced in other than the classical manner, except one in supination which was reported by Duges.¹⁸ In the case which is the basis of this paper one radius was subluxed while the forearm was flexed about 30 degrees, and the other while the forearm was flexed 120 degrees or more. Furthermore, with the forearms in such a position and the child himself pulling, the biceps must have been contracted. It would hardly seem possible that adduction could have been a factor.

CONCLUSIONS

Subluxation of the head of the radius can occur while the biceps is contracted, with the forearm flexed and without adduction. It occurs only while the hand is pronated. The line of traction is parallel to the shaft

of the bone. Supination is resisted because the tense lateral ligament forces the flattened side of the radial head against the anterior edge of the lesser sigmoid articulation and the inner attachment of the annular ligament. Attempts at this motion throw the exposed two thirds of the long axis of the head against an already tight ligament, making it more tense. Complete pronation is possible because the short part of the long axis is behind and moves outward against the loose posterior portion of the lateral ligament.¹⁹

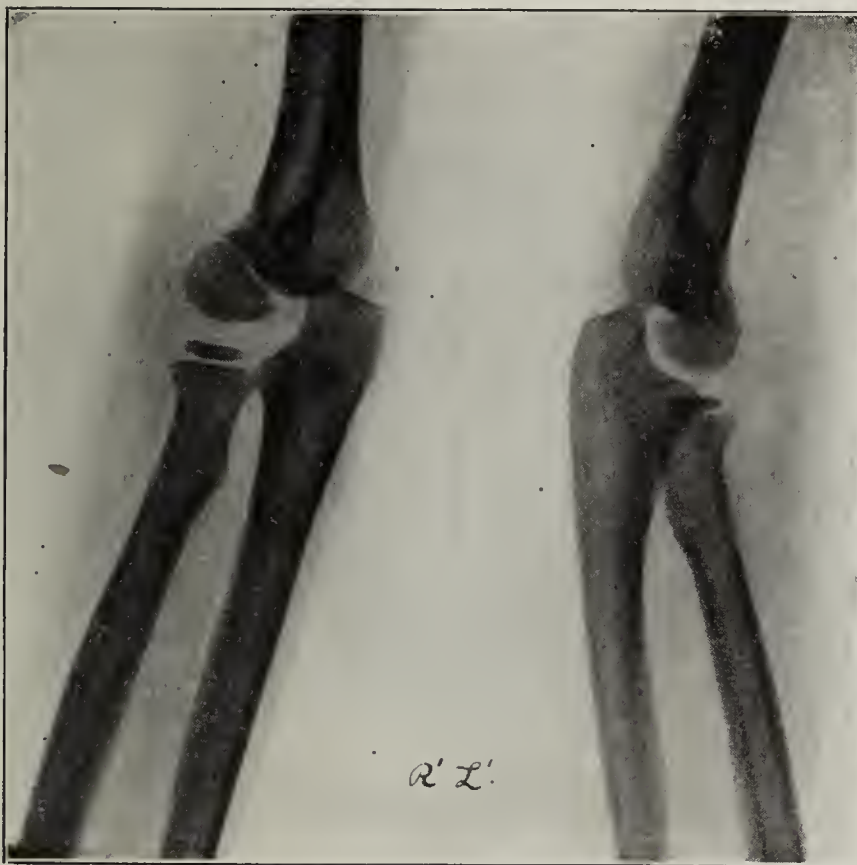


Fig. 2.—Anteroposterior view of right and left elbows. It will be seen that the distance from the head of the radius to the capitulum is greater in L and L' than in R and R'.

18. Duges: *Jour. hebdomadaire de médecine*, Paris, 1831, iv, 196.

19. In addition to the references already given, the following will be found of interest:

Clumpsy: *Ztschr. f. orthop. Chir.*, 1911, p. 213.

Bessel-Hagen: *Arch. f. klin. Chir.*, 1891, xli, 420.

Sawicki: *Gaz. lek. Warszawa*, 1891, Series 2, xi, 702.

Caldwell: *Lancet Clinic*, 1891, N. S., xxviii, 496.

Broca: *Gaz. d. hôp.*, 1903, No. 56.

Lobit: *Med. inf. Par.*, 1898, ii, 95.

Ante-Natal Hygiene.—So far as the race is concerned the health of the mother, especially at the time she is carrying a baby, is of great importance, and for this reason ante-natal hygiene must be carefully considered. Ante-natal life occupies a period of nine months, except in the case of prematurely born infants. During this time the infant is growing rapidly. The mother supplies the necessities of life during these nine months, and the infant is being prepared for an existence of many years. On looking at the infant mortality rate for the last few years, we find that it varies a good deal each year according to the age of the infant, and that it is higher during the first month of life than at any other time. It is also seen that infant mortality has decreased more rapidly of recent years during the ages over 1 month than during the first month of life. The greatest improvement has been in the second half of infancy, though there has been a remarkable saving even in the first half.—Ashby.

SEVEN UNERUPTED TEETH IN THE
SUPERIOR MAXILLA

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That foci of infection in systemic and general septic conditions are found in the mouth, in abscessed teeth and infected gum tissue, has been widely accepted by the profession. Actual pus-forming conditions of these organs, however, does not exclude them as a cause of systemic disorders. Pressure from teeth, dislodged from their normal tract, and the deposition of supernumerary teeth, are, in many baffling conditions, the unseen causes of chronic neuralgia, rhinitis, neuritis, nasal conditions and hysteria. I do not presume to offer this as a frequent or common cause in these conditions, but only to present it for consideration when other correct diagnosis cannot be reached.

Supernumerary teeth are much more common than we have hitherto believed, because we had no means of knowing their existence without the use of the roentgenograph. The daily use of the Roentgen ray in my practice has proved the truth of this statement by

REPORT OF CASE

This case, with the operation, is reported because it appears to be at least unique in that several teeth were found and removed:

Mrs. X, aged 34, consulted me concerning a bridge extending from the left lateral incisor tooth supplying the left central to the right central. She asked whether the teeth crowned could be in any way associated with the fistula draining into the right nostril. Examination was made of the bridge, and also the fistula observed; the septum was deflected entirely, closing the opening on the right side. A roentgenogram was immediately made through the anterior teeth, which showed an abscess on the left lateral incisor, and also a foreign formation near its apex. A larger film was used and a second exposure made with the tube pointing through and above the nose (Fig. 1). In this roentgenogram a large tooth will be seen which, according to the patient's history, was judged to be the unerupted central incisor, which had never appeared.

The following history was secured from the patient: The sore or sinus in the nose had been extremely annoying, breaking and running with bloody fluid, four or five times a day. She could not breathe through either nostril, and had not done so for about eight years. Each time, following the discharge of the fistula, she became very nervous, suffering from intense pain or pressure in the upper portion of her face,

until she had become an extremely hysterical patient. This pressure was also noticed in her efforts at placing her tones high in her head while singing, and when forcing tones she imagined something moved in her head, so that she was compelled to give up her vocal efforts. Six years ago, the patient collapsed and remained unconscious for two days. She states that her case was diagnosed as nervous prostration, and that she never fully recovered from this attack. Two years ago, while dancing, she had felt an extreme pressure in the upper part of her face and again collapsed, this time remaining in a comatose condition for six days. She states the diagnosis was a "blood clot on the brain." She has been in a serious nervous condition since with periodic headaches, following a feeling of



Fig. 1.—Appearance of nest of teeth and large tooth. (Roentgenogram by Ream.)



Fig. 2.—Appearance after removal of all teeth. (Roentgenogram by the author.)

revealing many impacted and unerupted teeth which were direct causes of nerve pressure. We must realize that there are few normal mouths, that is, mouths in which all the teeth have erupted in proper occlusion, and that the tooth germ cells will deposit in any part of the body to which they may become deflected. A striking feature of the cases recorded in which teeth have been found in the nasal cavity is that only one or two teeth have been found, and in several cases the discovery of the tooth has been made when the patient has shown a tuberculous or syphilitic history.

Hopple¹ has reported a case of atrophic rhinitis in which the patient was treated for certain periods, and eventually a tooth was forced through the floor of the nose. Joachim² reports a case in which the patient was treated for specific ulceration of the nasal septum, and a tooth was found in the floor of the nose.

The delay in the healing of the fistula leading from these teeth, in specific cases is recorded by Ingersoll.³ Removal of the cause is not always followed by immediate closing of the sinus.

pressure and the breaking of the fistula in the right nostril.

Dr. W. H. Haskin was consulted, and the diagnosis verified with the opinion that the tooth highest in the nose was deflecting the septum to the side, and causing the points of inflammation in the right nostril.

No tuberculin or Wassermann test was made.

The operation was performed in my office with Dr. W. V. Ryan assisting. Novocain and epinephrin was the anesthetic used, with infra-orbital, tuberosity and palatine injections.

The left lateral root was removed, and the incision over the apex carried to the base of the nose, with removal of bony tissue, by the use of the chisel and proper dental engine drills and burrs, exposing the nest of six supernumerary teeth. Considerable force and care was required in their removal, as they were packed against each other tightly and embedded in the bony tissue.

The patient's breathing was difficult, and after the removal of these teeth, a very pronounced dilatation of the nostril was noticed, and she exclaimed about "a wonderful breath of air." The only pain experienced during this operation was in her right ear, which was intense when pressure was placed on these teeth. The nervous condition of the patient prevented further operating, and the wound was packed for ten days.

A more profound anesthesia was secured for the next operation, and an injection made into the nasal cavity. With much difficulty and cutting of adhesive and bony tissue, the large unerupted central incisor tooth was exposed and found to be

1. Hopple: Brooklyn Med. Jour., 1900, xiv, 403.

2. Joachim: Orleans Parish Med. Soc., 1895, iii, 52.

3. Ingersoll: Laryngoscope, 1903, xiii, 688.

firmly embedded. By the use of the engine drill and chisel, it was cut off at the incisal edge and carefully worked down until it could be turned into the wound, in order to avoid splitting the surrounding bony tissue. The illustration of the tooth (Fig. 3), therefore, does not show its full length; but it was a perfectly formed central incisor.

A minimum amount of tissue was destroyed, and after the wound was healed, no depression was apparent from the outside and only a small evidence over the teeth in the mouth.

One month after the operation, the headaches and neuralgia had ceased, the hysterical condition was much improved, and the breathing was normal through the nose. The sinus in the nose, as in some cases quoted, was slow to heal; however, the bleeding appeared only occasionally.

A removable bridge was placed in the mouth to restore the lost central and lateral, and the patient was dismissed.

The pressure of these supernumerary teeth as well as the central incisor, forcing the septum, will be realized when the curve of the larger of the extra teeth is noted in Figure 3. The three small teeth are wrapped around each other.



Fig. 3.—Teeth removed. Small group shows three teeth curved around each other. (Photograph by the author.)

CONCLUSION

I believe that this case is an appeal for all who are treating the mouth, nose and surrounding parts to forestall any chance of error by the use of the roentgenograph. The surgeon may relieve many cases of difficult diagnosis, and every dentist who treats the roots of teeth should not work without the daily use of the roentgenograph.

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ORTHOPEDIC TREATMENT IN HEMIPLEGICS OF LONG STANDING*

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It is generally accepted that if a hemiplegic has not improved within a short time, he will never improve; on the contrary, contractures will develop. These patients usually become chronic invalids. It will be of interest, therefore, to see what orthopedic treatment in old and neglected cases can do. This is a plea that the orthopedic treatments should be started early. Patient work will bring excellent results.

The prognosis which the attending physician usually gives to the patient is influenced by the teachings of the neurologists which is as follows:¹

Patient recovers the power of walking in a short time, viz., six to eight weeks, but muscle retraction and shortening (contractures) almost invariably occur. . . . The depth

and duration of the apoplectic seizure will give some hint to the progress in the future. The more incomplete the apoplexy, the better are the chances for recovery. The course during the first few weeks will decide this point. If, during the first month, the hemiplegia continues unchanged in intensity or if only a trace of movement sets in in the affected limb, it will improve very little. On the other hand, a certain degree of movement setting in during the first few days, and steadily advancing during the first period, is a very favorable sign. . . . As soon, however, as the first evidence of contracture sets in there is hardly any prospect of complete restoration.

Dana,² Church and Peterson³ and Starr,⁴ in their textbooks, state that after two years, no further gain is to be expected. Curschmann⁵ is of similar opinion and says:

Gradual improvement after severe attacks may continue for months; but whatever has not disappeared in from six to nine months, must be regarded as a permanent defect. The more quickly after an attack the improvement in motility appears, the more favorable is the progress.

We can easily understand why the general practitioner, influenced by these teachings, usually watches the case for from three to four months, and is satisfied with the improvements attained by that time. If the patient is then able to walk, he considers himself quite fortunate. If the contractures develop, he is put in the class of "chronic invalid" and is either allowed to remain in the house or sent to a "home for incurables." Many physicians are a little less cautious and do nothing to the paralyzed muscles for the first three months, waiting to see what improvement the patient will get from the medications, and only then is he sent to the neurologist and very seldom to the orthopedist. Of course, it is needless to repeat that, in many cases, the contractures are already present at that time.

The case which we have to report proves many of these statements and emphasizes new ones. We hope, therefore, that it will interest the readers to follow the details.

CASE REPORT

History.—M. W., man, aged 52, admitted to the Montefiore Hospital at the age of 27, had a clear case of right sided hemiplegia with motor aphasia. He became paralyzed at the age of 26. As far as we can find in the history, the cause of the apoplexy was some trauma, sustained three weeks previous to the onset of unconsciousness. He was unconscious for twelve days, which indicates that the attack was quite severe. When he regained consciousness, he suffered severely from dizziness, vertigo and headaches, and was admitted to Mount Sinai Hospital. A decompression was done which relieved the symptoms but not the hemiplegia. He was admitted to the Montefiore Home and Hospital one year after the attack, unable to walk and presenting some contractures. (Probably nothing was done during that interval to prevent contractures.) He was put in the ward for chronic invalids and was confined to the chair and bed for twenty-one years, during which time he did not leave the home even once. Following the prevailing opinion, he was considered hopeless during all this time, and therefore received no treatments. He did not improve spontaneously, but, on the contrary, his paralyzed extremities became contracted. He did not regain his speech, but learned to write with the left hand so that he could make himself understood.

2. Dana, C. L.: Text Book of Nervous Diseases, Ed. 7, New York, William Wood & Co., 1908, p. 467.

3. Church, Archibald, and Peterson, Frederick: Nervous and Mental Diseases, Ed. 8, Philadelphia, W. B. Saunders Company, 1914, p. 223.

4. Starr, M. Allen: Organic and Functional Nervous Diseases, Philadelphia, Lea & Febiger, 1913, p. 495.

5. Curschmann, Hans: Text Book on Nervous Diseases, Burr's English Edition, Philadelphia, P. Blakiston's Son & Co., 1915, ii, 667-681.

* Read in part before the Orthopedic Section, Academy of Medicine, Nov. 19, 1915.

1. Oppenheim, Hermann: Text Book of Nervous Diseases, Edinburgh, Otto Schultze & Co., 1911, ii, 792.

In 1911 we were doing some work on hemiplegic and neurologic patients and had much success. This patient, who is intelligent, observing this, implored us in a touching note to endeavor to make him walk. Even when we explained to him that he would have to undergo a great deal of suffering, he still persisted in his request. We decided to help him reach his goal.

Examination.—The physical examination made in 1911 showed marked adduction of the right upper extremity. The forearm was flexed to an acute angle; it could not be extended by force more than to an angle of 90 degrees. The wrist was flexed on the forearm; the fingers were markedly contracted and held in a position of a closed fist with the thumb inside the palm.

Lower Extremity: The right thigh was flexed on the abdomen at an angle of 45 degrees, and rotated inward. The leg was flexed on the thigh at an angle of 100 degrees; by using considerable force, the leg could be extended to an angle of 112 degrees. The foot was in a position of talipes equinovarus (that is, where the foot is turned inward and the toes downward). The toes were flexed and bent on themselves. The foot was very firmly fixed.

Here there was practically a bedridden invalid of twenty-one years' standing. His thigh was flexed on the abdomen and the leg so flexed on the thigh that the heel and part of his acquired clubfoot pressed into his buttocks—and this of twenty-one years' standing.

Before undertaking operative procedures, we urged him to stand on his good foot for from ten to fifteen minutes about ten times a day so as to train himself to use that limb, as he had not borne any weight on it for twenty-one years. We also ordered massage for the paralyzed side so as to develop somewhat his atrophied muscles.

Operations and Results.—In December, 1911, we performed a tenotomy of the biceps, semitendinosus, semimembranosus and popliteal fascia and, using considerable force, we brought the leg to an angle of 135 degrees. We might have been able to extend it more, but we feared rupture of the popliteal artery, which had been in a contracted position for so many years. At the same time we corrected the foot slightly. We put the limb in a plaster of Paris cast. The cast was left on only a few weeks, and then we started daily baking (Bier's active hyperemia), massage and stretching slowly the leg and foot. After each massage, the limb was put back into the cast. The process was rather painful, but the patient stood it well. We changed the splint from time to time, making it straighter as we gained motion in the knee. It took almost a year before the knee was perfectly straight.

In December, 1912, that is, one year later, we did a tenotomy of the Achilles tendon, and by brisement forcé corrected the foot. Daily baking, massage and exercises were then carried out regularly. In March, 1913 (three months after the second operation), his knee and foot were straight, a brace was fixed up for him, and the patient for the first time left the ward. Within a few weeks, he walked so well that he asked to go downtown himself (a distance of one and a half hours' ride by elevated trains, car and the short walks from and to the cars) and brought us a report as to what changes Manhattan had undergone in the twenty-two years that he had been in the hospital, or as he called it "imprisoned there." You can easily imagine his joy.

He continued his active exercises so that within a few months he could flex voluntarily his knee and could bear weight on the limb without the brace.

A few months later, we began to treat his upper extremity. By brisement forcé we brought down the elbow to an angle of 100 degrees and straightened the fingers and wrist and put them in a plaster cast. After ten days, baking, massage and exercises were instituted. He has improved nicely. The elbow can be flexed voluntarily and can be extended to an angle of 135 degrees. The fingers and wrist are straight, but there is very little voluntary motion in them. It is doubtful whether he will regain power in his fingers, but with the power he has in his shoulder and elbow, we may be able to fix up some brace and permit him to use the fingers. We are still continuing the exercises, as we feel that in a case of such long duration, one should not be discouraged quickly.

Even if we do not reach this aim, it is worth the work to make it possible for a patient to walk.

COMMENTS

1. Perhaps the chief point of interest in this case is the long standing contracture deformity (twenty-one years) and its correction after this long period of time.

2. Another point of interest is the early onset of the hemiplegia, at the age of 26 years, and the classical type of the hemiplegia—complete unilateral paralysis with complete motor aphasia. At this comparatively early age, we are wont to search for specific disease affecting the blood vessels. We have failed to find any objective evidence of this, and the Wassermann has been found negative. Further, now 52 years old, with twenty-five years since the attack, the patient appears well as regards his general health.

3. We have referred to the fact that we did not fully correct the deformities of the lower extremity at our first séance. The condition of the blood vessels must be considered. This figures especially in the case of the average hemiplegic, in which the attack is later in life, as a rule, and these subjects are apt to have rather marked arteriosclerosis.

4. It is observed that the hand deformity has not improved to the same degree as that of the lower extremity. This is probably due to the more delicate action of the hand muscles. It is also largely due to the difference of the contraction. In the lower extremity it was a condition of real contracture, and the limb when corrected and properly treated, to use an apt expression, "stayed put." In the upper extremity, especially the hand, there is contraction. But there is the knife blade spasticity. The fingers can be readily straightened, but they snap back. In other words, they do not "stay put." This condition is not very amenable to the treatments we have considered.

5. The favorable results in this case indicate clearly that there is no time limit for improvement in hemiplegia. Franz, Sheetz and Wilson⁶ have recently reported improvements in five cases of hemiplegia of long duration, and we feel certain that reports of such cases should stimulate all the physicians to resort to orthopedic methods in similar cases, no matter at what stage they are seen.

6. We might recall the emphasis recently laid by Mayer⁷ that the deformities encountered in hemiplegics should be prevented by maintaining the paralyzed limbs in the proper position by means of splints.

7. We had a considerable number of patients in the Montefiore Hospital who, when admitted within the first year after the apoplectic attack, were placed in our service. We put the knees and feet in splints, and the patients were able to walk within a short time.

This case further suggests that: A. Patients with hemiplegia should receive proper orthopedic treatments as soon as they regain consciousness.

B. Light massage should be used, and active and passive exercises early. As soon as the patient is able, he should be urged to stand up.

C. Even in the old and neglected cases, great improvement can be obtained, especially in walking; hence one should work patiently on any hemiplegic who comes under his professional care.

40 East Forty-First Street—1210 Tinton Avenue.

6. Franz, S. I.; Sheetz, M. E., and Wilson, A. A.: The Possibility of Recovery of Motor Function in Long-Standing Hemiplegia, *THE JOURNAL A. M. A.*, Dec. 18, 1915, p. 2150.

7. Mayer, L.: The Necessity for Orthopedic Training in Hemiplegia, *Berl. klin. Wchnschr.*, June 7, 1915; abstr. *THE JOURNAL A. M. A.*, July 24, 1915, p. 366.

REPORT OF A CASE OF BANTI'S DISEASE

KARL C. EBERLY, M.D., FORT WAYNE, IND.

The rareness of this disease is my reason for reporting this case:

History.—Mrs. R. J., aged 63, married, consulted me, April 7, 1915, complaining of constipation, gas in stomach and bowels, loss of strength and weight and pain in left side at margin of ribs. The patient had three healthy children, was doing housework and had always worked hard. The family history was negative. She had had children's diseases with good recovery, chronic cough for twenty years, had been constipated since childhood, and for the previous twelve years had suffered from periodic attacks of cyanosis involving the hands and feet. She had had malaria when a child, but no other fever. Menstrual history was negative. The menopause had occurred twelve years previously. There were no unexplained miscarriages.

Present Trouble.—Although the patient had been constipated for years and had suffered much from intestinal putrefaction, she did not become incapacitated until September, 1914. At that time mucous colitis with much gas and considerable abdominal pain was present. She had lost weight, weighing 156 pounds in 1911, and in December, 1914, 122 pounds. She was weak, unable to do much work, and had a poor appetite. There was no nausea or vomiting except that precipitated by severe coughing. There was pain in the left hypochondrium. Lactic acid bacillus tablets, sodium cacodylate administered hypodermically and rest improved her condition so she was able to do her housework. However, the pain in her left side continued. It was a dull ache, occasionally sharp and referred to the ribs. For twelve years she had noticed periodic attacks of a cold cyanotic condition of the hands and feet, which apparently had no relation to the intensity of the pain in the region of the spleen, and was relieved by heat. For the last few years she has suffered from the cold. She had never had palpitation of the heart or difficulty in breathing even after exercising. Her greatest complaint, when I was first called, was the pain in the region of the spleen, which had become very severe after an unusually hard trip.

Physical Examination.—The patient was emaciated and weak, and her skin was the color of bronze. Although of a dark complexion, she had noticed her skin becoming this color for the last twelve years. The lips and the tips of the ears and nose were dusky; the sclera was pale but not discolored; the neck and heart were negative; the breath sounds were high pitched, and expiration was prolonged as in chronic bronchitis; the abdomen was flaccid and tympanitic, and there was a slight general tenderness, but no localized area; the liver was negative. A mass was felt in the left hypochondrium, extending 3 inches below the costal margin. This was notched, the edge was easily palpated, and the surface was smooth and hard and very tender. The pelvis was negative. Reflexes were present and normal. The hands and feet were cyanotic and cold, but not swollen. The temperature was normal at this examination and at all subsequent readings.

Laboratory Findings.—Blood: Hemoglobin, 90 per cent.; red cells, 5,600,000; white cells, 9,500; smear normal, except for slight paling of red cells (no plasmodium of malaria). Differential; neutrophils, 53 per cent.; acidophils, 3 per cent.; small lymphocytes, 26 per cent.; large lymphocytes, 14 per cent., and transitionals, 4 per cent. Wassermann and tuberculin reactions were negative. The sputum and urine were repeatedly negative. The high blood count proved to be due to the cyanotic condition of the finger from which the blood was taken. Subsequent counts gave a slight anemia of the secondary type with a constant increase in the large lymphocytes averaging 10 per cent.

Diagnosis, Treatment and Course.—On these findings a diagnosis of Banti's disease was made. The general condition of the patient prohibited a splenectomy, so tonics, sodium cacodylate and Roentgen-ray treatments were resorted to. After six treatments the pain and soreness were much relieved, but the patient developed a herpes zoster on that

side, and the use of the Roentgen ray was discontinued. The active herpetic lesion cleared up in ten days, but left an itching, smarting and burning pain that resisted all local treatment and finally had to be controlled by morphin for several weeks. After recovery, the patient was very weak, but complained of no pain in the spleen. In October, 1915, she went to Florida thinking the climate would benefit her. In December, she began to bloat and lose strength, and as this continued she returned here, February 4, at which time I saw her. The abdomen was markedly distended with fluid and the legs were swollen to the knees. The patient stated that she had been bloated in this manner for four weeks and that her legs had been swollen for two weeks. About the middle of January, she had had hematemesis which was followed for several days by the passing of tarry stools. Although very weak she had stood the trip well and was free from pain. The bronze discoloration of the skin had disappeared and been replaced by a yellowish tinge. The sclera, however, showed no icteric discoloration. The next day I withdrew 6 quarts of fluid from her abdomen. This fluid was of a light amber color; the specific gravity was 1.008, the albumin, 1 per cent., and it contained a few lymphocytes and endothelial cells. She passed only a few ounces of urine during the twenty-four hours, but it was still negative and remained so except for the appearance of bilirubin. The secondary anemia had increased. After the tapping, the spleen was easily felt and, though not so tender, was in the same condition as before. I withdrew about 2 gallons of fluid, February 15, and again March 3 and April 1. After the last tapping the spleen was found to be much contracted.

The patient had felt her case to be hopeless and with this apparent sign of improvement she was so much encouraged that she left her bed, ate at the table with a better appetite than she had had for many months, and sat up for several hours. Much to her disappointment ascites again developed in ten days. On the advice of another physician she was operated on, April 27, for cirrhosis of the liver, a Talma operation being done. Two and one half gallons of fluid were drained off. The liver was found to be small and hard and the spleen only slightly enlarged and surrounded by firm adhesions. The patient rallied well from the operation and progressed nicely for several days, when she died from gastro-intestinal hemorrhages.

COMMENT

The absence of any demonstrable etiology, the chronicity of the splenic pain, the pigmentation of the skin, the splenomegaly, the hematemesis, and finally the ascites with hemolytic changes, make this, I believe, a typical case of Banti's disease.

The periodic attacks of cyanosis may or may not have been part of the syndrome.

KNEE BLOCK FROM AVULSION OF BONE
FRAGMENT BY POSTERIOR CRUCIAL
LIGAMENTROSCOE R. KAHLE, PH.D., M.D., COLUMBUS, OHIO
Surgeon to Grant Hospital

History.—K., man, aged 24, athletic and muscular, referred by Dr. E. L. Harney, stepped from an express wagon down on an ice cream freezer, Sept. 15, 1915. The cracked ice on which he stepped with his right foot gave way, causing outward rotation. With the leg in abduction and the knee semiflexed, he fell to the ground. From his description of the fall it is quite impossible to determine the precise nature of the wrench which his knee received. He arose without difficulty, walked as usual for about two blocks, when his knee suddenly became locked, and he fell helpless. The examining physician found the knee partially flexed and fixed. Only slight motion in either direction could be borne. All maneuvers to cause complete extension were fruitless. A fixation splint was applied pending Roentgen examination.

Examination.—The roentgenograms revealed a fragment of bone free in the joint cavity. This had been broken ante-

riorly from the outer edge of the inner condyle of the femur. This location corresponds to the femoral attachment of the posterior crucial ligament. Our diagnosis was that, at the time of the injury, the posterior crucial ligament was brought to great tension, causing rupture at its femoral insertion. Manipulative efforts to dislodge the fragment and facilitate extension were of no avail. The surgical removal of the bone block, therefore, seemed imperative.

Operation and Result.—A large U-shaped skin flap was lifted, exposing the joint area. With a second scalpel a vertical incision along the inner margin of the patella opened the joint cavity. By the aid of retractors a fair view of the joint was secured. The small detached piece of bone, shown in the roentgenograms, was readily located and removed. A second fragment, loose but undetached, was taken away. It was observed that the foremost fibers of the ligament had been instrumental in the avulsion of the fragments. The balance of the ligament was firmly attached to the femur. The operation was completed without drainage. The leg was fully extended, and a plaster cast with a knee window was applied and left in place for about two months. The pain and swelling during convalescence were negligible.

For the past four months, Mr. K. has been walking without assistance, and he now walks without a limp. Flexion is nearly normal, and will probably be entirely so in a few more months.

COMMENT

In a very complete discussion¹ of similar, though not identical, knee injuries, Jones of Liverpool and S. Alwyn Smith of Winnipeg state that rupture of the posterior crucial ligament alone is a rare accident. Pagenstecher has reported one case treated by suture, though he does not mention any separation of bone fragments.

It is interesting to note that in most cases of complete dislocation of the knee joint, with rupture of both crucials, serviceable joints are the rule after prolonged fixation in complete extension. There is, therefore, no valid indication for primary operation to restore ruptured crucials, except when complicated by bone fragments which prevent complete extension of the joint. The most common error in management is the disposition to move the joint before sufficient time has elapsed for sound healing.

350 East State Street.

SUDDEN BLINDNESS ASSOCIATED WITH CHOKED DISK AND NASAL SINUS DISEASE

EDWARD J. BROWN, M.D., MINNEAPOLIS

Mrs. Rose H., aged 49, Russian Jewess, referred by another poor patient, came to me, Jan. 31, 1916, complaining that her left eye had become suddenly blind three weeks before, and that she had consulted several private oculists, besides going to the university clinic, without benefit. At the clinic she had been advised to have her teeth removed, and that was done two weeks before her visit to my office. The patient had suffered from pain in her head (temples) and back and had experienced more or less dizziness. There had been a lacrimal abscess fifteen years before and she still suffered from lacrimal obstruction. Otherwise the history was negative. She reported that one physician had made a urinalysis with negative result.

Vision of the right eye was normal; the left could dimly recognize a hand at a distance of 18 inches. Efforts to map out the field were unsuccessful, but the inner (nasal) field seemed to be wholly wanting. The right pupil was 3 mm. in diameter and of normal reaction, the left was 7 mm. and immobile. The retina and disk of the left eye were markedly swollen, and there was a small hemorrhage on the inferior quadrant of the disk. The patient denied having any nasal trouble, but I found a septum markedly deviated to the right, atrophy of the left inferior turbinal, and very large middle turbinal, the latter covered with crusts. She refused to have

any nasal treatment, but consented to wash the nares with alkaline solution at home. Transillumination was negative.

Five days later the woman returned. The eye condition remained as at first visit except that the left counted fingers at 5 feet. Pus was flowing freely from the left middle fossa posteriorly, as shown by the Holmes nasopharyngoscope.

The middle turbinate and the ethmoid cells were at once removed, and the woman declared that she could see better directly after the operation.

On the following day, the sixth, she could count fingers at 20 feet. I have not seen the woman since, but she reports still further improvement.

524 Syndicate Building.

Therapeutics

BLOOD PRESSURE

The study of the blood pressure has become a subject of great importance in the practice of medicine and surgery. No condition can be properly treated, no operation should be performed, and no prognosis is of value without a proper consideration of the sufficiency of the circulation, and the condition of the circulation cannot be properly estimated without an accurate estimate of the systolic and diastolic blood pressure. However perfectly the heart may act, it cannot properly circulate the blood without a normal tone of the blood vessels, both arteries and veins. Abnormal vasodilatation seriously interferes with the normal circulation, and causes venous congestion, abnormal increase in venous blood pressure, and the consequent danger of shock and death. Increased arterial tone or tonicity necessitates greater cardiac effort, to overcome the resistance, and hypertrophy of the heart must follow. This hypertrophy always occurs if the peripheral resistance is not suddenly too great or too rapidly acquired. In other words, if the peripheral resistance gradually increases, the left ventricle hypertrophies, and remains for a long time sufficient. If, from disease or disturbance in the lungs, the resistance in the pulmonary circulation is increased, the right ventricle hypertrophies to overcome it, and the circulation is sufficient as long as this ventricle is able to do the work. If either this pulmonary increased pressure or the systemic increased pressure persists or becomes too great, it is only a question of how many months, in the case of the right ventricle, and how many years, in the case of the left ventricle, the heart can stand the strain.

If the cause of the increased systemic tension is an arterial fibrosis, sooner or later the heart will become involved in this general condition, and a chronic myocarditis is likely to result. If, on the other hand, there is a continuous low systemic arterial blood pressure, the circulation is always more or less insufficient, nutrition is always imperfect, and the physical ability of the individual is below par. It is evident, therefore, that an abnormally high blood pressure is of serious import, its cause must be studied, and effort must be made to remove as far as possible the cause. On the other hand, a persistently low blood pressure may be of serious import, and always diminishes physical ability. If possible, the cause should be determined, and the condition improved.

No physician can now properly practice medicine without having a reliable apparatus for determining the blood pressure both in his office and at the bedside. It is not necessary to discuss here the various kinds

1. Jones, Robert, and Smith, S. A.: Brit. Jour. Surg., July, 1913.

of apparatus or what is essential in an apparatus for it to give a perfect reading. It may be stated that in determining the systolic and diastolic pressure in the peripheral arteries, the ordinary stethoscope is as efficient as any more elaborate auscultatory apparatus.

It is now generally agreed by all scientific clinicians that it is as essential—almost more essential—to determine the diastolic pressure as the systolic pressure; therefore the auscultatory method is the simplest, as well as one of the most accurate in determining these pressures. Of course it should be recognized that the systolic pressure thus obtained will generally be some millimeters above that obtained with the finger, perhaps the average being equivalent to about 5 mm. of mercury. The diastolic pressure will often range from 10 to 15 mm. below the reading obtained by other methods. Therefore, wider range of pressure is obtained by the auscultatory method than by other methods. This difference of 5 or more millimeters of systolic pressure between the auscultatory and the palpatory readings should be remembered when one is consulting books or articles printed more than two years ago, as many of these pressures were determined by the palpatory method.

Sometimes the compression of the arm by the armlet leads to a rise in blood pressure.¹ It has been suggested that the diastolic pressure be taken at the point where the sound is first heard on gradually raising the pressure in the armlet.

In some persons the auscultatory readings cannot be made, or are very unsatisfactory, and it becomes necessary to use the palpation method in taking the systolic pressure. In instances in which the auscultatory method is unsatisfactory, the artery below the bend of the elbow at which the reading is generally taken may be misplaced, or there may be an unusual amount of fat and muscle between the artery and the skin.

The various sounds heard with the stethoscope, when the pressure is gradually lowered, have been divided into phases. The first phase begins with the first audible sound, which is the proper point at which to read the systolic pressure. The first phase is generally, not always, succeeded by a second phase in which there is a murmurish sound. The third phase is that at which the maximum sharp, ringing note begins, and throughout this phase the sound is sharp and intense, gradually increasing, and then gradually diminishing to the fourth phase, where the sound suddenly becomes a duller tone. The fourth phase lasts until what is termed the fifth phase, or that at which all sound has disappeared. As previously stated, the diastolic pressure may be read at the beginning of the fourth phase, or at the end of the fourth phase, that is, the beginning of the fifth; but the difference is from 3 to 10 mm. of mercury, with an average of perhaps 5 mm.; therefore the difference is not very great. When the diastolic pressure is high, for relative subsequent readings, it is much better to read the diastolic at the beginning of the fifth phase.

It is urged by many observers that the proper reading of the diastolic pressure is always at the beginning of the fourth phase. However, for general use, unless one is particularly expert, it is better to read the diastolic pressure at the beginning of the fifth phase. There can rarely be a doubt in the mind of the person who is auscultating as to the point at which all sound ceases. There is frequently a good deal of doubt, even

after large experience, as to just the moment at which the fourth phase begins. With the understanding that the difference is only a few millimeters, which is of very little importance, when the diastolic pressure is below 95, it seems advisable to urge the reading of the diastolic pressure at the beginning of the fifth phase.

The incident of the first phase, or when sound begins, is caused by the sudden distention of the blood vessel below the point of compression by the armlet. In other words, the armlet pressure has at this point been overcome. Young² believes that the murmurs of the second phase, which in all normal conditions are heard during the 20 mm. drop below the point at which the systolic pressure had been read, is "due to whirlpool eddies produced at the point of constriction of the blood vessel by the cuff of the instrument." The third phase is when these murmurs cease and the sound resembles the first, lasting he thinks for only 5 mm. The third phase often lasts much longer. He thinks the fourth phase, when the sound becomes dull, lasts for about 6 mm.

(To be continued)

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLE HAS BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. ITS ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

STANDARD RADIUM SOLUTION FOR DRINKING (1 microgram Ra).—A solution containing radium chloride equivalent to 1 microgram of radium (Ra) and 1.3 mg. of barium chloride per bottle of 60 Cc.

Actions and Uses.—See Radium (N. N. R., 1916, p. 266). In view of the small barium content, it is claimed that the physiologic action of barium may be ignored.

Dosage.—See Radium (N. N. R., 1916, p. 267). Contents of one bottle after each meal.

Manufactured by the Standard Chemical Co., Pittsburgh, Pa. (The Radium Chemical Co., Pittsburgh, Pa.). No U. S. patents or trademarks.

One Gm. of crystallized barium chloride is added to 40 liters of distilled water and the solution allowed to stand for a day; then 800 micrograms of radium element in the form of a solution of 60 per cent. pure radium chloride is added, together with 40 Cc. of normal hydrochloric acid. This solution, after analysis by the emanation method to confirm its radium content, is then delivered into the bottles by means of an automatic pipet delivering 50 Cc. of the solution, which contains, as stated, 1.3 mg. of barium chloride and 1 microgram of radium element. The bottles are then filled almost full to the stopper with distilled water.

The amount of radium may be determined by the "emanation method" of Rutherford and Boltwood as described in Rutherford's "Radioactive Substances and Their Radiations," Cambridge, 1913, p. 659.

2. Young: Indiana State Med. Assn. Jour., March, 1914.

Fuel Requirement.—About 2,500 calories are required in the daily food of man whose occupation is of sedentary character. As a matter of fact, statistics show that the inhabitants of cities take this amount of fuel daily. The latest statistical proof that the food supply of a great city is regulated by the needs of its inhabitants may be found in the report of Gautier which shows that in Paris an average of 2,500 calories of energy are daily supplied to each inhabitant.—Lusk, The Fundamental Basis of Nutrition.

1. MacWilliams and Melvin: Brit. Med. Jour., Nov. 7, 1914.

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SATURDAY, JULY 1, 1916

METABOLISM IN PREGNANCY

The metabolism of pregnancy has received comparatively little study, particularly in the human species, for which the opportunities of suitable investigation are not always easily procurable under circumstances that make scientific observations entirely satisfactory. The few researches of importance which are on record and commonly quoted by writers on the subject are almost entirely confined to the latter part of the period of gestation, usually just prior to parturition. Experimental studies which have been conducted on animals during the earlier periods of pregnancy have indicated in several instances that there may be a negative nitrogen balance—an apparent loss of protein to the organism at that time. Thus Hagemann¹ concluded that the formation of the fetus occasions a loss of protein from the mother's body, even when there is an abundance of nourishment. This suggestion that the development of the fetus is accompanied by the destruction of maternal protoplasm has led Ver Ecke² to make the somewhat dramatic statement that gestation constitutes a sacrifice of the individual for the good of the species. In this sense the embryo might seem a parasite preying on the maternal protein.

Several years ago Murlin³ of the Cornell University Medical College in New York City, to whom we owe excellent studies of metabolism in pregnancy, summarized the findings up to that time. With respect to the first half of this period of fetal development, he said, the weight of evidence, from observations on animals, is that a period of diminished retention or of minus nitrogen balance is likely to occur at about the stage which corresponds to the period of morning sickness of women. With respect to the second half of the period of pregnancy there has been perfect agreement that more nitrogen is regularly ingested than is excreted, provided a sufficient supply of protein and potential energy is available in the diet.

Until recently no one has attempted to follow extensively the nitrogen balance in pregnant women earlier than the sixteenth week. This paucity of information lends special value to the studies lately reported from the obstetric clinic of the Johns Hopkins Hospital by Wilson.⁴ One case in his records, in which the period of estimation of the nitrogenous metabolism probably extended from the tenth to the fourteenth week of pregnancy, is believed to represent the earliest pregnancy on which such experiments have been carried out in women for any extended period of time. In this person, storage of nitrogen, rather than the expected loss, was found to be taking place from the time the observations were begun until their close. The actual gain amounted to 60 gm. of nitrogen in these four weeks. Additional observations, old and new, show further that storage of nitrogen in the healthy woman who goes through a normal pregnancy continues through the entire duration of the intra-uterine development, being most marked during the last few weeks, when the fetal needs are at a maximum.

Wilson suggests that in the pregnant woman storage of nitrogenous products begins at a much earlier period than has hitherto been supposed; possibly the organism may acquire the capacity for storing nitrogen from the very beginning of pregnancy. During the tenth to fourteenth weeks of pregnancy, regarding which the new facts are now available to indicate a retention of several grams of nitrogen per day, the daily need of the developing ovum must be extremely small. The total nitrogen content of the entire ovum is estimated not to exceed 3 gm. at this period. Accordingly it is reasonable to assume, with Wilson, that most of the nitrogen stored must have been added to the general maternal organism in some form, possibly to be drawn on later by the developing tissues when the need becomes greater. It is not unlikely that a portion, at least, is utilized in the growth and hypertrophy of the uterus and the breasts. The uterus increases in size up to 800 or 1,000 gm., and may represent nearly 40 gm. of nitrogen. An enlargement of the breasts amounting to 500 gm. would account for 17 gm. of nitrogen. Even the sum of these, 57 gm., will not account for the utilization of the far larger total gains of nitrogen reported during pregnancy.

Evidently, then, the "nitrogen capital" of the maternal organism is increased during pregnancy. The reserve may become exhausted during the puerperium and the period of lactation. Of course, nausea, vomiting and gastro-intestinal disturbances so frequently noted in early pregnancy at once restrict the food intake and produce a different story in the metabolic balance. But Wilson remarks that in the experience of his clinic at least half of the patients go through the entire period of pregnancy without any of these

1. Hagemann: *Arch. f. Anat. u. Physiol.*, 1890, 577; *Inaug. Diss.*, Erlangen, 1891.

2. Ver Ecke, A.: *Les échanges matériels dans leur rapports avec les phases de la vie sexuelle*, *Mém. couronnés de l'Acad. roy. de Belgique*, 1901, xv, No. 7.

3. Murlin, J. R.: *Metabolism of Development*, II, *Am. Jour. Physiol.*, 1910, xxvii, 177.

4. Wilson, K. M.: *Nitrogen Metabolism During Pregnancy*, *Bull. Johns Hopkins Hosp.*, 1916, xxvii, 121.

disagreeable symptoms. The question therefore arises whether women suffering from such disturbances are to be regarded as perfectly normal. At any rate it has become unlikely that normal pregnancy represents a real sacrifice of the old individual for the new. Perhaps it is an instance, as it has been called, of "homogeneous and harmonious symbiosis" which is "not an occasion of loss but of profit to the maternal organism as well as to the embryo."³

CAVEAT VENDOR!—THE NEW CONSCIENCE

The Supreme Court of the United States has recently handed down a decision that is of more than ordinary significance to those who are interested in truth and decency in advertising. In effect, the court has held that an advertiser may be guilty of fraud if, through misrepresentation, he leads a purchaser to invest in his goods, even though the goods advertised are worth the money asked for them. A real-estate company had used the United States mails to advertise some Florida land for sale. The company was indicted for using the mails to defraud on the ground that false representations had been made concerning the land. It was not denied, in the indictment, "that the land was worth fully as much as was to be obtained therefor." The lower court, before which the case was tried, held that the business was legitimate on the ground that it was not an offense against the statute to raise the expectations of a purchaser, even if those expectations were not fulfilled, provided the purchaser was given value received for his money.

The United States Supreme Court, however, with that greater breadth of vision for which our greatest tribunal has distinguished itself, took a more human and equitable view of the matter. Justice McKenna, who wrote the opinion, declared: "An article alone is not necessarily the inducement and compensation for its purchase. It is in the use to which it may be put, the purpose it may serve; and there is deception and fraud when the article is not of the character or kind represented and hence does not serve the purpose." It was pointed out in the decision that a number of the representations made by the real-estate company, such as the alleged fertility of the soil, the kind of roads, the presence of hotels, the alleged excellence of transportation facilities, etc., if they were false, would be in effect a scheme to defraud by leading persons to purchase the land who would otherwise not have done so.

The extension of this principle to other phases of advertising suggests many interesting questions. It would mean, for instance, that a concern which advertised a "female remedy" to cure "falling of the womb" would be guilty of fraud, if the preparation would not produce this result, even though the product might be a meritorious one as a remedy for functional dysmenorrhea. It would mean that a man who sold a mixture

as a cure for consumption, which was powerless to produce such results, would be a swindler, even though his preparation might have some virtue as a cough medicine. It would mean that a product which might be efficacious as a wart-remover could not be sold as a "cancer cure" without subjecting the seller to the charge of defrauding and swindling the sick. In short, the decision means that the great purchasing public shall be given a fairer and squarer deal than it has been in the habit of getting. It means the substitution for the old Manchester doctrine of *Caveat emptor!* the more enlightened principle, *Caveat vendor!* And, surely, in no place is such a change in our economic ethics more necessary than in the sale of preparations for the relief or mitigation of disease.

STATE RIGHTS, STATE DUTIES, AND THE HARRISON NARCOTIC LAW

The decision of the United States Supreme Court in the case of *United States v. Jin Fuey Moy*, decided, June 5, and referred to in previous issues,¹ is a reminder that the states still have important duties to perform with respect to the sale of opium, cocaine and other habit-forming drugs. The Harrison Narcotic Law may be assumed, according to the decision, to have a moral end in view as well as the collection of revenue, but the moral end must be reached through the law only as a revenue measure and within its limits as such. Any other construction would cast grave doubts on the constitutionality of the law. The possession of morphin by a person addicted to its use but not belonging to any of the classes required to register under the law is not forbidden by the law. Therefore, a physician who prescribes such a drug, not in good faith for medicinal purposes but merely for the purpose of putting it into the possession of a person addicted to its use in order that he may gratify his cravings, is not guilty of conspiring to commit an offense against the United States.

If we except the dangerous immunity which Congress has given through the sixth section of the Harrison Narcotic Law to the sale of proprietary nostrums containing opium, morphin, heroin and codein in more or less dilute forms, the federal government has now done and is doing its full duty with respect to the suppression of drug habits, so far as the drugs named in that law are concerned. In pursuance of treaty obligations which the United States not only voluntarily assumed but actually sought out and induced other nations to assume, three statutes have been enacted and are now being enforced, and these seem practically to have exhausted the federal authority under its right to regulate foreign and interstate com-

1. Antinarcotic Law Construed, General News, THE JOURNAL A. M. A., June 17, 1916, p. 1933. A New Decision Under the Harrison Act, Current Comment, June 24, 1916, p. 2073.

merce and to levy taxes. But where the power of the federal government leaves off, the power of the state begins; and if the federal government cannot make the possession of opium, morphin, cocain and other forbidden drugs presumptive evidence of possession for an unlawful purpose, unless it can show that the person in possession is required to register and to pay a federal tax, it is quite within the power of the state to enact such legislation as the situation calls for and the public welfare demands. As a matter of fact, too, if the defendant in the case just determined, or in any other similar case, did conspire as alleged with persons addicted to the use of morphin so as to put that drug into their possession, and did issue written prescriptions for the drug, merely to satisfy the cravings of the victims of the drug habit, it would clearly appear that an offense was committed against the welfare of the community in which the act was done much more serious than the mere infraction of a revenue law of the United States. And the state in which the offense was committed should hardly abandon its right of self-defense and rely for protection on the treaty-making power of the United States, or on the right of the federal government to regulate foreign and interstate commerce and to levy taxes, but should defend itself through its own police power, enacting its own laws and providing its own machinery for their enforcement.

The state can no longer plead as an excuse for inaction on its part that state laws and regulations are ineffective because of the possibility of obtaining any desired drug through foreign or interstate commerce without state interference, for the federal statutes now regulate such traffic in a reasonably effective manner, and need only active state cooperation to accomplish much more. The Harrison Narcotic Law itself recognizes the necessity of state action, and was framed with state cooperation in view. Duplicate order forms and prescriptions for habit-forming drugs required by the federal law to be preserved and statements to be filed in the offices of collectors of internal revenue are all by law open to inspection by the state and municipal officials who are charged by law with the enforcement of laws and regulations governing the distribution of the drugs named in the federal act, and certified lists of all persons registered in any collection district can be obtained by such officers on the payment of nominal fees. All of the drugs under regulation that come into any state or city can therefore be easily located and traced by the state and municipal officers, and where the federal law fails and must necessarily fail because of constitutional limitations, state and municipal laws and ordinances can and should be applied. If the decision of the Supreme Court in the case of *United States v. Jin Fuey Moy* impels states and cities to action in this respect, it will have served a most useful purpose.

SOLDIER'S HEART

To the occupational diseases such as aviator's disease, trench frostbite and trench nephritis¹ associated with the vicissitudes of war, there is added a form of heart trouble to which soldiers are particularly liable, and which has gone under the name of "soldier's heart" or the "irritable heart of soldiers." It is not a new phenomenon, for it appears to have been recognized by American physicians during and after our own Civil War. Sir James Mackenzie and others² have described what they regard as a definite clinical picture, sharply defined and differentiated. The cardinal symptoms are a sense of exhaustion, breathlessness on slight exertion, a rapid pulse which becomes more rapid on the slightest attempt at action, pain over the precordial region or along the left costal margin, and a vasomotor condition of greater or less stability. Sometimes nervous symptoms and high blood pressure are added to these. Murmurs, systolic in time and heard in different regions, are frequent, while a slight increase in the size of the heart is not uncommon. Periods of depression are not unusual, and the patients invalided home are often very irritable.

In 1864, during the Civil War, Hartshorne³ published comparable descriptions of this condition, in which he emphasized the rapidity of the pulse, the acceleration of the heart's movement on the slightest exertion, the shortness of breath, and the cardiac weakness. In explanation of the genesis of these symptoms, the prevalence of tight accouterments and overexertion, particularly in the form of setting-up drills, were early suggested. The change in accouterment has failed to effect any improvement, and the discontinuance of the particular drills formerly complained of has not put an end to the condition. The theorists, therefore, are bankrupt; the disease still remains—these are the words with which one student of the subject has expressed the existing situation.

The salient features in the condition known as soldier's heart are not uncommon in civil life. They are observed in persons recovering from exhausting illness, such as typhoid fever or influenza, or after a severe surgical operation. They are seen in persons who have suffered a long mental and physical strain, particularly with insufficient sleep. All of the soldiers give an account of a very strenuous life with attendant exhaustion. Sir James Mackenzie contends that most of them give a history which can also safely be surmised to involve an infection. According to him the condition is not, properly speaking, cardiac in origin, but is the outcome of an injury to other systems, such as the central nervous system, as well as the heart. Mackenzie in particular is inclined on purely clinical

1. Trench Nephritis, editorial, *THE JOURNAL A. M. A.*, June 24, 1916, p. 2070.

2. Discussion on the Soldier's Heart, opened by Sir James Mackenzie: *Proc. Roy. Soc. Med.*, London, 1916, ix, Therapeutical and Pharmacological Section, p. 27.

3. Hartshorne, H.: *Am. Jour. Med. Sc.*, 1864, xlviii, 89.

grounds to attribute the majority of the cases to bacterial and toxic influences; at any rate he believes that toxic products, whatever their origin, produce changes in the economy—in the blood, the nervous system, and the heart muscle—resulting in an impairment of these structures.

Other English physicians who have had an opportunity to study many cases prefer to preserve a more open mind as to etiology. All agree, however, that a psychic factor calls for corresponding treatment. A cheerful atmosphere confers benefit, whereas a depressing environment exaggerates the condition. The psychic condition must be treated before recovery can be expected. For this purpose the hospital with pleasant surroundings and suitable opportunities for moderate exercise seems to be the most promising device for the management of the disorder. Despite the demonstrated value of mental change, the prognosis is very uncertain, for, in the opinion of many of the army physicians, in a large number of cases the heart is permanently damaged.

All kinds of trying experiences such as a soldier's life in warfare must be exposed to inevitably puts strains on the heart. As Mackenzie has expressed it, this strain invariably finds out the impaired hearts, whether or not the impairment gives rise to physical signs of lesion. But the typical "soldier's heart" is a different entity. The heart abnormalities are only a feature, though a prominent one, in a general condition in which general exhaustion and a sense of its existence are the dominating characteristics. Doubtless both the nervous and muscular systems are involved.

QUARTERLY CUMULATIVE INDEX TO CURRENT MEDICAL LITERATURE

With the increasing amount of medical literature it has become more difficult, yet more necessary, for physicians to keep abreast of medical progress. At present there is no index which makes current medical literature accessible under a single alphabetical arrangement. The index¹ which has been issued each six months with THE JOURNAL is good so far as it goes, but it is not as inclusive as many desire, and the arrangement is not altogether satisfactory, since a reference to THE JOURNAL is necessary.

There are at the present time two other indexes to medical literature, one, the *Index Medicus*, published by the Carnegie Institution of Washington, D. C. It is so elaborate and so inclusive that it is of practical value to few but research workers. It is never up to date; the last references available in it are for 1914,

unless each individual issue is consulted. The index to the 1915 volume is not yet out; the index to each volume is usually issued about August of the following year. Even with the index one must turn to the body of the book to find a reference, thus making it necessary to look in two places. The other index is the *Index Catalogue of the Library of the Surgeon-General's Office, U. S. Army*. This is a most valuable reference work, but its method of issuance is such that it cannot represent *current* literature. The letter A of the present series was published in 1896, and B in 1897. It has now reached W, which letter is not complete. Matter under the last initial is more or less up to date, but the literature under the previous initials is out of date and valuable only for research purposes. As a matter of fact, the existing indexes leave much to be desired.

It has been decided to issue an index on what is known as the "cumulative plan" which, while new in medical indexing, is not new in the indexing of general literature. In the cumulative plan each issue includes all that has appeared in previous issues of the year, the final issue being an index to the literature of the past twelve months.

The *Quarterly Cumulative Index to Current Medical Literature*² will be issued the middle of April, July, October and January. The April issue, already out, indexes the journals received during January, February and March; the July issue will contain in one alphabetical sequence all that appeared in the April issue, with the addition of references to journals received during April, May and June. Thus the July issue will supersede the April issue, and similarly the October issue will supersede the July issue. Each quarterly issue will contain a complete index of the literature of the year up to the first day of the month of issue. The January issue will be a complete index to the literature of the preceding year, and will be bound in cloth for permanent preservation.

POSTGRADUATE WORK AT HOME

Many physicians, for financial reasons, or from the nature of their practice or location, find it impossible to leave their homes to take postgraduate work. Many of these would be glad to add to their knowledge of modern diagnostic methods and to improve their skill if such instruction could be made accessible to them.

Efforts to meet this need are now being made in several states. The Medical Society of the State of Pennsylvania, so far as we know, was the first state association to establish graduate instruction in county societies. Many physicians well qualified as teachers were found who were willing to conduct clinics and discuss medical topics before county societies if their

1. Hereafter the index published in THE JOURNAL at the conclusion of each volume will contain references only to material in THE JOURNAL, including abstracts of articles in the Current Medical Literature department, but not references to titles. The index to THE JOURNAL will be more complete in that each subject entry will be followed by the name of the author in brackets, and in the author index each name will be followed by a brief clue to the subject of the article. The Guide to Current Medical Literature will be discontinued with the present issue.

2. See advertising pages 10 and 11 of this issue.

traveling expenses were paid. This plan was quite successful for a number of years, and that success would doubtless have been continued if adequate supervision of it had been maintained by the state society.

Another plan was adopted about two years ago by the Committee on Post-Graduate Instruction of the Medical and Chirurgical Faculty of Maryland. Among the younger faculty members in the local medical schools, a number of men well qualified to give graduate instruction were found who could be spared from their duties at certain periods of the year. The offer was made to send one or two of these men to give courses of lectures and clinics to county societies desiring them, the only charge made being for traveling expenses. Last year the plan was tried at Hagerstown, and so much interest was aroused that this year the state committee expects to establish ten or twelve such courses. This year it is planned also to have the teachers make use of afternoon hours by giving individual instruction in diagnostic methods, auscultation, percussion and similar subjects.

In Michigan during the past year the development of a public health measure has resulted in bringing graduate medical instruction to the local physicians. The state board of health established clinics throughout the state for the examination of patients suspected of having tuberculosis. Specially qualified clinicians have been selected by the board to have these clinics in charge, who, in addition to examining the patients and instructing them how to live, demonstrate to local physicians the later and more efficient methods of examination and diagnosis. In Ohio the Committee on Medical Education of the state medical association has adopted a plan somewhat similar to the one in Maryland whereby teachers from the local medical schools have consented to give lectures and demonstrations on special subjects to physicians in the small cities and towns of that state.

Another plan explained in greater detail on another page¹ is being tried in North Carolina by the state board of health and the state university. A Boston physician has been engaged to make a weekly circuit of six cities in the eastern part of North Carolina for seventeen weeks and to give a series of clinical lectures and demonstrations. A Chicago physician is conducting a similar class in the western part of the state. Classes have been arranged in these cities, and fees are charged sufficient to pay the traveling expenses and to provide a nominal remuneration for the instructor. The courses are on diseases of children, in connection with which, it is stated, special attention is to be given to the latest methods of infant feeding and laboratory methods of diagnosis. If these courses are successful, classes in other subjects will doubtless be established not only in North Carolina but in other states also.

By these several schemes, therefore, a field of endeavor has been opened which is worthy of being widely extended. In this way physicians who otherwise cannot secure graduate instruction will be enabled to do so, and thus render better service to their patients.

Current Comment

THE ARMY MEDICAL SERVICE AS A CAREER: AN OPPORTUNITY

The glamor of military preparedness from a national point of view should not be allowed to obscure the fact that from the standpoint of the individual there has never been so good an opportunity as at present for the physician who desires to enter as a career the medical corps of the army. For competent men, there is the certainty of immediate appointment, and the chances of rapid promotion are all that any reasonable person could wish. Through the operation of the recently enacted army reorganization law there are now more than 100 vacancies to be filled; and as the annual increases for which the law provides are made from year to year within the next five years, the men now appointed, if they have proved their fitness for the service, will be rapidly advanced to higher grades. If the president, without waiting for the expiration of the stated annual periods fixed by the act, should exercise the right given him in event of actual or threatened war or similar emergency to organize the entire increase authorized by the law, or any part thereof, that he might deem necessary in addition to the one fifth that he is required to organize annually, appointments in the near future will be even more numerous and promotions more rapid. Of course the tenseness of our international relations and a natural spirit of resentment for the unprovoked destruction of American lives tend just now to drive every man possessed of any good red blood toward the military arm of our government, and a physician inclines naturally toward service in the medical corps. But leaving all that aside and looking on the service as offering a career in time of peace as well as in time of war or threatened war, it will be found to invite as do few other fields of medical endeavor. It offers a more than fair living wage, under most congenial conditions, a wage and condition that are certainly superior to those pertaining to the average medical practice. To the physician of a scientific turn, its opportunity for rational practice along strictly scientific lines presents an almost irresistible appeal. Opportunities for study and research in favorable environments are numerous, and officers are encouraged to avail themselves of them. The sacrifice of personal liberty of action which the officer must make for the efficient operation of the service is hardly any greater, if as great, as the surrender of his own independence that all successful practitioners, and many unsuccessful ones, make to the whims and caprices of their patients. While the foregoing applies to the army, it must not be forgotten that the navy also offers opportunity to physicians, but of different

1. Graduate Medical Classes in North Carolina, THE JOURNAL A. M. A., this issue, p. 66.

kind. Applicants who successfully pass examinations attend the course of instruction at the Naval Medical School, during which time they receive a substantial salary. At the end of this course, if successful, they are commissioned as assistant surgeons in the navy. A review of recent advances in medical science — particularly in the field of hygiene — indicates that many of the most significant discoveries have been the result of research conducted by officers of the U. S. Army and Navy Medical Corps. The work is not, as many imagine, a dry routine. Exceptional opportunity is offered for independent observation and research. The man of an investigative turn of mind need not be lost as a mere unit in a government bureau, but may express his personality and receive the reward of his personal endeavor.¹

TECHNICALLY GUILTY—MORALLY JUSTIFIED

A little after 10 p. m., Thursday, June 22, and after being out nearly a week, the jury in the Wine of Cardui case brought in a verdict for the plaintiff and assessed the damages at 1 cent. The Chattanooga Medicine Company charged the American Medical Association with having libeled it when *THE JOURNAL* declared, among other things, that the business had been built on deceit, and that Wine of Cardui was a vicious fraud. For this alleged libel it asked that it be given \$100,000.00; it was given \$0.01. As most of our readers remember, two suits were originally brought against the Association and the Editor of *THE JOURNAL*. One was a personal suit for \$200,000, brought by John A. Patten, formerly chief owner of the Chattanooga Medicine Company; the other was a partnership suit for \$100,000 brought by John A. Patten and his brother, Z. C. Patten, Jr., doing business as the Chattanooga Medicine Company. The suits were based on two articles that appeared in *THE JOURNAL*, April 11, 1914, and July 18, 1914, respectively. The cases came to trial March 21, 1916. On April 26, in the middle of the trial, John A. Patten died, and the personal suit was automatically abated. The partnership suit, however, was continued and this case went to the jury Friday, June 16. The case is by far the most important of its kind that has ever been tried. In addition to 498 depositions which the "patent medicine" concern took through the South from women and from doctors of a certain type, the company also put 97 witnesses on the stand to testify in its behalf. The American Medical Association took only 8 depositions but did put on the stand 93 witnesses, among whom were some of the best known physicians in the country. The trial and the facts that led up to it could furnish texts for many interesting comments. The spectacle of a scientific organization, in its attempt to safeguard the public health, having to assume responsibilities that rightly belong to state or federal

agencies, is but one of several anomalies that characterize this case. Viewing all the facts in the case and remembering the heavy damages asked by the plaintiff, the medical profession may interpret the verdict thus: Technically guilty; morally justified! To the Association a moral triumph; to the "patent medicine" interests a Pyrrhic victory.

AN INCIDENT IN THE WINE OF CARDUI CASE

Several physicians from the South have testified as witnesses for the American Medical Association in the Wine of Cardui case. In many instances, necessarily, the evidence dealt with the case-histories of certain patients. In order to protect these patients from any publicity, the physicians who testified specially requested that the names of the patients need not be given in open court. To this the Court agreed, holding that the names should be given in confidence to the lawyers for the manufacturers of Wine of Cardui. Soon after some of these Southern physicians reached home they reported that statements had been made by strangers to some of these women and their relatives that their names had been made public and serious reflections had been made upon their reputations in court. The natural result of these statements, by whomsoever circulated, has been to create local prejudice against the physicians who testified. Some of these physicians declare that they have been in danger of bodily violence and have been put in a false and unenviable light in their communities. The Court, on having this matter brought to his attention, made a statement¹ relative to it which becomes part of the record of the case.

FOURTH OF JULY ANTICIPATION

Before our next issue another Fourth of July will have passed. How will it be celebrated? Has the Mexican crisis created a deeper and more sincere patriotism than that usually shown by the din and destruction from fireworks? Will there be a retrogression in the methods of celebration, or are the saner methods to prevail? Will the result of the celebration this year show a continuation of the more rational methods of the last two or three years? We hope that it will. Last year the injuries numbered 1,165, including deaths, only one of which was from lockjaw. This was in marked contrast to conditions in 1903, when there were 4,449 injured, including 466 killed, with 406 deaths from lockjaw. It is too much to hope that the old method of celebration has been entirely uprooted; some injuries from the use of fireworks next Tuesday are bound to occur. It is worth while, therefore, to repeat the suggestions printed in previous years for prophylaxis against tetanus and for the treatment of Fourth of July injuries:

1. Carefully and thoroughly remove every particle of foreign matter from the wound, laying it open; an anesthetic should be given if necessary.

2. Dry the wound thoroughly, and paint it and the surrounding parts as carefully as possible with iodine, or else cauterize it thoroughly with a 25 per cent. solution of phenol (carbolic acid) in glycerin or alcohol.

1. Preliminary examinations for appointments to the Army Medical Service will be held July 17 and August 14. Information as to details can be obtained by addressing the Surgeon-General of the Army, Washington, D. C. The next examination for appointments in the medical corps of the navy will be held August 7 at several different places. Full information regarding the physical and professional examinations, with instructions as to the proper method of submitting formal application, may be obtained by addressing the Surgeon-General of the Navy, Navy Department, Washington, D. C.

1. See pag. 51.

3. Apply a loose wet pack, using a solution of some such antiseptic substance as boric acid or alcohol.

4. As soon as possible inject intravenously or subcutaneously 1,500 units of antitetanic serum and continue the injections if indications of possible tetanus arise.

5. In no case close the wound. Allow it to heal by granulation. Remove the dressings and packing each day and apply fresh ones.

PREPAREDNESS

If war comes—and certainly it does not seem far off—physicians of the United States will be called on in far greater numbers than can be secured from the regular army, the militia, and the medical reserve corps. In England, France, Germany, and in other warring European nations, the war was but a few weeks old when an appeal went out to civilian physicians. In all countries the response was as hearty and complete as might be expected from members of the medical profession. While it seems improbable that such an urgency will develop in this country, nevertheless it may. The government may rest assured that when needed members of our profession will be ready. Physicians who feel that they will respond should inform themselves as to the duties that will devolve on them. During the last few years THE JOURNAL has published many articles on military medicine. These may be found by a reference to the index numbers of THE JOURNAL. A few months ago THE JOURNAL published¹ a series of articles which will be found helpful.

QUO WARRANTO PROCEEDINGS AGAINST THE ASSOCIATION

On June 27 the state's attorney of Cook County, Illinois, acting under mandamus issued by the courts, commenced *quo warranto* proceedings against the American Medical Association and its trustees. The action concerns the right, under the Illinois law, of a "corporation not for profit" to elect its officers at meetings held outside of the state of Illinois, and to hold such elections through delegates instead of by a vote of the individual members. As our readers know, this matter has been in the courts some five and one-half years. But the various procedures have been so wrapped up in legal technicalities that it is impossible to make a clear statement without taking too much space. Suffice it to say that this action brings the American Medical Association into the case for the first time. As this suit was entered just as we go to press and the papers have not yet been served, a further statement cannot be made at this time. It should be added that the question at issue is one that concerns all societies and organizations chartered under that part of the Illinois law which provides for "corporations not for profit."

1. A pamphlet entitled "What the Civilian Doctor Called to Active Service Should Know," reprinted from THE JOURNAL, Feb. 5, 12 and 19, 1915, will be sent on receipt of a request accompanied by a two-cent stamp.

Preparation for Writing.—When a man writes from his own mind, he writes very rapidly. The greater part of a writer's time is spent in reading in order to write; a man will turn over half a library to make one book.—Samuel Johnson.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

New Hospital Building.—Leland Stanford Junior University is planning to erect a new hospital during the present summer at a cost of \$500,000.

New Medical Scholarship.—Another scholarship, amounting to \$400 per annum, to be known as the William Watt Kerr scholarship, has been established at the University of California by the medical alumni of that institution.

To Wipe Out Hookworm.—The state board of health announces that it will hereafter issue hookworm certificates to all miners examined whether free, cured or suffering. It is said that 50 per cent. of the men working in the mines in California are infected with the disease.

Alumni Election.—At the annual meeting of the Alumni Association of the College of Physicians and Surgeons of San Francisco, May 31, the following officers were elected: president, Dr. Frederick C. Keck; vice presidents, Drs. Will P. Schwarz and Gabriel J. Vischi; secretary, Dr. Charles M. Troppmann, and treasurer, Dr. Philip S. Haley.

ILLINOIS

Medical Aid for University Students.—Northwestern University will provide daily consultation and free treatment for its students. Dr. Virgil E. Dudman has been appointed health officer.

Banquet for New State President.—Dr. Elmer B. Cooley, Danville, president-elect of the Illinois State Medical Society, was the guest of honor at a banquet given by the Vermilion County Medical Society at the Plaza Hotel, Danville, June 19.

Picnic and Medical Meeting.—Physicians of the state are invited to attend the three-day picnic of the Illinois State Medical Society at Starved Rock, Ill., July 12 to 14, as guests of the doctors of northern Illinois. The committee in charge has provided excellent entertainment, including an address by Dr. William Seaman Bainbridge, New York; outdoor sports, hikes, river excursions and a visit to the Ottawa Tuberculosis colony.

Chicago

Women Doctors Elect.—At the annual meeting of the Medical Women's Club of Chicago, June 21, Dr. Clara Ferguson was elected president; Drs. Lillian E. Taylor and Marie S. Schmidt, vice presidents; Dr. Rachel A. Watkins, secretary; Dr. Ione F. Beem, treasurer, and Dr. Sadie Bay Adair, editor of the bulletin.

Baby Week.—Baby Week, conducted under the auspices of the health department, ended June 23, and during the week more than 300 addresses were delivered to children in public schools and many talks were made from automobiles to street corner crowds. The 200 physicians and 100 nurses who took part in this work traversed the entire city preaching the gospel of the proper care of babies and distributing the health department's book on this subject.

Annual Meeting of Chicago Medical Society.—At the annual election of the Chicago Medical Society, June 20, the following officers were elected: president-elect, Dr. Charles E. Humiston; president, Dr. A. Augustus O'Neill, and secretary, Dr. John V. Fowler. On the following evening these officers were installed at a reception given in the Auditorium Hotel, at which Dr. Elmer B. Cooley, Danville, the president-elect of the Illinois State Medical Society, was the guest of honor. The reception was followed by a banquet and dance.

Memorial to Distinguished Sanitarian.—A memorial service to the late Dr. Frank W. Reilly, for many years assistant commissioner of health of Chicago, and at one time secretary of the Illinois State Board of Health, was held June 21, when the Frank W. Reilly Public School at School Street and Lawndale Avenue was dedicated. The principal addresses were delivered by Superintendent of Schools John D. Shoop; President Jacob M. Loeb of the Board of Education; Dr. Arthur R. Reynolds, former health commissioner, and Dr. Alfred C. Cotton, who paid high tribute to the memory of Dr. Reilly.

Banquet to Prof. Walter S. Haines.—The annual banquet of the faculty and alumni of Rush Medical College, held Saturday, June 17, was a testimonial to Prof. Walter S. Haines in recognition of forty years of service as teacher of materia medica and chemistry at the college. A portrait of Dr. Haines, paid for by individual subscription from 1,100 alumni, was presented to the college by Dr. William T. Belfield and accepted by Dr. Frank Billings. A short address was made by Professor Haines. More than 400 alumni were present. At the annual meeting of the alumni association the following officers were elected: president, Dr. John E. Rhodes; treasurer, Dr. Elmer L. Kenyon, and secretary, Dr. Charles A. Parker.

Personal.—At the annual convocation of the University of Wisconsin, June 21, the degree of Doctor of Science was conferred on Dr. Ludvig Hektoen.—Dr. Frederick Tice is convalescing at the Washington Boulevard Hospital after an operation for gallstones.—Dr. Philip S. Chancellor has returned from Santa Barbara to join Field Hospital No. 1, Illinois National Guard, in Springfield. Dr. Chancellor recently returned from service with the Chicago unit in France where he was mentioned in dispatches on account of efficient service.—Capt. Daniel W. Rogers has been appointed major; Lieut. Eugene G. Clancy has been promoted to captain, and Dr. Thomas M. Egan has been appointed first lieutenant, medical corps, all being assigned to the Seventh Infantry.—Drs. John G. O'Malley and Frederick C. Jacobs have returned after service in a British base hospital in France.—Drs. Jacob J. Minke, Harry C. Rolnick, and six nurses have arrived in Berlin to take service in German base hospitals.

INDIANA

Personal.—Dr. Moses A. Rush, Anderson, who has been seriously ill for several weeks as the result of a cerebral hemorrhage, is reported to be improving.—Dr. Brown S. McClintic, Peru, is on duty with the Russian army in Persia.

National Guard Changes.—Maj. Frank W. Foxworthy, Medical Corps, Indianapolis, has been appointed chief surgeon of the Indiana National Guard; Maj. Larue D. Carter has been assigned to command Field Hospital No. 1, and Drs. Burton A. Thompson, Kokomo; Leonard J. Ostrowski, Indiana Harbor; Clint C. Sourwine, Brazil, and Leonard P. Collins, Winamac, after a physical, mental and professional examination, have been appointed lieutenants in the medical corps.

MARYLAND

Personal.—Dr. Elizabeth Hurdon, Baltimore, sailed June 28 from New York for England for an indefinite stay.—Prof. William H. Welch received the degree of Doctor of Laws at the spring convocation of the University of Chicago.—Dr. Edward L. Whitney, professor of physiologic chemistry, pharmacology and clinical pathology in the University of Maryland, has resigned to take up practice in Portland, Ore.

Johns Hopkins Hospital Given \$93,000.—For the purpose of enlarging the Phipps Tuberculosis Dispensary and adding facilities for diagnosis and treatment, \$7,500, and \$17,500 as an annuity for five years for supporting a research fund have been given the Johns Hopkins Hospital by Mr. Kenneth Dows of New York. Dr. Allen K. Krause, at present connected with the Saranac Lake (N. Y.) laboratories, will come to Baltimore and with a special staff will assume charge of the work in the Phipps laboratories. The donor's aim is to create facilities for more adequate and thorough research work. It is also planned to afford better instruction for physicians specializing in the treatment of tuberculosis along the lines of recognition and management of the disease. The work of the newly organized department will be centralized in the laboratory. In the clinic, Dr. Krause's staff will consist of Dr. C. R. Austrian, now in charge of the dispensary, Drs. Edward V. Coolahan, Isadore Hirschman, Mary A. Hodge, Martin F. Sloan, John Girdwood and Hiram Fried. During the summer months, Dr. Krause will return to his work at Saranac Lake, thus binding together the Trudeau School of Tuberculosis and the Johns Hopkins Hospital.

NEW JERSEY

Personal.—At the fifty-fifth annual commencement exercises of Washington University, St. Louis, June 8, the honorary degree of LL.D. was conferred on Dr. Theobald Smith, Princeton, N. J., who is connected with the Rockefeller Institute for Medical Research.

Society One Hundred and Fifty Years Old.—The one hundred and fiftieth annual meeting of the Medical Society of New Jersey was held at Asbury Park, June 19 to 22, under the presidency of Dr. William J. Chandler, South Orange. The following officers were elected: president, Dr. Philip Marvel, Atlantic City; vice presidents, Drs. William G. Schauffler, Lakewood; Thomas W. Harvey, Orange, and Gordon K. Dickinson, Jersey City; secretary, Dr. Thomas N. Gray, East Orange (reelected), and treasurer, Dr. Archibald Mercer, Newark (reelected). The oration in medicine was delivered by Dr. Martin H. Fischer of the University of Cincinnati on "Classification, Prognosis and Treatment in the Nephritides." At the anniversary dinner, held June 21, at the Monterey Hotel, the speakers were Dr. Hobart A. Hare of the University of Pennsylvania, Philadelphia, and former Attorney General Robert H. McCarter, Newark. The morning session of the last day was devoted to centennial exercises for Essex, Middlesex, Monmouth, Morris and Somerset county medical societies. The society has always held the get-together spirit in its annual meetings as most important and special interest has been manifested in the work of the house of delegates. At the last meeting, the committee on standardization of hospitals, which was appointed in 1914, made its report. This committee had made a personal investigation of every hospital in the state during 1914-1915, and during the last year has studied the data obtained during these investigations and formulated a minimum standard for hospitals. The report was unanimously adopted by the house of delegates, and the State Board of Medical Examiners, at that time in session in Trenton, was advised of this action. Later it was announced to the house of delegates that the state board had adopted the society's findings as to minimum standards for hospitals. This society is unique among medical societies in the large number of members who bring their wives and families to the meetings. Among the visitors from outside the state were Drs. George I. McKelway of Delaware; C. B. Earle of South Carolina; Martin B. Tinker of New York; John R. Brown of Washington; Edward Y. Davidson of the District of Columbia, and George M. Palmer of Massachusetts. The Medical Society of the State of Pennsylvania paid a splendid tribute to the society by sending a delegation of about fifty, representing in addition the medical institutions of the state and the board of health of Philadelphia. Nearly 800 were in attendance; of this about one half represented membership. In the seventy-seven years from 1835 to 1912, the society has had but three recording secretaries, two of whom, the Drs. William Pierson, father and son, served thirty-one years each, and Dr. William J. Chandler fifteen years. Dr. James English served as treasurer for thirty-three years and this year the society recognized the twenty-five years of service as treasurer of Dr. Archibald Mercer by presenting him with a massive silver loving cup at the annual banquet. The original book of minutes of this society, in good preservation, is still in its possession. In the century and a half since its organization, the membership has increased from sixteen who responded to the roll call on the day of its organization, to over 1,600 physicians, whose names now appear on its roster. In anticipation of the one hundred and fiftieth anniversary the June issue of the *Journal of the Medical Society of the State of New Jersey* was a special issue devoted largely to recording the history of the physicians who have taken a prominent part in the profession of the state, and in announcing the program for the annual session.

NEW YORK

Visit Memorial Hospital.—Forty of the employees of the Bureau of Hygiene of the Buffalo Department of Health, headed by Dr. Arthur C. Schaefer, assistant commissioner of health, went to Perrysburg, June 10, to study methods in the J. N. Adam Memorial Hospital.—A second party headed by Arthur W. Kreinheder visited the hospital earlier in the day to make investigations with a view to increasing the facilities at the institution.

Immunizing New York Guardsmen Against Typhoid.—According to Commissioner Biggs of the state department of health enough vaccine was shipped from the laboratories of the department on June 22 to immunize 4,000 guardsmen. Enough vaccine is on hand to immunize the entire national guard recruited up to war strength. Anticipating such a demand, the division of laboratories of the department has been working overtime for several months.

New York City

College Requirements Raised.—Beginning with September, 1918, the University and Bellevue Hospital Medical College will require two years of college work before admission. By arrangement with the academic department of New York University, it will now be possible for a student after six years and a half to obtain the combined degree of bachelor of science and doctor of medicine.—Dr. Samuel A. Brown, assistant professor of medicine, has been made dean of the medical school.

Memorial Gift to Mount Sinai Hospital.—It has been announced that the Guggenheim brothers have given \$165,000 to Mount Sinai Hospital as a supplement to previous gifts totaling \$500,000 donated as a memorial to their parents. The gift was originally intended to build a private pavilion with a capacity of eighty beds. The recent demands for private rooms has been so great that it has been shown that the contemplated building would have been far from adequate. The additional donation will provide for the erection of a pavilion having accommodations for 125 patients. The new building will be seven stories in height, and will have a frontage of 200 feet on Fifth Avenue overlooking Central Park.

Hospital Liability Ceases with Death.—Recently a certain Mrs. Hasselbach sued Mount Sinai Hospital for damages because of a necropsy performed on the body of her husband, but she did not allege that those performing the necropsy were under control of the hospital authorities. In reversing an order of the Supreme Court sustaining a demurrer to the separate defense of the defendant in this suit, the Appellate Division unanimously decided that a benevolent or charitable corporation maintaining a hospital wherein a patient dies after an operation, is not under absolute duty to the wife of such a patient to protect her husband's body against a necropsy by any person whomsoever and to deliver said body in the same condition that it was immediately after death.

Infantile Paralysis.—The officials in charge of the investigation of the infantile paralysis outbreak in Brooklyn announce that four additional true cases and ten new suspected cases have been found and they therefore believe that the outbreak is not spreading and that conditions will soon return to normal. Thus far 114 cases have been reported, with three deaths. The acting health commissioner, Dr. John S. Billings, Jr., has sent 2,500 circular letters to the physicians of Brooklyn calling attention to this outbreak and asking the cooperation of all practicing physicians in preventing the spread of the present focus of infection, and to the fact that in doubtful cases examination of the cerebrospinal fluid often affords valuable aid. The department is ready to undertake the examination of the spinal fluids and to make the lumbar puncture if requested. In 1907, this city suffered an extensive outbreak of poliomyelitis, there being over 2,500 cases, and little was known with reference to the control of the disease. The department of health now requires a minimum period of quarantine of six weeks, and also insists in the exclusion from school of other children in the same family. Since there is good reason to believe that the disease is spread through infected nasal discharges, the department insists on precautions similar to those in diphtheria.

OHIO

Honor Dr. Means.—The faculty of the Ohio Medical University held a banquet in Columbus, June 19, in honor of Dr. William J. Means, dean of the faculty, who resigned recently after a quarter of a century of active service for the institution.

Honor to Zinke.—Dr. E. Gustav Zinke, Cincinnati, was the guest of honor at a dinner given by 125 physicians and friends at the Hotel Gibson, Cincinnati, June 19, on the occasion of his retirement after twenty years' service as professor of obstetrics at the Medical College of Ohio. Dr. Charles L. Bonifield was toastmaster, and Dr. Zinke was presented with a silver loving cup.

Personal.—It is reported that Dr. William Gillespie is to succeed Dr. E. Gustav Zinke as professor of obstetrics at the Ohio-Miami Medical College.—Dr. Booker Lee has resigned from the staff of the Massillon State Hospital and will practice in Richmond, Va.—Dr. Thomas J. Calkins, Cleveland, was given the honorary degree of Master of Arts by Fordham College, New York, June 15.—Dr. Harry R. Wahl,

associate in pathology in Western Reserve University, Cleveland, has been elected director of laboratories in the new Mt. Sinai Hospital.

Degree to Prof. John Uri Lloyd.—At the annual commencement of the University of Cincinnati, June 10, the honorary degree of Doctor of Science was conferred on Prof. John Uri Lloyd, Cincinnati, author, chemist, humanitarian and philanthropist. Professor Lloyd is also widely known as a literary student of the folklore of northern Kentucky. He is the founder of the Lloyd Library, the most completely equipped pharmaceutical library in this country. His contributions to the chemistry of colloids and his researches in the chemistry of medicinal plants are many and valuable.

Alumni Meeting.—The meeting of the Alumni Association of Western Reserve University, Medical Department, was held, June 8 to 10, at Cleveland with about 400 in attendance. A series of clinics and demonstrations for three days was held in the various hospitals and the medical school. Dr. John B. Deaver, Philadelphia, delivered the annual address and held a general clinic at the City Hospital, and the following officers were elected: president, Dr. George E. Follansbee, Cleveland; vice presidents, Drs. Charles Griefe and John M. Firmin, Findlay; secretary, Dr. Clyde L. Cummer, Cleveland; and treasurer, Dr. Harvey A. Berkes, Cleveland. President Charles F. Thwing accepted, on behalf of the university, portraits of Dr. Gustave C. E. Weber, former professor of surgery, and Dr. Hunter H. Powell, former professor of obstetrics and diseases of women in the Medical College, the presentation on behalf of the Alumni Association being made by Drs. William T. Corlett and Arthur H. Ball respectively.

Faculty Changes.—The following changes are announced in the faculty of the Western Reserve University, Medical School: Dr. Edward Perkins Carter promoted to associate professor of medicine; Dr. Louis Williams Ladd promoted to associate professor of clinical necroscopy in the Leonard Hanna Foundation; Dr. William Bricker Chamberlin promoted to associate professor of otology, rhinology and laryngology; Dr. Harold Newton Cole promoted to associate professor of dermatology; Dr. Gaius Elijah Harmon promoted to senior instructor in hygiene; Dr. Bradley Merrill Patten promoted to senior instructor in histology and embryology; Dr. Percy Wells Cobb promoted to instructor in physiology; Dr. Edward Patrick Monaghan promoted to instructor in gynecology; Dr. Roy Bartlett Metz promoted to instructor in ophthalmology; Dr. Leo Wolfenstein promoted to instructor in ophthalmology. Dr. John George Spenser was voted a seat and vote in the medical faculty as representative of the former faculty of the medical department of Ohio-Wesleyan University, and Dr. Arthur Bradley Eisenbrey, New York, was appointed associate in pathology.

OKLAHOMA

Personal.—Dr. John Reynolds, Muskogee, has been appointed city health officer; and Dr. James G. Rafter, Muskogee, has been made physician of Muskogee County.—Dr. John W. Duke, state commissioner of health, Guthrie, has been requested by the surgeon-general, U. S. P. H. S., to taken up the investigation of the number of cases of pemphigus in the United States.

State Association Meeting.—At the twenty-fourth annual meeting of the Oklahoma State Medical Association, held at Oklahoma City, Medicine Park was selected as the place of meeting for 1917, and the following officers were elected: president, Dr. Charles R. Hume, Anadarko; president elect, Dr. W. Albert Cook, Tulsa, and vice presidents, Drs. G. Fowler Border, Mangum; Arthur R. Lewis, Ryan, and Horace Reed, Oklahoma City.

OREGON

Alumni Election.—At the forty-first annual meeting of the Alumni Association of the Medical Department of the University of Oregon, held in Portland, June 7, the following officers were elected: president, Dr. David H. Rand, Portland; vice presidents, Drs. Banner R. Brooke, Portland; Louis Buck, Portland; Kittie Plummer Gray, Portland, and Mark W. McKinney, Seattle, Wash.; secretary, Dr. Adalbert G. Bettman, Portland, and treasurer, Dr. Katherine C. Manion, Portland. The name of the association was changed to

the Alumni Association of the Medical School of the University of Oregon, to conform to the change in the name of the institution.

PENNSYLVANIA

Druggists Fight "Patent Medicine" Vendors.—The Pennsylvania druggists, at their annual meeting in Reading during the week of June 20, enacted resolutions with a view of prohibiting or curtailing the sale of "patent medicines" in this state. At the last meeting of the legislature the bill was introduced to control this business and was defeated by a small majority. The druggists believe therefore that they can pass such a measure this year because the public better understands the evil of "patent medicine" frauds.

Personal.—Dr. and Mrs. Frank P. Lenahan, Wilkes Barre, have moved to San Diego, Calif.—Dr. Richard G. Burns is in charge of the Pittsburgh Tuberculosis Hospital.—Dr. J. Stuart Lawrance, Greensburg, has been appointed obstetrician to St. Mary's Hospital, Philadelphia.—Dr. Theodore L. Hazlett, Pittsburgh, who has been serving with the Russian army for a year and a half, is reported ill with typhus fever.—Dr. William J. Crookston, Pittsburgh, is home from Budapest, where he has been connected with the American Red Cross Hospital since December, 1914.

Philadelphia

Personal.—Dr. Charles K. Mills was given the honorary degree of Doctor of Laws by the University of Pennsylvania at the annual commencement exercises, June 20.—Dr. S. Lewis Ziegler was elected a member of the board of trustees of Bucknell University at the annual meeting, June 20.—Dr. John Wanamaker, III, has been appointed surgeon at the central station.

Phipps Institute to Close Branches.—The hospital of the Henry Phipps Institute for the study, treatment and prevention of tuberculosis is to be partially closed. "The factory experiment," an extensive branch of sociologic work providing an industrial occupation for tuberculous patients, will be closed at the end of the fiscal year, June 30. It is said the hospital itself will only be closed for a very short period. The sociologic department, however, with the dispensary and the pathologic laboratory, will continue in operation.

CANADA

Compulsory Military Training at McGill.—McGill University, Montreal, recently adopted the following resolution: "That in view of the gravity of the present situation, military training shall be compulsory (for the duration of the war and while the university is without a gymnasium) during the first three years of his course for every British male student of the university who is declared fit by the medical officer."

Personal.—Dr. Casimir C. Fissette, Brantford, Ont., has received an appointment to the R. A. M. C., and leaves shortly to take up his duties in a base hospital.—Dr. J. A. Boyd, Guelph, Ont., has been appointed medical superintendent of the Kingston General Hospital, in succession to Dr. Morris F. Coglon, who retires July 1.—Dr. John Hicks, assistant superintendent of the Brandon (Manitoba) Hospital for Mental Diseases, has been appointed superintendent to succeed Dr. John J. McFadden.

Hospital News.—A by-law is to be submitted to the people of Brantford, Ont., to provide \$58,000 to pay off the debt on the new hospital building. The City Council has voted \$7,000 for this purpose.—A hospital for the treatment of soldiers who have been "gassed" is to be built near the Mountain Sanatorium at Hamilton, Ont. The building will be provided by the Hamilton Health Association, and the Daughters of the Empire will be responsible for the maintenance of it.—More than \$41,000 was recently collected in Toronto for the new Women's Hospital. It is expected \$120,000 will be raised.—A Home for Incurables is to be opened at Longue Pointe, Quebec.—From the Montreal theater tax the Montreal General Hospital, Royal Victoria, Hotel Dieu, Western and Notre Dame will receive about \$30,000; the special hospitals will receive \$20,000 and other institutions \$10,000.—There has recently been collected in Montreal a sum of \$60,000 to pay off the debt of the Western Hospital in that city.—A nurses' home is to be built in connection with the Calgary Hospital.—The Calgary Hospitals Board will provide additional accommodation for cases of infectious diseases; this is owing to the prevalence of diphtheria in Calgary during the past few weeks.

GENERAL

Prevention of Hay Fever.—At the annual meeting of the American Hay-Fever-Prevention Association, held in New Orleans, June 15, the following physicians were elected to office: Dr. William Scheppegegrell, New Orleans, president, and Surgeon General Rupert Blue, U. S. P. H. S., vice president.

Medical Alumni Organize.—At the annual meeting of the Medical Association of the Alumni of the University of Virginia, Charlottesville, the following officers were elected: president, Dr. Hugh H. Young, Baltimore; vice president, Dr. Fielding L. Taylor, New York, and secretary treasurer, Dr. Thomas V. Williamson, Norfolk, Va.

Academicians Elect New Officers.—At the annual meeting of the American Academy of Medicine, held in Detroit, June 12, the following officers were elected: president elect, Dr. Jacob E. Tuckerman, Cleveland; vice presidents, Drs. Frederick L. Van Sickle, Olyphant, Pa., and Ray Connor, Detroit, and secretary, Dr. Thomas W. Grayson, Pittsburgh.

Industrial Physicians Organize.—More than one hundred physicians engaged in work for great corporations met at Detroit, June 12, and organized the American Association of Industrial Physicians and Surgeons, electing the following officers: president, Surgeon Joseph W. Schereschewsky, U. S. P. H. S., Pittsburgh; vice presidents, Drs. Francis D. Patterson, Philadelphia, and Robert T. Legge, Berkeley, Calif., and secretary treasurer, Dr. Harry E. Mock, Chicago.

Result of Safety-First Campaign.—The safety revolution in business America has resulted, since 1913, in a reduction of accidents in the American Locomotive Company, Schenectady plant, of 62 per cent.; in the Eastman Kodak Camera Company of Rochester, N. Y., of 51 per cent.; Stromberg-Carlson Telephone Manufacturing Company, 40 per cent.; New York Edison Company, 38 per cent.; Lackawanna Steel Company, 44 per cent.; General Electric Company, 34 per cent., and the United States Steel Corporation, between 1906 and 1914, of 43.54 per cent.

Will Study Source of Tropical Diseases.—A commission constituted by the International Health Board of the Rockefeller Foundation sailed on the *Almirante*, June 14, on a trip to various points of South America where yellow fever is still reported to exist. The commission is headed by Maj. Gen. William C. Gorgas, U. S. Army, who has obtained four months' leave of absence for this purpose, and the other members are Asst. Surg. Gen. Henry R. Carter, U. S. P. H. S., clinician; Dr. Juan Guiteras, head of the Public Health Service of Cuba, clinician and general adviser; Maj. Theodore C. Lyster, M. C., U. S. Army, clinician; Maj. Eugene R. Whitmore, M. C., U. S. Army, pathologist; Sanitary Engineer William D. Wrightson, U. S. P. H. S., sanitary engineer, and Harry H. Wakefield, secretary. The commission will go first to Caracas, Venezuela, and then to Colon, and after crossing the Isthmus will proceed down the western coast of South America, stopping at Guayaquil, Ecuador; and Manaos, Pernambuco, and Bahia, Brazil. The official announcement states that this commission "will now make surveys of the infected regions for the purpose of determining the doubtful endemic centers and of ascertaining what measures may be necessary and feasible for the eradication of the infections in those communities on which the responsibility for the presence and spread of yellow fever is found to rest."

Another School of Hygiene and Public Health.—The Rockefeller Foundation reports that funds have been provided for the establishing of a school of hygiene and public health in Baltimore, in connection with Johns Hopkins University. Dr. William H. Welch has been appointed as director of the school and Dr. William H. Howell as head of the physiologic department. A site is to be purchased and a suitable building erected, provided with laboratories and departments needed in such a school, including those of sanitary chemistry, physiology, bacteriology, protozoology, epidemiology, industrial hygiene, vital statistics, museum, library, etc. A year will be required for the erection of the building, the securing of equipment and the gathering together of a suitable staff of teachers. It is expected, therefore, that the school will be opened in October, 1917. Johns Hopkins University will be the eleventh institution to establish a school of hygiene and public health. The others, given in order of their organization, are connected with the University of Pennsylvania, Harvard University, the Universities of Michigan, Wisconsin and Colorado, the Detroit College of Medicine and Surgery, University and Bellevue Hospital Medical College, Tulane University and

the Universities of Minnesota and California. All these schools have been established since 1909, and undoubtedly have been organized in recognition of the urgent need of improved opportunities for public health instruction. As a result the science of sanitation and public health will be more rapidly advanced, and methods of teaching will be improved. Still more important, however, they have provided the facilities and the instructors whereby medical students, physicians, engineers, chemists, biologists and others may fit themselves for useful careers in public health work. These graduates will go forth better prepared not only for their own particular work but also to instruct others how to live and how to keep well.

Bequests and Donations.—The following bequests and donations have recently been announced:

United Hebrew Charities, Mt. Sinai Hospital, Home for Aged and Infirm Hebrews, and Montefiore Home for Incurables, each \$1,000, by the will of Mrs. Rachael Lahmeier.

St. Luke's Hospital, New York, \$10,000; Columbia Hospital, \$5,000; State Trustees' Aid Association, \$3,000, by the will of Miss Alice T. Wheelock.

Municipal Hospital for Monroe, N. C., property valued at \$20,000, by the will of Mrs. Ellen Fitzgerald, Monroe.

Brooklyn Hospital, Brooklyn City Dispensary and Brooklyn Home for Consumptives, each \$5,000, by the will of Senator Stephen Griswold.

Columbia University, \$100,000, to establish an endowment fund for research into the cause, prevention and cure of cancer, by the will of Emil C. Bondy.

Albany Medical College, for college administration, a donation of \$40,000, by anonymous benefactors; \$1,000, for the building fund of the institution, a donation from Simon W. Rosendale, president of the board of trustees.

Washington University Medical School, St. Louis, a donation of \$166,000, from Edwin Mallinckrodt, and a donation of a similar amount from John W. Milliken, both of St. Louis.

A hospital for Steger, Ill., by the will of John V. Steger.

Minnesota State Tuberculosis Fund, \$11,937.10, as the result of a tax on boxing bouts.

Presbyterian Hospital, Chicago, \$12,000, the income of which is to be used for the maintenance of a room to be known as the Marion Louise Room; Chicago Visiting Nurses' Association, \$10,000, and United Charities of Chicago, \$5,000, by the will of Ella M. Walker.

Philadelphia General Hospital, a contingent bequest of \$1,000 for the tuberculous poor, by the will of Horace Haverstick.

Johns Hopkins Hospital, \$95,000, to be devoted to the investigation of tuberculosis and the better teaching of physicians and students in the recognition and management of the disease and the care of patients at the hospital, by the will of Kenneth Dows, New York.

Free Hospital for Women, Brookline, Mass., interest in the estate at 511 Washington Street and 16-24 West Street, Boston, for the purpose of erecting a cancer hospital. Waltham (Mass.) Baby Hospital, \$5,000, and Industrial School for Crippled and Deformed Children and New England Hospital for Women and Children, Boston, the residue of the \$70,000 trust fund after the payment of \$19,000 legacies, by the will of Mrs. Anna Bolton Matthews, Boston.

Michigan Child Welfare League, between \$4,000 and \$5,000 on tag day, June 17.

Visiting Nurses' Fund of Sheboygan, Wis., \$1,500, collections of tag day, June 17.

FOREIGN

Deaths in the Profession Abroad.—P. A. V. Rommelaere, professor emeritus of medicine at the University of Brussels, aged 79.—H. Favre of Paris, aged 88.—F. Dubief, member of the French house of deputies and at one time of the French cabinet, aged 66.—A. Faye of Christiania, the leading historian of medicine in Norway. Without being officially connected with the University of Christiania, he was several times called on to deliver courses on medical history. He succumbed to cancer of the stomach at an advanced age.—A. Riva, professor of clinical medicine at the University of Parma, a pioneer in various fields of pathology and clinical medicine, aged 72.

WAR NOTES

Assignments in Eastern Department.—The following assignments of army medical officers to take charge of the physical examination preliminary to mustering in the Organized Militia into the service of the United States are announced: Connecticut, Maj. Charles Y. Brownlee, M. C., at Niantic; Georgia, Maj. Henry Page, M. C., at Macon; Maine, Capt. George B. Foster, M. C., at Augusta; Massachusetts, Maj. James F. Hall, M. C., at South Framingham; New Hampshire, Lieut.-Col. Henry D. Snyder, M. C., Concord; New Jersey, Capt. Nelson Gapen, M. C., Sea Girt; New York, Maj. Sanford H. Wadhams, M. C., Green Haven; North Carolina, Maj. Edward F. Geddings, M. C., Camp Glen, Morehead City; Pennsylvania, Maj. Conrad P. Koerper, M. C., Mt. Gretna, and Virginia, Lieut.-Col. Alexander N. Stark, M. C., Richmond.

Red Cross Relief Work.—The American Red Cross in its instructions to chapters, dated June 22, indicates the duty of the American Red Cross to undertake two important lines of service in consequence of the calling out of the National Guard for the protection of the southwestern international boundary. The first line of service is that of supplies for soldiers in camps. The Red Cross will collect, forward and distribute suitable articles for the soldiers. Receiving and distributing depots will be established at San Antonio and El Paso in charge of competent persons, and supplies sent to these depots will be distributed in the camps in accordance with the rules prescribed by the military authorities. It is probable that intermediate depots will be established in a number of important centers. The second line of service is the care of destitute families of soldiers, regarding which an announcement will be made at an early date. Chapters are advised immediately to segregate their work into two sections: one on military relief and one on civilian relief. The chapters are urged to exercise a thoroughly cooperative and cordial spirit toward other organizations and agencies which desire to participate in this work. All such organizations should be invited to join hands with the Red Cross and thus give a demonstration of united, harmonious community effort. All questions of policy should be reported to the Director General of Civilian Relief, at Washington, D. C.

Sanitary Troops Ordered Out.—In addition to the sanitary detachments assigned to the various units of the Organized Militia, the following organizations have been ordered to mobilization: California, one ambulance company and one field hospital; Colorado, one field hospital; Connecticut, one ambulance company and one field hospital; District of Columbia, one field hospital; Georgia, one field hospital; Illinois, two field hospitals; Indiana, one field hospital and one ambulance company; Iowa, one field hospital and one ambulance company; Kentucky, one field hospital and one ambulance company; Maryland, one field hospital and one ambulance company; Massachusetts, one field hospital and one ambulance company; Michigan, one field hospital and two ambulance companies; Missouri, one field hospital and one ambulance company; Nebraska, one field hospital; New Jersey, one field hospital and one ambulance company; New York, three field hospitals and four ambulance companies; North Carolina, one field hospital and one ambulance company; Ohio, three field hospitals and two ambulance companies; Oklahoma, one field hospital; Pennsylvania, two field hospitals and two ambulance companies; Rhode Island, one ambulance company; Tennessee, one field hospital and one ambulance company; Virginia, one field hospital, and Wisconsin, one field hospital. The entire National Guard of Arizona and Texas was mustered into the United States service in May.

Call for Service.—To officers of the Medical Corps required for service in mobilization camps, the following telegram has been sent by the commander of the Central Department: "You as first lieutenant, Medical Reserve Corps, inactive list, are hereby called into active service. Proceed at once with or without uniform to mobilization camp at _____ and report to senior mustering officer there for temporary duty as medical examiner of organized militia. Wire acceptance immediately." In the Central Department the following medical officers have been recommended for duty and have reported:

Illinois—Lieuts. John A. Hornsby, Arthur R. Reynolds, James F. Presnell, Henry F. Lewis, Edward C. Morton, Clarence L. Wheaton and Francis Deacon, Chicago; Albert H. Roler, Evanston, and Jesse C. Maxon, Harvard, have reported to Maj. James M. Phalen, M. C., camp surgeon at Springfield. Ohio—Lieuts. George C. Schaeffer, C. E. Pfeifer, John B. Alcorn and Frank Winders, Columbus; Archibald M. Wilkins, Delta, and Rufus A. Van Voast, Cincinnati, have reported to Maj. Ernest L. Ruffner, M. C., U. S. Army, camp surgeon at Columbus. Minnesota—Lieuts. Alexander R. Colvin, John M. Armstrong, St. Paul, and Alexander E. Hedback, Minneapolis, have reported to Maj. George H. Crabtree, M. C., camp surgeon at Fort Snelling. Michigan—Lieuts. Emil H. Webster (at present on active duty at Fort Brady, Mich.), Harry L. Arnold, Oswego, and Preston M. Hickey, Detroit, have reported to Maj. James L. Bevens, M. C., camp surgeon, at Grayling. Wisconsin—Lieuts. A. E. Midgley, Whitewater; Frederick C. Huff, Sturgeon Bay; George V. I. Brown, Milwaukee, and William G. Merrill, Grand Rapids, have reported to Lieut.-Col. James M. Kennedy, M. C., camp surgeon, at Camp Douglas. Indiana—Lieuts. Thomas Z. Ball, Waveland, and Thomas B. V. Keene, Carleton B. McCulloch, Horace R. Allen, John J. Boaz and Blanchard B. Pettijohn have reported for duty to Lieut.-Col. William B. Banister, M. C., camp surgeon, at Fort Benjamin Harrison, Indianapolis. Iowa—Lieuts. Eugene R. Lewis, Dubuque; James E. Kessell and Edward E. Dorr, Des Moines; Evan S. Evans, Grinnell and Frederick G. Murray, Cedar Rapids, have reported to Maj. Kent Nelson, M. C., camp surgeon at Des Moines. Missouri—Lieuts. Reinhard E. Wobus, Major G. Seelig, Downey L. Harris and Clarence Loeb, St. Louis, and Guy L. Noyes,

Columbia, have reported to Maj. M. A. W. Shockley, M. C., camp surgeon at Nevada. Kansas—Lieuts. John E. Hewitt (now on active duty at that post), Frederick W. O'Donnell, Junction City; George E. Toolcy, Washington, and Samuel T. Millard, Topeka, have reported to Capt. George P. Pêed, M. C., camp surgeon, at Fort Riley. Nebraska—Lieuts. Emile L. DeLanney, Omaha, and Albert A. Fricke, South Omaha, have reported to Capt. Charles F. Craig, M. C., camp surgeon, at Lincoln. Colorado—Lieuts. William L. Edmunson, William W. Grant and Walter A. Jayne, Denver, have reported for duty to Capt. Leonard S. Hughes, M. C., camp surgeon, at Golden. Wyoming—Lieut. Henry C. Bierbower (now on active duty at Fort D. A. Russell, Wyo.), has reported to Capt. Ray W. Bryan, M. C., camp surgeon, at Cheyenne. North Dakota—Lieuts. Frederick B. Strause and Albert M. Fischer have reported to Capt. Clarence H. Connor, M. C., camp surgeon, at Fort Lincoln. South Dakota—Lieut. William E. Clark, Aberdeen, has reported to Capt. Leartus J. Owen, M. C., camp surgeon, at Redfield.

Organization of Base Hospital Units.—Col. Jefferson R. Kean, Medical Corps, U. S. Army, as director general of Military Relief for the American Red Cross, assumes the organization of base hospital units from the personnel of the larger civil hospitals in this country. These base hospitals are intended to be transported on the outbreak of war to the seat of military operations, where they are located at the city which is selected to be the military base. One of these is needed for each 20,000 men brought into service. They receive the sick and wounded coming from the field hospitals at the front, and in them the wounded soldier in his journey to the rear first finds a comfortable bed and trained nurses. Thirteen base hospitals with skilled personnel are now organized and seven more are in process of organization. Each base hospital is equipped to receive 500 patients. Although organized by the Red Cross, they are not administered by it, but when called into active service pass under the exclusive authority of the War Department and become a part of its medical service. The medical officers are given military commissions in the Reserve Corps, and receive volunteer commissions when called into active service. The nurses in the same way belong to the Red Cross Nursing Service, and in time of war become a part of the Army Nurse Corps. The following are the locations of these hospitals and the heads of the various services:

PRESBYTERIAN HOSPITAL, New York.—Director and chief of surgical service, Dr. George E. Brewer; principal assistant, Dr. Alfred Stillman; chief of medical service, Dr. Warfield T. Longcope; chief of laboratory service, Dr. Karl M. Vogel; chief nurse, Miss Anna C. Maxwell.

MOUNT SINAI HOSPITAL, New York.—Director, Dr. N. E. Brill; chief of surgical service, Dr. Howard Lilienthal; chief of medical service, Dr. R. Weil; chief of laboratory service, Dr. George Baehr; chief nurse, Miss Elizabeth A. Greener.

BELLEVUE HOSPITAL, New York.—Director and chief of surgical service, Dr. George David Stewart; chief of medical service, Dr. Van Horne Norrie; chief of laboratory service, Dr. Charles Norris; chief nurse, Miss Clara D. Noyes.

NEW YORK HOSPITAL, New York.—Director and chief of surgical service, Dr. Charles L. Gibson; chief of medical service, Dr. Lewis A. Conner; chief of laboratory service, Dr. William J. Elser; chief nurse, Miss M. H. Jordan.

NEW YORK POST GRADUATE HOSPITAL, New York.—Director, Dr. Samuel Lloyd; chief of surgical service, Dr. Edward W. Peterson; chief of medical service, Dr. Arthur F. Chace; chief of laboratory service, Dr. Ward J. MacNeal; chief nurse, Miss Amy Patmore.

BROOKLYN, for Navy.—Director and chief of surgical service, Dr. W. B. Brinsmade; chief of medical service, Dr. Luther F. Warren; chief of laboratory service, Dr. Robert F. Barber; chief nurse, Miss Frances van Ingen.

MASSACHUSETTS GENERAL HOSPITAL, Boston.—Director, Dr. Frederic A. Washburn; chief of surgical service, Dr. George W. W. Brewster; chief of medical service, Dr. Richard C. Cabot; chief of laboratory service, Dr. J. Homer Wright; chief nurse, Miss Sara E. Parsons.

BOSTON CITY HOSPITAL, Boston.—Director, Dr. J. J. Dowling; chief of surgical service, Dr. Edward H. Nichols; chief of medical service, Dr. John Jenks Thomas; chief of laboratory service, Dr. Ariel W. George; chief nurse, Miss Emma M. Nichols.

HARVARD UNIVERSITY, Massachusetts.—Director and chief of surgical service, Dr. Harvey Cushing; chief of medical service, Dr. Roger Lee; chief of laboratory service, Dr. Richard P. Strong; chief nurse, Miss Carrie M. Hall.

LAKE SIDE HOSPITAL, Cleveland.—Director, Dr. George W. Crile; chief of surgical service, Dr. W. E. Lower; chief of medical service, Dr. C. F. Hoover; chief of laboratory service, Dr. H. T. Karsner; chief nurse, Miss Grace Allison.

ROCHESTER, N. Y.—Director, John M. Swan; chief of surgical service, Dr. C. W. Hennington; chief of medical service, Dr. William V. Ewers; chief of laboratory service, Dr. C. C. Sutter; chief nurse, Miss Emma Jones; assistant, Miss Jessica Hcal.

JOHNS HOPKINS HOSPITAL, Baltimore.—Director, Dr. Winford Smith; chief of surgical service, Dr. J. M. T. Finney; chief of medical service, Dr. T. C. Janeway; chief of laboratory service, Dr. T. R. Boggs; chief nurse, Miss Bessie E. Baker.

HARPER HOSPITAL, Detroit.—Director, Dr. Angus McLean; chief of surgical service, Dr. C. D. Brooks; chief of medical service, Dr. B. R. Shurly; chief of laboratory service, Dr. P. M. Hickey; chief nurse, Miss Emily McLaughlin.

PARIS LETTER

PARIS, June 1, 1916.

The War

SKULL WOUNDS

Many problems have arisen in regard to this subject both from the surgical and the neurologic point of view. For this reason, the Société de chirurgie de Paris and the Société de neurologie de Paris recently met in a common session under the chairmanship of the undersecretary of state for public health, in order to study a number of these questions. The following subjects were discussed:

1. Early operation in wounds of the skull: Should one always operate? What types of operation should be recognized? How far should one go? When in presence of a simple crack of the external table, what operation should be performed, and should one always diagnose fracture of the internal table and search for fragments? Is the flap preferable to the crucial incision? What are the indications, technic and the results of early extraction of projectiles which have penetrated the brain?

2. Transport of patients with skull wounds.

3. Early secondary complications of skull wounds, particularly hernia of the brain, abscesses, meningitis, general or partial epilepsy, their frequency, prognosis, and treatment. Deferred extraction of projectiles.

4. Late complications (affections of the motor apparatus, of speech and of sight, and subjective troubles). Liability of wounded with skull injuries to develop these complications after healing of their wounds. For what period does this liability extend? How should the military value of such men be judged?

5. Cranioplasty: indications; technic; complications, immediate and remote. Should the indemnity accorded to a wounded man be reduced on the ground of his refusal to submit to this operation? Protective prosthesis for large gaps in skull.

6. Protective value of the morion or helmet.

NECESSITY TO REMOVE EVEN THE SMALLEST PROJECTILES
WHICH HAVE PENETRATED THE BRAIN

At the Réunion médico-chirurgicale de la I-re Armée, Dr. Barnsby brought forward two cases which prove the danger of the smallest fragments. In the first case the patient was a soldier from whom was removed, on the third day after receipt of the wound, a fragment the size of a very small pea. This fragment was extracted from the frontal lobe in which there had already formed an abscess as large as a hazelnut. In the second case, a fragment of the size of a wheat grain was extracted from the left rolandic region. The rise of temperature and development of a right hemiplegia with aphasia had precipitated the intervention. In the course of the operation there was found a voluminous abscess, in the pus of which was the projectile. It seemed advisable, therefore, to remove these small projectiles just as systematically as the large ones. The best method seems to be a combination of the compass for depth and direction and control by screen observations with Roentgen rays, which permits the simple and rapid extraction with the minimum of injury.

THE USE OF TEMPORARY ARTIFICIAL LIMBS INSTEAD
OF CRUTCHES

At the Société de chirurgie de Paris, Professor Depage has made an interesting communication on this subject. He avoids in almost every case the use of crutches after amputation. Their use modifies the statics of the body, keeps the stump fixed, and not infrequently causes paresis of the arm by compression of the brachial plexus. Crutches are a bad instrument for those who have undergone amputation, and one ought to substitute the temporary artificial limb. The latter can be made of a variety of materials. At the suggestion of his assistant, Martin, Dr. Depage has used plaster, reinforced by bands of metallic cloth. The artificial limb so formed has a great advantage in that it adapts itself to the stump and that it answers all the indications for a normal gait. It is inexpensive, easily made by a skilful nurse, and can be remade to meet the modifications undergone by the stump. As soon as the latter has reached its final state, the temporary limb is replaced by a permanent one. Depage has recently conceived the idea of employing shavings in the manufacture of artificial limbs. The experiments which he has made in collaboration with Martin have been satisfactory. This new sort of apparatus presents the following advantages: possibility of being molded exactly on the stump, employing the whole of its surface and its bony points for a

support; similarity in form of the artificial and natural limb; slight weight, great strength, cheapness and ease of manufacture.

LATENT MYOCARDITIS

At the Réunion médicale de la IV-e Armée, Dr. C. Lian drew attention to the fact that acute articular rheumatism is often followed by a latent myocarditis which shows itself by palpitation and breathlessness after effort with or without precordial oppression and pain, where there is no sign of endocarditis or pericarditis. Lian insists on the practical importance of these facts, the nonrecognition of which may lead to regrettable errors. In fact, in a case of this kind, combining an extracardiac murmur and a history of rheumatism, a physician might easily make an erroneous diagnosis of endocarditis or pericarditis. From this, he would be led to recommend a soldier for the auxiliary services or for discharge, while these cases of myocarditis are, as a rule, compatible with active service. On the other hand, if the physician is able to set aside the possibility of endocarditis or pericarditis, he runs the danger of not recognizing the rheumatic origin of the trouble and of attributing it to purely nervous causes and, therefore, of not according to it the importance which it deserves. It is necessary, therefore, in cases of palpitation, to bear in mind the possibility and characters of this latent myocarditis. Although latent myocarditis is more common as a sequel of acute rheumatism, it may also result from any other infectious disease. The prognosis is, as a rule, quite good, and unless there supervenes another infectious disease, the exacerbation of the rheumatism or great physical or moral exhaustion, hyposystole or asystole is not to be feared. The treatment of the acute initial phase of myocarditis is that of the causal infectious disease; in the later stages, it must be palliative. From the military point of view, the patient can as a rule be maintained in active service. He may, if necessary, be changed from one arm to another or simply allotted to relatively sedentary work in his regiment or recommended not to be overworked. As a rule it is not necessary, on account of these cardiac troubles, to transfer the patient to the auxiliary services or to discharge him.

Prevention of Communicable Diseases in High Schools

At the Société de médecine de Paris, Dr. Gallois made a communication on the insufficiency of the measures taken in high schools to protect the pupils against communicable diseases. Epidemics have recently broken out and it is only after about ten cases of illness that serious measures have been taken. Gallois desires to see a complete reform of the present organization. In his opinion, the physician of the high schools should be responsible for the sanitary police of the establishment. When a day pupil has been absent more than five days, it should be the duty of the physician to go to the pupil's home to ascertain the nature of the illness in order that he may take the necessary measures. To the objection that in any case the pupil must produce a certificate before being admitted into the school, he answers that this certificate arrives much too late to admit of the necessary precautions being taken. Again, it has been said that this sanitary police function belongs to the epidemiologic service, but, in this respect, this service functions badly, nor could it be otherwise, since, in order to put it in movement, a declaration of the treating physician is necessary. The latter is not always made, and, when it is, it does not always mention that the patient is a pupil of the high school. The epidemiologic service is too complicated an organization. It is enough for one wheel to go wrong for the whole machine to stop. The prophylaxis of communicable diseases in school can only be satisfactorily assured by the concentration of all direct responsibility in the hands of one person, and by the elevation of school physician to the rank of defender of the health of the pupils.

Personal

At its sitting, May 23, the Académie de médecine proceeded to the election of a foreign corresponding member. Dr. Charles Willems, surgeon of Ghent, was almost unanimously elected.

At a recent session, the Académie des sciences held an election for a correspondent in the section of medicine and surgery in succession to the late Professor Mosso of Turin. Dr. Bergonié, professor of biologic physics and medical electricity at the Faculté de médecine de Bordeaux, was elected by sixteen to fourteen votes. Dr. Bergonié has acquired a great reputation by his remarkable work on electricity in its applications to medicine, and on radiography. He is the founder of the review under the name *Archives d'électricité médicale, expérimentale et clinique de Bordeaux*.

LONDON LETTER

LONDON, June 5, 1916.

The War

THE ARMY AND MEDICAL SERVICE

In his first dispatch, Sir Douglas Haig, the new commander-in-chief of the British forces in France, says that all branches of the medical services deserve the highest commendation for the successful work done by them, both at the front and on the lines of communication. The sick rate has been consistently low; there has been no serious epidemic, and typhoid fever, the bane of armies in the past, has almost completely disappeared, owing to preventive measures energetically carried out. The results of exposure incidental to trench warfare during the winter months were to a great extent kept in check by careful application of the precautions recommended and taught by regimental medical officers. The wounded have been promptly and efficiently dealt with, and their evacuation to the base has been rapidly accomplished. The close cooperation which has existed between the officers of the regular medical service of the army and those members of the civil medical profession who have patriotically given their valuable services to the army has largely contributed to the prevention of disease and to the successful treatment and comfort of the sick and wounded. As part of the medical services, the Canadian army medical corps has displayed marked efficiency and devotion to duty. The Commission of Graves Registration and Enquiries, since it first undertook the work eighteen months ago, has registered and marked over 50,000 graves. Without its labors many would have remained unidentified. It has answered several thousand inquiries from relatives and supplied them with photographs. Flowers and shrubs have been planted in most of the cemeteries which are sufficiently far removed from the firing line, and all cemeteries which it is possible to work in during the daytime are now being looked after by noncommissioned officers and men of this unit. The valuable nature of the work performed by the officers of the central laboratory and the chemical advisers with the armies, in investigations into the nature of the gases and other new substances used in hostile attacks, and in devising and perfecting means of protecting our troops against them, is deserving of recognition. The efforts of these officers materially contributed to the failure of the Germans in their attack of Dec. 19, 1915, as well as in the various gas attacks since then.

The Limitations of Science in Education

In this country the classics have always occupied the principal position in higher education, and though the greater recognition is being given to the claims of science, it still occupies a subordinate position. As shown in previous letters to THE JOURNAL, the protests of those who demand greater recognition for science have been increased by the war. A counterblast, signed by some university professors, including Sir William Osler and other public men, has been published in the *Times*. They point out that as material means and technical skill are the most obvious factors in deciding the war, there is a risk that these may be prized to the exclusion of forces even more important. Technical knowledge is essential to our industrial prosperity and national safety; but education should be nothing less than a preparation for the whole of life. It should introduce the future citizens of the community not merely to the physical structure of the world in which they live but also to the deeper interests and problems of politics, thought and human life. It should acquaint them, so far as may be, with the capacities and ideals of mankind, as expressed in literature and in art, with its ambitions and achievements as recorded in history, and with the nature and laws of the world as interpreted by science, philosophy and religion. If we neglect physical science, we shall have a very imperfect knowledge of the world around us; but if we ignore or subordinate the other elements of knowledge, we shall cut ourselves off from aspects of life of even greater importance. Even physical science will suffer. Some of its most distinguished representatives have strongly insisted that early specialization is injurious to the interests they have at heart, and that the best preparation for scientific pursuits is a general training which includes some study of language, literature and history. Such a training gives width of view and flexibility of intellect. Industry and commerce will be most successfully pursued by men whose education has stimulated their imagination and widened their sympathies. The nation requires mental training even more than physical science.

We might enthrone physical science in all our schools without acquiring as a nation what we most need, the persuasion that knowledge is essential to progress, and that it has to be acquired by the faculty of independent reflection, which implies the power of selecting, combining and testing the essential facts of the subject in hand. This scientific method is not the peculiar property of physical science; all good work in all studies is based on it; it is indispensable to law, history, classics, politics and all branches of knowledge rightly understood. What we want is scientific method in all branches of an education which will develop human faculty, and the power of thinking clearly to the highest possible degree. In this education, the study of Greece and Rome should have a large part, because our whole civilization is rooted in the history of these peoples, and without knowledge of them cannot be properly understood. The small city communities of Greece created the intellectual life of Europe. In their literature we find models of thought and expression, and the subtle and powerful personalities who originated for Europe all forms of poetry, history and philosophy, and even physical science itself, no less than the ideal of freedom and the conception of a self-governing democracy; while the student is introduced to the great problems of thought and life at their springs, before he follows them through the wider but more confused currents of the modern world. The educated citizens of a great empire should not remain ignorant of the first state that met the problem of uniting in a contented and prosperous commonwealth nations differing in race, temper and culture, and which has left so deep a mark on the language, law and political conceptions of Europe. Some knowledge of Latin is indispensable for the intelligent study of any one of these things and even for the intelligent use of our own language. Greece and Rome afford us unique instances, the one of creative and critical intelligence, the other of constructive statesmanship. Nor can we afford to neglect the noble precepts and shining examples of patriotism with which their history abounds.

Proposed School of Medicine at Johannesburg

It seems likely that another medical school will be added to those in the British Empire. A representative meeting of the medical profession of the Transvaal has been held at the South African Institute for Medical Research. Dr. Watkins-Pitchford, director of the institute, moved a resolution, which was unanimously adopted, that "the time has now arrived when in the interests of the community a school of medicine should be established in the Transvaal with facilities for granting diplomas." He said that Johannesburg had a European population larger than any other town in South Africa, and that it is essentially an industrial town. Its total population at the present time is 237,000, of which one half—119,000—are Europeans. For the purposes of higher education, the smaller towns of the Rand, from Randfontein in the west to Springs in the east, should be associated with the central town of Johannesburg, and these being included, the total population became 430,000, of which 206,000 are white people. In Johannesburg alone, there are more than twice, and on the whole of the Witwatersrand more than four times, as many people as there were in Leeds when its medical school was established. The number of hospital beds on the Witwatersrand is about 8,170, representing a wealth of material for clinical instruction which is unequaled throughout the world. There are some 520 physicians registered in the Transvaal, of whom 240 obtained their qualifications in Scotland, 172 in England, and 58 in Ireland; 43 hold diplomas obtained in various other countries, including 3 from Canada and 2 from Australia, and there are 5 physicians who have no qualifications other than the license of the late government of the South African Republic.

A Girl Burnt to Death on an Omnibus

From time to time the deaths of women due to their clothes catching fire are reported, but never apparently under such peculiar circumstances as the following: As a girl was traveling along the Strand on the top of a motor omnibus, the lower part of her dress caught fire. The material, which is described as voile, was so inflammable that she was immediately enveloped in flames. Two soldiers, who were on the bus, endeavored to extinguish the flames as soon as they could unbutton their tunics and throw them around her, and the conductor assisted with the omnibus aprons and a chemical extinguisher. But she was so severely burned that she died. The origin of the fire could not be ascertained, but it was probably caused by the carelessness of a smoker throwing down a lighted match.

Marriages

THADDEUS DEWEY SMITH, M.D., Neenah, Wis., to Miss Fredrica Doris Krueger of Kew Gardens, L. I., N. Y., April 29.

FREDERICK LOUIS WAHRER, M.D., Fort Madison, Iowa, to Miss Josephine Jane Gabelman of Marshalltown, Iowa, June 1.

WILLIAM SEBASTIAN DE LA HOYDE, M.D., to Miss Mary Newton, both of Brooklyn, at Williamsburg Hospital, June 7.

CHARLES ROLLIN GRANDY, M.D., Norfolk, Va., to Miss Elizabeth Norfleet Neely of Portsmouth, Va., June 10.

ASST. SURG. SUMMERFIELD M. TAYLOR, U. S. Navy, to Miss Florence Davis Riner, at Olongapo, P. I., April 14.

CHARLES STEWART SUTTON, M.D., to Miss Grace Hislop, both of St. Cloud, Minn., at Fargo, N. D., June 14.

JESSE DAY TAYLOR, M.D., University Place, Lincoln, Neb., to Miss Carita Schreckengast of Lincoln, June 14.

JOHN JOSEPH McLOONE, M.D., Phoenix, Ariz., to Miss Hattie Vivian Watkins of Flagstaff, Ariz., June 7.

JOHN DUNCAN QUACKENBOS, M.D., New York, to Miss Louise Dudley White of Princeton, N. J., June 7.

LIONEL LOUIS ALBERT, M.D., Central Falls, R. I., to Miss Gertrude B. Steinmetz, at Yonkers, N. Y., May 21.

SIMON R. KARPELES, M.D., Washington, D. C., to KATE BRECKENRIDGE BOGLE, M.D., Danville, Ky., June 7.

MARGUERITE DEININGER, M.D., and Mr. Louis Keser, both of Richmond, Calif., at Alameda, Calif., June 9.

WILLIAM PARVIN BRAMLETT, M.D., Philadelphia, to Miss Rebecca Stroud Kerr of Towanda, Pa., June 15.

HARRY WELDAY MAYES, M.D., Brooklyn, to Miss Elizabeth Gertrude Lamb of St. Petersburg, Fla., June 3.

JOHN BRADFORD BRINSON, JR., M.D., to Miss Martha Hawkins Bailey, both of Monticello, Fla., April 25.

THEODORE ANDREW BAUMANN, M.D., DeLand, Ill., to Miss Mabel Ida Prentice of Rockford, Ill., June 2.

REGINALD JAMES HENRY STROUD, M.D., Gleeson, Ariz., to Miss Emma Luhrs of Phoenix, Ariz., June 7.

ISIDOR SAMUEL FAUST, M.D., Bronx, New York City, to Miss Edith Fern of Elizabeth, N. J., June 11.

ELBERT LAFAYETTE SPENCE, M.D., Fulton, Mo., to Miss Mittie V. Robnett of Columbia, Mo., June 10.

JOSEPH AUGUSTINE O'CONOR, M.D., to Miss Theodora Loretta Brown, both of New York, June 7.

CECIL GARDNER HARROD, M.D., to Mrs. Mollie Wasson, both of Burney, Ind., at Louisville, Ky., June 7.

HARRY WILLIAM HELMEN, M.D., South Bend, Ind., to Miss Norma Trayler of Indianapolis, June 7.

MILTON WESTON HALL, M.D., Evanston, Ill., to Miss Florence Patersen of Chicago, recently.

SAMUEL GOODMAN, M.D., Kansas City, Mo., to Miss Blanche Babette Wedeles of Chicago, June 17.

HEMAN R. BULL, M.D., Grand Junction, Colo., to Miss Ruth B. Fulwider of Denver, June 17.

OTIS HACKETT JOHNSON, M.D., New York, to Miss Mary Diana Stone of Ithaca, N. Y., June 17.

FRANK BENEDICT ROSINSKI, M.D., to Miss Theodora Sophia Kocinski, both of Cleveland, June 21.

CLARENCE WRIGLEY JUDD, M.D., Philadelphia, to Miss Virginia Vogt of Baltimore, June 7.

ERNEST NELSON GREENMAN, M.D., to Miss Portia C. Snow, both of Kankakee, Ill., June 15.

SERGEANT PRICE MARTIN, M.D., to Miss Alice Wilson, both of Rochester, Minn., June 17.

FRED WADE JONES, M.D., Alton, Ill., to Miss Mary Krome of Edwardsville, Ill., June 10.

ROBERT SHAW TAYLOR, M.D., Buffalo, to Miss Alma Ericson of Biggsville, Ill., June 8.

LEE WELSEY POLLOCK, M.D., to Miss Addie Baihly, both of Rochester, Minn., June 17.

JAY C. MILLER, M.D., Garrison, Neb., to Miss Edna Macrow of Lincoln, Neb., June 15.

ISIDORE GOLDSTEIN, M.D., to Miss Hazel Ritter, both of New York, June 4.

Deaths

Thomas Franklin Smith, M.D., New York City; New York Medical College, New York City, 1860; aged 83; visiting physician to the Metropolitan Hospital, New York City, and examiner in lunacy; treasurer of the American Institute of Homeopathy for twenty-three years; mustered with the Seventh Regiment, N. G. N. Y., of which he was major, into the United States service in 1861 as chaplain; and reenlisted as acting assistant surgeon, U. S. Army, serving in that capacity for fifteen months; for many years manager of the New York Association for Improving the Condition of the Poor, and vice president of the Jennie Clarkson Home for Children, Valhalla, N. Y.; died at his home, June 6.

Paul Paquin, M.D., Kansas City, Mo.; University of Missouri, Columbia, 1887; aged 55; a Fellow of the American Medical Association and a member of the Medical Society of North Carolina; for several years professor of bacteriology, pathology and comparative medicine in his alma mater; secretary of the Missouri State Board of Health from 1896 to 1899; afterward a resident of Asheville, N. C., for several years, director and executive officer of the Hospital and Health Board of Kansas City; died in the Christian Church Hospital, Kansas City, June 22, from tubercular meningitis.

William L. Tadlock, M.D., Talbott, Tenn.; Louisville, Ky., Medical College, 1898; aged 48; a member of the Tennessee State Medical Association; while returning from a Chautauqua at Morristown, Tenn., with his wife and nephew, in an automobile, was struck by a train of the Southern Railway at a grade crossing at Talbott; Dr. Tadlock and his nephew were instantly killed, and Mrs. Tadlock died from her injuries forty minutes later.

Oscar Paul Chester, M.D., Chicago, Northwestern University Medical School, 1896; aged 45; a Fellow of the American Medical Association; formerly attending physician to Mercy Hospital, Chicago, and instructor in physical diagnosis in his alma mater; who had been obliged to relinquish his practice two years ago on account of cerebral hemorrhage; died at the home of his mother in Champaign, Ill., June 24.

Samuel T. McDermith, M.D., Denver; University of Louisville, Ky., 1876; aged 67; formerly a Fellow of the American Medical Association and a member of the Colorado State Medical Society; formerly president of the medical section of the National Fraternal Congress, and for twelve years supreme medical examiner of the Fraternal Union of America; died suddenly in his office, June 15, from heart disease.

Henry Hughes, M.D., Long Branch, N. J.; College of Physicians and Surgeons in the City of New York, 1873; aged 67; a resident of Long Branch for more than forty years; for a number of years a member of the medical staff of the Monmouth Memorial Hospital; died in Miss Alton's House for Private Patients, New York City, June 14, from ascites.

Fenimore Cooper Hoke, M.D., Richfield Springs, N. Y.; College of Physicians and Surgeons in the City of New York, 1896; aged 45; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of New York; for many years a practitioner of New York City; died at his home, June 16.

William Arthur Charlton, M.D., Palmyra, Neb.; Lincoln, Neb., Medical College, Eclectic, 1908; aged 32; professor of materia medica and therapeutics in his alma mater; a member of the Nebraska State Medical Association; was instantly killed by the overturning of his automobile about nine miles from Lincoln, June 5.

Clarence Webster Coulter, M.D., Oil City, Pa.; University of Pittsburgh, 1888; aged 59; formerly a member of the Medical Society of the State of Pennsylvania; a member of the National Association of Railway Surgeons; local surgeon of the Pennsylvania System to the Oil City Hospital; died at his home, June 10.

John Ellis Gilman, M.D., Chicago; Hahnemann Medical College, Chicago, 1871; aged 74; emeritus professor of materia medica and therapeutics in his alma mater; one of the oldest and most esteemed homeopathic practitioners of Chicago; died in St. Luke's Hospital, June 21, from cerebral hemorrhage.

Lawrence Thomas Aitkin, M.D., Brooklyn; Long Island College Hospital, 1908; aged 31; assistant to the Coney Island Hospital, the Medical Department of St. Peter's Hospital, the Long Island College Hospital and the Polhemus Clinic, Brooklyn; died at his home, June 18.

Robert William Hutcheson, M.R.C.S., England, 1857; M.D. University of St. Andrews, Dundee, Scotland, 1858; Licentiate of the Apothecaries' Society of London, 1859; aged 80; for fifty years a practitioner of Rockville Center, N. Y.; the dean of the medical profession of Long Island; died at his home, June 13.

Phineas J. Montgomery, M.D., Los Angeles; formerly of Council Bluffs, Ia.; Hahnemann Medical College, Chicago, 1880; aged 74; formerly consulting physician and surgeon to the Council Bluffs General Hospital and physician to Mercy Hospital; died at his home in Hollywood, Los Angeles, June 2.

Thomas Walter Long, M.D., Newton, N. C.; New York University, New York City, 1885; aged 56; a member of the Medical Society of the State of North Carolina; who fractured his hip in a fall while alighting from an automobile at Newton, June 9, died in a hospital in Hickory, N. C., June 11.

William Lane Duff, M.D., Harrisburg, Pa.; Philadelphia University of Medicine and Surgery, 1868; Medical College of Ohio, Cincinnati, 1874; aged 71; a member of the Medical Society of the State of Pennsylvania; for nearly forty years a practitioner of Harrisburg; died at his home, June 8, from uremia.

Samuel Murtland, M.D., New York City; College of Physicians and Surgeons in the City of New York, 1883; aged 66; formerly a member of the Medical Society of the State of New York; a fellow of the New York Academy of Medicine; died at his home, June 15.

Thomas Kirkpatrick, M.D., Garnett, Kan.; College of Physicians and Surgeons, Chicago, 1883; aged 58; a member of the Kansas Medical Society; secretary of the State Board of Health under Governor Morrill; died at his home, June 11, from heart disease.

Solomon Carrington Minor, M.D., New York City; New York University, New York City, 1892; aged 66; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of New York; died at his home, June 16.

Levant Emery Hackley, M.D., Oak Park, Ill.; College of Physicians and Surgeons in the City of New York, 1850; aged 89; for many years a druggist of Minnesota, Chicago, and Wisconsin; died at his home, June 13, from senile debility.

David Saunders George, M.D., Marshallberg, N. C.; North Carolina Medical College, Charlotte, 1903; aged 51; a Fellow of the American Medical Association; died recently in a hospital in Morehead City, N. C.

John C. Knauer, M.D., Reading, Pa.; College of Physicians and Surgeons, Baltimore, 1886; aged 52; died in the Homeopathic Hospital, Reading, June 3, from septicemia due to an operation wound.

James J. Evans, M.D., Straud, Okla.; University of Louisville, Ky., 1894; aged 43; a member of the Oklahoma State Medical Association; died suddenly at his home, June 5, from heart disease.

William F. Beck, M.D., Buffalo, N. Y.; University of Buffalo, 1893; aged 59; for several years president of the Clinton Street Business Men's Association; died at his home, June 2.

J. T. Sparks, Camden, Tenn. (license, Tennessee, 1885); for more than thirty years a practitioner; died at his home six miles north of Camden, June 7, from cerebral hemorrhage.

Max Hermann, M.D., Detroit; Detroit College of Medicine and Surgery, 1910; aged 30; a Fellow of the American Medical Association; died at his home, June 3.

Thomas H. Coe, Byrdstown, Tenn. (license, Tennessee, 1889); aged 57; for thirty-four years a practitioner; died at his home about June 8, from tuberculosis.

Thacker Ellsworth Lee, M.D., Washington, D. C.; Howard University, Washington, D. C., 1892; aged 56; died at his home, June 8, from pernicious anemia.

Peter Hewetson, Amanda, Ohio (license, Ohio, years of practice, 1896); aged 85; for sixty years a practitioner of Amanda; died at his home, June 3.

Harlow Erwin Dunton, M.D., Brooklyn; University of Vermont, Burlington, 1877; aged 55; died at his home, June 6, from cerebral hemorrhage.

Alfred Paul Keam, M.D., St. Paul; Detroit Medical College, 1880; aged 63; died at his home, June 2, from angina pectoris.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

WINE OF CARDUI SUIT

Instructions to the Jury

BY THE HONORABLE JUDGE GEORGE A. CARPENTER

The following are the instructions of Judge Carpenter as given to the jury in the Wine of Cardui suit, Friday morning, June 16. Because of their importance, the instructions are printed out of their order.

Gentlemen of the Jury:—

For nearly three months you have been engaged in this trial. That your labor might have been shortened is not important. It means much to the litigants, and your patience has been appreciated both by the Court and counsel. Your service is compensated for, not alone by your fee bill but by your being able to be a substantial part of our greatest institution. To be able to determine what is right between man and man is an opportunity which is not given to all and, to fulfil well the duty imposed upon you in this case is a privilege which I foretell some day you will be proud of.

Counsel engaged on both sides are earnest and capable men charged with a serious responsibility to their clients and they have discharged their obligation to the full. It is not strange that from time to time during the course of the trial, they have indulged themselves in a little acidity of comment towards each other and to have now and then argued so vehemently that the Court could not be heard. Nothing that counsel have done or said, however, has passed the bounds of propriety, but I am bound to tell you that the evidence in the case you must take from the sworn witnesses and the exhibits which have been admitted for your consideration, and from no other source.

It may be well at this point to impress upon you certain fundamental principles of law applying to all civil cases and to this case in particular. You must realize, and I so instruct you, that yours alone is the right, power and duty to determine from the evidence what the real facts are. Mine is the duty to advise you as to the law to be applied to those facts. I wish you to understand this clearly and no matter what I may say in these instructions about the facts or the witnesses, no word of mine is or should be permitted to influence you one way or the other so far as the determination of any material fact is concerned. If, perchance, I make any reference to the evidence, remember, please, it is for the sole purpose of enabling you to exercise your best judgment in settling the issues of fact involved. It is my duty to declare to you the law and it is your duty to apply the law so declared. You must determine what the facts are, uninfluenced by any views which you may think the Court has.

The Court has not given or intended to give or even intimate at any time during this trial, nor in these instructions, any views as to what are the facts or as to what inferences, if any, may be or should be drawn from the facts.

You are charged, therefore, to disregard any notions you may entertain as to what the Court's views may be on the

evidence or its sufficiency. Yours is the responsibility with reference to the facts; mine as to the law.

On the other hand, whatever may be your personal impressions gained as laymen in regard to the law of this case also must be disregarded by you and you must be actuated entirely by what the Court tells you in these instructions is the law of the case.

The Court instructs the jury that no evidence has been offered in this case to sustain the replication to the plea of release to the first count of the declaration, and that the plea of release to that count must prevail. Therefore you cannot consider the first count of the declaration in making up your verdict and you are to decide the case upon the second count and upon the second alone.

You may, however, consider all the evidence presented by either side in arriving at your verdict upon the second count.

This is a case for damages based upon alleged libelous matter. Libel is a malicious defamation expressed in writing or by signs or pictures or by epitaphs tending to impeach the honesty, integrity, virtue or reputation of a person and to thereby expose him to public hatred, contempt, ridicule or obliquy and cause him to be shunned or avoided or to injure him in business or reputation.

One's good name is the only thing we know of in this material world which, if lost, cannot be compensated for by money. Remember in this connection that the fair name of a business or partnership in a commercial community is quite

as valuable an asset as the fair name of an individual, in the community in which he lives.

No man is entitled lightly or recklessly or maliciously to defame either an individual or a commercial enterprise. The law recognizes the value to an individual of a business reputation and strives to give redress for its injury. It imposes upon him who attacks it by a libelous publication, a liability to make measurably full compensation for the damage to the reputation and for the

shame and obloquy which are caused by the publication of the libel.

The Court instructs you that the following paragraphs which are in the article published by the defendants in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION of July 18, 1914, are libelous per se, and I will explain later what "libelous per se" means. I quote from the second count of the declaration:

"Such then in brief, was the Journal's original article on Wine of Cardui. In it two things were emphasized: one, the more important, the fact that Wine of Cardui is a vicious fraud; the other, that the preparation contains 20% alcohol, and so far as the Association's chemists could discover, no other drugs in amounts sufficient to give any medicinal effect. In fact, it seems that the Journal's statement to the effect that Wine of Cardui contains twice as much alcohol as is found in champagne has elicited more comment than the charge that the stuff is an outrageous fraud on the women of the country."

And again from the same count, and the same article:

"The second reason for the publication of 'an explanation,' was that the matter might be put up squarely to the membership of the Methodist Episcopal Church, which has not only highly honored Mr. Patten, but has also accepted from Mr. Patten money derived from the sale of a vicious and fraudulent patent medicine."

And again:

"As it has been said before, however, the alcohol content of Wine of Cardui is but a minor indictment against the product; the basic objection to it is that the business has been built on deceit; that its sale is a wicked and vicious fraud perpetrated on ailing women."

And again:

"To summarize: 1. Wine of Cardui is a vicious fraud. 2. Each dose contains as much alcohol as is found in about 100 drops of

Statement Made by the Court

"It has been represented to the Court that rumors have been spread, by whom it is at this time unimportant, to the effect that various doctors who have testified in this case, volunteered in open court the names of their patients. Such rumors are false. All of the doctors, save one from Chicago, who had permission from his patient to disclose her name, requested the Court to allow them to withhold the names of their patients. This request was granted upon condition that the names be given to opposing counsel. As a result, none of the names were mentioned in open court or given to the public, but were given privately to opposing counsel for verification and investigation. The foregoing statement may be made a part of the record in this case."

[For explanation of the above see Editorial Comment, page 41]

"whiskey and, so far as careful chemical and physiologic experiments show, does not possess any other drugs in sufficient quantities to give any appreciable therapeutic effect."

And again:

"The Journal believes that the exploitation of Wine of Cardui is vicious and fraudulent."

These statements, I tell you, are libelous per se in that they charge that the plaintiffs were guilty of perpetrating a fraud upon women who purchased Wine of Cardui, in manufacturing and putting the same upon the market as a woman's tonic possessing medicinal value, with full knowledge, actual or constructive, that it was worthless and produced no medicinal effect except from its alcoholic content.

In order to justify this charge it will be necessary for the defendants to prove: First, that Wine of Cardui is worthless and produces no medicinal effect except from its alcoholic content. And, second, that the plaintiffs had knowledge or should have known of such fact while manufacturing Wine of Cardui and placing it upon the market.

You are also instructed that the following paragraphs, which are in the same article published by the defendants in THE JOURNAL of July 18, are also libelous per se, and I am also quoting from the second count.

"The older and new claims for Wine of Cardui were compared and it was shown that while direct lies have been removed from the labels and cartons of Wine of Cardui—which would render the manufacturer liable under the Food and Drugs Act—the most outrageous falsehoods were still printed in booklets sent out to women who answered the Company's advertisements. These booklets are not subject to the penalties of the Pure Food Law."

And again:

"As it has been said before, however, the alcohol content of Wine of Cardui is but a minor indictment against the product; the basic objection to it is that the business has been built on deceit. To summarize, the claims made in recent advertising sent out by the Chattanooga Medicine Company, but not subject to the supervision of the Food and Drugs Act, were still false, fraudulent and vicious."

Those statements are libelous per se, in that they charge the plaintiff with fraudulent and vicious advertising for deceiving the public and to have builded up their business of the manufacture and selling of Wine of Cardui on deceit.

In order to justify this charge, it will be necessary for the defendants to prove, first: that the advertising done by the plaintiffs and proved in this case was fraudulent. That is, that the medicinal virtues possessed by Wine of Cardui were grossly overstated and that the effects of its use in female diseases for which it was recommended were not merely exaggerated, but were grossly misrepresented and that the plaintiffs knew or ought to have known, when such advertising was done, that the virtues of Wine of Cardui and the effects of its use were grossly overstated.

Two defenses have been urged before you. One is justification, and the other, qualified privilege, or as it is sometimes called, "fair comment." It may be well for me to illustrate to you the nature of these defenses.

You may publish of a man the most serious thing possible and, while that publication constitutes libel per se (and by that I mean what is libelous by itself, and of itself without proof of more) you who have published it may come into court and say, "Yes, that is true. I did publish this of the man, but everything I published is true and I justify my publication because I published the truth."

In other words, if I publish of a man that he is a thief and he complains, I may come into court and say that he is a thief and if I satisfy the jury that he is a thief, then the jury must render a verdict for the person publishing the libel. That defense, in the law, we call justification and the reason it is allowed is because, in this country, while we do not permit license, we do allow the freedom of the press and the freedom of speech on the part of every person whether that speech be by word of mouth or written on a piece of paper.

But along with this defense of justification comes another principle, and that principle is that the justification must be as broad and comprehensive as the libel itself.

In other words, to use the same example, if I have charged a man with being a thief I must show to the satisfaction of the jury that he is a thief and if I should show only that he was a man who did not keep his word, or that he had some other unpleasant characteristic, but failed to show that he was a thief, then my defense of justification fails, because it is not so broad as the charge.

This does not mean that my proof must be in the exact words of the charge, but it means that the defense must be substantially as broad as the charge. I hope I have made this clear to you.

If the defendants' characterizations of the plaintiff and his business in your opinion are true, on this branch of the case, if the defense has satisfied you by a fair preponderance of the evidence that it has shown the truth to be substantially as broad as the charge, then the defense has succeeded in meeting the libel by justification.

On the other hand, if you feel and believe from the evidence that the defendants have not proved the substantial truth of their statements, then this defense fails.

The other defense in this case is the defense of qualified privilege. There are two kinds of privilege recognized by the laws of this country. The first, we are not concerned with in this case, but I will tell you of it by way of illustration. A representative in Congress or a United States Senator, a judge upon the bench or a lawyer in the court room may say what he pleases as a part of the proceedings of the House or the proceedings of the Senate or in the Court room, and no person may call him to task. That is what we call absolute privilege and it is allowed because we must in such matters have free, full and fair discussion and there must be no limitation upon the opportunity of a man under such circumstances and so situated, to express himself courageously and freely.

The defense of qualified privilege, or as it is sometimes called, conditional privilege, is this: that any person may discuss a matter of public concern, provided: first, that he has not been moved by actual malice; second, that his comment or criticism shall be fair and reasonable. That is to say, it must be the kind of comment or criticism, which, under all the circumstances of the case, twelve men like yourselves would say was fair and reasonable.

If, in the discussion of a public matter, and in this case I charge you that the American Medical Association in writing the articles about Wine of Cardui was treating a matter of great public concern, if I say in the discussion of a public matter any person publishes of another fair and reasonable comment upon his conduct or business and the publisher is actuated by no element of actual malice, then that publication is privileged, and there may be no recovery whatever because of that publication.

Fair and reasonable comment, however, does not include a reckless disregard for the truth or any statement inspired by malice or evil intent.

In the event that you find by a preponderance of the evidence that the defendant has not justified or proved its claim of justification, that I say will bring the defendants to their second ground of defense, qualified privilege. In that defense, the defendants say in substance that what they wrote and published was a matter of public interest and public concern; that the plaintiff by his advertising invited people to use his medicine, and his system of treatment and that, if the defendants really believed it to be a delusion, they had a right to maintain that it was so; and even if in drawing inferences of bad intention, they fell into error yet, if they wrote honestly and with an intention of exercising their vocation through their magazine fairly and with reasonable moderation and judgment, they would be entitled to a verdict. This I believe to be the law.

Here the plaintiff challenged public criticism by advertising a medicine and a system of treatment, inviting the public to adopt it as a means of curing many of the most destructive diseases common to women. In doing this, I say, it challenged public criticism and if a public writer,

using a reasonable degree of temperance and moderation, as behooves anyone who makes imputations upon others, if a public writer thus discussing the subject in the exercise of his vocation, falls into error as to the facts or inferences and goes beyond the limits of strict truth he is nevertheless privileged if he acts in good faith. The occasion is a privileged one, and if the privilege is exercised honestly and faithfully, and with reasonable regard to what truth and justice require, then, though he may exceed the limit of what he can legally prove to be the truth, he is protected.

It is not therefore necessary in this case that the plea of justification of the truth should appear to be made out if you think the writer of the articles complained of was in the reasonable or honest exercise of his vocation as a public writer, even though he was not fully warranted in drawing the inferences he did as to the conduct of the plaintiff and though it may be that he was not entirely justified by the truth.

You must take into consideration the circumstances under which the article was written, the purposes for which the American Medical Association was organized and the character of its work. If you believe that the article was written with an honest intention and that the writer believed that the plaintiff's system was delusive and that the medicine had no therapeutic value and that its only active principle was the alcoholic content, you are to take all of these things into consideration in making up your mind whether the thing published was justified even if it were not true.

If you believe from the evidence that the writer of the article did not write from personal spite or professional malice, but wrote honestly to denounce what he honestly believed a system of quackery and imposture and to do his duty to the public and he believed the things he was writing, then there can be no recovery in this case.

The American Medical Association is a corporation not for profit organized and operated in the interest of mankind and for the advancement of the science of medicine and surgery. Its publications are many and reach upwards of 75,000 physicians and surgeons. No attack has been made on this organization as such and you may assume that it had the right through its Propaganda Department to criticize favorably or unfavorably any method of treatment for diseases by medicine or surgery. It must, however, confine itself to legitimate criticism. It had the right to advise its doctor subscribers that, in its opinion, Wine of Cardui had no therapeutic value, and that there was nothing potent in it save its alcohol.

If this were the case with John A. Patten, which I emphasize to you it is not, complaint might justly have been made that the articles of the defendants overstep the bounds of fair comment and criticism or qualified privilege. It was not necessary in the interest of humanity for the defendants to criticize Mr. Patten in his church relations. But this suit involves purely a business proposition and no consideration may be paid by you to the feelings of the surviving partner, however lacerated they may be, or to the feelings of his family, however keenly his family and relatives may have suffered.

The plea of fair comment or qualified privilege will not avail a defendant who is proved to have acted maliciously with a reckless disregard for the truth. The burden of proof under a plea of fair comment or qualified privilege is on the plaintiff, and any facts that would go to show malice would tend to rebut the defense of fair comment, or it may be inferred from the terms of the article itself. If the right to publish fair comment on a matter of public interest is misused to gratify any indirect or personal motive of the writer, the malice thus shown destroys the defense.

There has been no direct evidence offered by the plaintiff in this case showing that the defendants were actuated by malice in publishing the article in question. It is for you to determine under all the circumstances in evidence in this case, whether such malice may be inferred from the terms of the articles themselves.

The plaintiff is required in every civil case to prove his case by a preponderance of the evidence. The defendants when they set up an affirmative defense, such as a plea of justification, have the same obligation. This does not mean that they have to prove their case by a greater number of witnesses. It means that the evidence must overbalance, even though by a little, on one side, that of the evidence on the other side. That is what we call "preponderance."

So far, however, as the defendants affirmative plea is concerned, the plea of justification, it involves a charge of fraud and deceit. The law in this case, while it does not require the proof to be made beyond a reasonable doubt, yet it requires you to be satisfied by a clear preponderance of the evidence, that a fraud has been made out, because fraud is never presumed.

Under the instructions which I have given you, you will render a verdict for the defendants if you believe from the preponderance of the evidence that this libel was justified and, when I say "preponderance of the evidence," I mean a clear preponderance of the evidence.

Or, if under the head of "qualified privilege," you believe from the evidence that the facts complained of in this article of July 18, 1914, constitute, under all the facts and circumstances of the case, a fair and reasonable comment or criticism of the plaintiff and his business.

Should you think to the contrary, you will render a verdict for the plaintiff for damages, as I will define them, in such an amount as you may deem proper. If you believe the defendants have justified in this case, there can be no recovery. If you believe the defendants have not justified, then if you believe the articles complained of are fair comment and criticism, in that case the plaintiff cannot recover.

If on the other hand, you believe the defendants have not justified nor made out their defense of fair comment or privilege, your verdict must be for the plaintiff.

You are the sole judges of the credibility of the witnesses and the weight that should be given to their evidence. You may take into consideration their interest, if any, in the outcome of the trial; their relation, if any, to the parties; their demeanor while testifying, their frankness and candor while on the witness stand or the contrary as the case may be. The fact, if it is a fact, that they have been contradicted or corroborated by other credible evidence or circumstances in evidence and, all things considered, you are to determine what weight is to be given to the evidence of each.

If you believe from the evidence that any witness has intentionally or knowingly sworn falsely as to any material fact or circumstance, you are at liberty to disregard altogether the evidence of such witness except in so far as it may have been corroborated by other credible evidence or circumstances in evidence.

Now, as to the measure of damages. Damages which are awarded in libel cases are of three kinds; normal, substantial and vindictive. Vindictive damages are sometimes known as punitive or exemplary damages. Nominal damages are awarded when the action is a proper one to bring, but the plaintiff has not suffered any substantial monetary damage and does not desire to put the money into his pocket, because of the things written. Nominal damages in this jurisdiction amount to one cent.

Substantial damages are awarded when the jury honestly endeavors, as men of business, to arrive at a figure which will fairly compensate the plaintiff for the injury which he has in fact sustained.

When words used are not libelous per se, that is, when they on their face are not of such a character as the law will presume to be necessarily prejudicial to the plaintiff's reputation, proof must be given to show special damages resulting from their publication. But when the words used are libelous per se, that is, when on their face they clearly must have injured the plaintiff's reputation, or in the case of a partnership, the business or business reputation of such parties, a substantial amount may be recovered without giving any evidence of actual pecuniary loss. The reason of this

rule is that while it is apparent that the libelous words must necessarily injure one's reputation or business, yet it is often impossible for the person libeled to prove even the approximate amount of damages suffered by him, and the law therefore leaves the matter to the reasonable discretion of the jury to fix what they may believe to be just compensation after giving due consideration to all the facts and circumstances proven.

The case now before you is one that is being prosecuted by Z. C. Patten, Jr., as surviving partner in the firm of John A. Patten and Z. C. Patten, Jr., who were doing business under the firm name of the Chattanooga Medicine Company.

When libelous words have been published with reference to a partnership business, an action may be maintained for such publication by the partners jointly to recover damages measured by the rules stated. Furthermore, if there be published of one member of a firm, libelous words of such character that they reflect on the credit and the integrity of the firm and naturally affect the firm's business, a joint action may be maintained by the partners to recover damages suffered by the firm.

It is also the law that when a publication as to a firm's business or one or more members of the firm is libelous per se, that is, that it is of such a character as to naturally injure the firm's business, substantial damages may be recovered in a joint action by the partners without their proving specific damages. In such a case punitive damages may also be recovered if the facts be such as justify the awarding of such damages under the principles hereinbefore stated.

But in this case, in determining the amount of actual damage which Z. C. Patten is entitled to recover you must keep in mind the distinction between the damage which John A. Patten in his individual capacity could have recovered had he lived, and those which the firm alone is entitled to have awarded them in this case, if any. You cannot in this case award any damages for any mental anxiety or suffering endured by John A. Patten or by Z. C. Patten, Jr., in consequence of the publication of the articles in question, nor for any effect the libelous words may have had upon the standing of John A. Patten in the Methodist Episcopal Church, or upon his relationship thereto, or for any effect that they may have had on any private business carried on by either of the partners of the firm.

But you should take into consideration the character of the charges published by the defendants both about the business in which the firm is engaged and either of the partners personally and if those parts of the articles which refer to either of the partners individually are of such a character that they reflect upon their integrity in connection with the business prosecuted by the plaintiffs, and therefore upon the firm's standing and business integrity, then such charges should be looked into in estimating damages as well as those relating to the firm and its business.

In certain cases the jury is permitted to award punitive or exemplary damages in their desire to signify their sense of the defendant's conduct by fining him to a certain extent, and therefore punish him by awarding smart money or a sum in excess of what would be adequate compensation for the injury of plaintiff's reputation. It is sometimes stated that a jury may, in addition to compensatory damages against a defendant, by way of punishing him, and as an example to others, assess such damages as in their sound judgment, under all the evidence in the case, they believe he ought to pay.

But this doctrine of punitive damages requires on the part of the jury a high degree of watchfulness to prevent it from being perverted and from being extended beyond the real principle on which it is based by allowing the plaintiff to characterize the acts of the defendant with a degree of enormity and turpitude which the law does not affix to them and demand punishment for fictitious offenses and thereby put money in his own pocket under the guise of protecting society. Exemplary damages or punitive damages may be allowed by a jury in actions for libel when, on a consideration of all the facts and circumstances of the case, they find that the publication has been made with a reckless dis-

regard of the rights and feelings of the persons libeled as well as where they find that it has been inspired by hatred or ill will towards or an intent to injure him.

I will give you two forms of verdict. If you find for the defendants, you will sign the form which reads "We, the Jury, find the defendants not guilty." If you find for the plaintiff, you will sign a form which reads, "We, the Jury, find for the plaintiff and assess his damages in the sum of" — blank dollars, filling in such sum as you may be satisfied under all the circumstances of this case, will make adequate compensation.

Are there any suggestions, gentlemen?

Mr. Hough:—We except to that part of your Honor's charge which relates to the release.

THE COURT:—Yes, that will be noted.

Mr. Hough:—And which states that there was no violation of the terms of their agreement as set up in the replication in connection with their rejoinder.

THE COURT:—Every point that may be urged against the Court's striking out the first count will be preserved in the record.

Mr. Hough:—Then we object to your Honor's charge with reference to qualified privilege in view of your Honor's action on demurrer to a plea of that kind and we particularly object to your Honor's failing to tell the jury that there can be no qualified privilege or fair comment except upon matters which are proven. There can never be a comment which is fair or a qualified privilege upon a matter which is in dispute, nor can there be a fair comment or privilege with reference to an attack on the character as distinguished from an attack on the thing itself. We think that is the law also.

THE COURT:—I explained to the jury that every finding they make must be based upon the evidence. That was in the general charge.

Mr. Hough:—Now we wish to except further to your Honor's statement that there was no evidence of good faith or want of malice, without drawing the jury's attention to the fact that the republication, the reprinting and the circularizing are of themselves evidence of malice.

THE COURT:—I intended to direct the jury's attention to that point when I said that they may take into consideration the articles and all of the articles that have been written and all of the evidence in the case and make up their minds whether from all the circumstances, there was malice.

Mr. Hough:—Now, your Honor, we except to that part of the charge, which refers in connection—we are objecting generally to everything you have said about fair comment and I want to point out the things, if I can recollect from the charge what they are—that they could consider whether this was done in good faith and it was fair comment and without malice. We contend that they cannot consider that when the defendants did not put a word of evidence before the jury to show that they did it in good faith and were without malice.

THE COURT:—That position would be quite sound if the matter of fair comment and privilege must be brought to the attention of the Court by special plea, but so long as it must be shown or may be shown, under the general issue, I am of the opinion that it is for the plaintiffs to prove the malice. So that point will be saved.

Mr. Hough:—Then there was one other addition to your Honor's instructions which we would like to have your Honor consider as to whether you should not give it in connection with the charge.

(The instruction proposed by counsel for plaintiff is in the words following):

"In giving you the instructions I have given you gentlemen, upon the question of fair comment or criticism, it is proper for me to instruct you that under the pleadings in this case, you cannot consider this question at all except upon the measure of the damages to be awarded; for the plea of the general issue (the publication of the articles being undisputed) admits the falsity of the charges complained of and thus admits the right of the plaintiff to recover some amount; the amount which you might otherwise find to be mitigated or lessened only to such extent as you, in the exercise of your sound discretion may deem right and proper, if you should find as a matter of fact that the libelous matter complained of, or any substantial part of it, can be fairly said to be fair comment or criticism."

THE COURT:—I am inclined to think that I can give this to the jury, but to save extended argument on it here in the presence of the jury, I will show this to Mr. Scofield just to see if he has any suggestion to make before I give it. We don't want to get any error on the question of damages.

Mr. Hough:—Then I wish to also take exception to your Honor's statement that there was any burden on us to prove actual malice.

THE COURT:—That may be done.

Mr. Hough:—And to the failure of your Honor to charge that the last paragraph, to the effect that shame should be brought into partnership with the man—

THE COURT:—If I have overlooked that in the article of July 18, the jury should be told that that is libelous per se.

Mr. Hough:—I think so, yes.

THE COURT:—Have you the article there so I may read it to the jury? I perhaps dropped into error because I took the things I call libelous per se from your statement.

Mr. Walker:—If is there on page 17 of our suggestions at the bottom of that first column on the left hand side.

THE COURT:—Gentlemen of the jury, you may understand that I regard this portion of the article of July 18 as libelous per se as well as the others to which I have called your attention:

"The law may better conditions in some respects, but whether it 'is bad booze or poisonous patent medicines that are dispensed, 'the only way really to accomplish anything is to bring shame into 'partnership with the man who makes money out of it."

Mr. Walker:—There is one point more. In your statement of responsibility, you said something about actual malice in the writer. Actual malice may be established by the repetition of the article and by the continual assertion of its truth under the plea of justification up to the very finish of the case, which they have done here.

THE COURT:—The jury may understand that the repetition of the article or the substance of it is evidence which they are to consider in arriving at the verdict on the question of malice.

Mr. Walker:—The repetition and the continual argument or its truth to the final finish of the case is an element as to whether they had actual malice.

THE COURT:—And the jury may so consider that. I want the jury to consider further that when I used the words "writer" and "publisher," that I regarded the writer and publisher here as one and when I referred to one, I referred to the other as well. I did not mean to distinguish between some editorial writer who wrote the article and the journal or magazine which published it.

Mr. Walker:—If by continuance of repetition there be actual malice, malice of the writer or publisher is malice of the Association.

THE COURT:—There is no question about that. If you find that there was malice in this case, it makes no difference whether it was malice on the part of the writer who wrote the article, or by the Medical Association that sent out the article through its Propaganda Department.

Mr. Loesch:—We except to that portion of your Honor's charge.

Mr. Walker:—Just one moment. I wish to take an exception to your Honor's failing to instruct the jury to leave it as an issue of fact that on those things that you have said were libelous per se, we had a right to recover and they should have been instructed on those things that you said were libelous per se, to render a verdict for the plaintiff.

THE COURT:—On all of those matters that I have characterized as libelous per se there must be a verdict for the plaintiff unless you find that the plaintiff (a misstatement for defendants) has justified and proved the truth or the substantial truth of those things or unless you find that under the law of fair comment and privilege as I have given it to you, they have acted only within their privilege.

Mr. Walker:—Your Honor used the word "plaintiff" instead of "defendant."

THE COURT:—I should have said that the plaintiff is entitled to recover.

Mr. Hough:—One other point upon which I think your Honor should have charged the jury, and that was the question as to the fact of the worthlessness of the medicine being a matter of opinion.

THE COURT:—No, you may save that point. I gave that very serious consideration.

Mr. Loesch:—The only point, your Honor, that we have is that you told the jury that we must prove the justification by a clear preponderance of the evidence.

THE COURT:—You may save that point.

Mr. Loesch:—We except to that.

Mr. Charles J. Scofield:—(Referring to suggestion for instruction tendered by plaintiff, and hereinbefore set out in full.) We object to that.

THE COURT:—I would like to have you state briefly your objection.

Mr. Charles J. Scofield:—Our objection is that that practically tells them that the defense of fair comment is not before the jury under the general issue. That tells them in effect that there is no evidence on fair comment under the general issue before the jury.

THE COURT:—It is perfectly well settled that you cannot make proof in mitigation of damages where you have a plea of justification.

Mr. Hough:—Nor can any of the facts offered in support of the truth under the plea of justification, be considered—

THE COURT:—Under the law as I conceive it to be—

Mr. Hough:—I just want to finish the statement—cannot be considered in mitigation of damages.

THE COURT:—Under the law as I conceive it to be, the defense of fair comment and privilege, qualified privilege, is just what it means. It is a defense and not something that goes to permitting the plaintiff to recover only in mitigation of damages. The reporter may copy this as having been asked of the Court to give the jury and refused and you may preserve the exception.

Mr. Hough:—May we consider that the requests which we made of the Court, which were not given—

THE COURT:—I could not do it. I did not have time. There were something like 200 pages all told handed up to me by counsel. It was absolutely out of the question.

Mr. Charles J. Scofield:—We have a great many, but we are not asking them of your Honor.

Mr. Hough:—We wish to save an exception to your Honor's failing to instruct the jury or rather that on the points upon which they did not justify there should be an instructed verdict for the plaintiff.

THE COURT:—Yes, you may save that.

Mr. Williams:—I do not want to tax your patience, but I prepared that little instruction requesting that the—

THE COURT:—This substantially says, Mr. Williams, that notwithstanding the jury might be of the opinion that the article was written under the privilege of fair comment and criticism, nevertheless there must be a verdict for the plaintiff, and this goes only to the amount of damages.

Mr. Williams:—The theory of it was based on the O'Malley case where it said or where they made the criticism that it came under the plea of general issue which admitted the falsity of the charge and where they then plead in mitigation. That is held in that case.

Mr. Charles J. Scofield:—We have got an abundance of authority to sustain our position.

THE COURT:—Gentlemen of the jury, as my distinguished associate has frequently said, when you go into your jury room, don't leave your common sense behind. Remember that this is a business proposition. You are twelve men coming from different walks of life and each one of you looks at things from a little different angle. I undertake to say that if you will take your common sense into the jury room with you, that the composite picture which you get of this evidence will result in a verdict which will be a substantially correct verdict. Now the exhibits, gentlemen, you can arrange with the bailiff, for all the exhibits ought to go into the jury room.

WINE OF CARDUI SUIT

(Continued from page 2113)

May 15, 1916, Afternoon

TESTIMONY OF DR. FRANCIS E. THORNTON

The Court met pursuant to adjournment. Dr. Francis E. Thornton was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. HOUGH

Dr. Thornton testified that he is a physician and has practiced in Chicago for 28 years. He graduated from the Bennett College of Eclectic Medicine and Surgery. He was ten years on the staff of the Frances E. Willard Hospital, 14 years on the Cook County Hospital staff, 6 years with the Norwegian Tabetha Hospital, and 5 years on the Norwegian Deaconess' Hospital staff. He taught physiology in the Bennett Medical College for six years, diseases of children for two years in the Bennett Medical College, and internal medicine in the Bennett Medical College and Chicago College of Medicine and Surgery for eight years. He does general practice, the greater percentage of his work being the diseases of women and children. He does only minor surgery. He believes that during his practice of 28 years he has treated 30,000 to 40,000 women for female diseases covering the entire range of female troubles from puberty to the menopause, including pregnancy. He testified that he has had over 4,000 cases of pregnancy and has used viburnum prunifolium in his practice in all cases of diseases of women. He has used carduus benedictus for diseases of women for about 20 years.

The witness stated that viburnum prunifolium has been one of the principal remedies that he has used in the treatment of diseases of women. Carduus benedictus is frequently indicated for female troubles. He believes that the effect of combining the action of these two drugs would be to produce a synergistic action and it would take less of each drug to produce the desired results. The smallest dose of viburnum prunifolium which he has used in his practice is three drops of the fluidextract or of the specific tincture which would represent a grain for a drop.

The smallest amount of carduus benedictus which he has used is one tenth of a drop or one tenth of a grain and he has obtained results. He would give them every half hour in fluidextract. He does not believe that the effect was due to the alcohol.

Q.—Have you an extensive practice in Chicago now? A.—I would rather somebody else would say that. I know I pay a good deal more income tax than I would like to.

Q.—On an average, how many patients do you see a day? A.—From 20 to 40.

Q.—Of those patients, how many of them would be on an average women or girls with some female troubles? A.—Two thirds of them.

Q.—Two thirds of them? A.—Yes, sir.

Dr. Thornton testified that he is familiar with symptoms of amenorrhea, menorrhagia, dysmenorrhea and metrorrhagia. When cases came to him that required surgical treatment, he refers them to a surgeon. Eighty per cent. of his women patients are treated medically. He stated that he was familiar with displacements of the uterus and with dynamics of the female pelvis and with prolapsus; that there are cases of uterine displacements that may be cured by hygienic measures and medicine. Under certain conditions carduus benedictus and viburnum prunifolium would be indicated for these conditions.

Q.—Would those medicines, doctor, be indicated for vaginitis, when not produced by malformation, or which did not require surgical treatment? A.—That would depend upon the cause.

Q.—Dependent upon the cause? A.—Yes, sir.

Q.—Are there any cases in which they would be indicated? A.—Yes, sir.

Q.—What class of cases would they be indicated in? A.—Why, in cases that were not due to malignancy, or specific causes.

Q.—What would you say are specific causes? A.—Well, gonorrhea.

Q.—In your school, do you treat causes or symptoms? A.—Symptoms. I would like to make a difference there. We treat the indication, a group of symptoms may produce an indication. It may be one symptom alone.

Q.—Then you mean you treat either the symptom or the group, which means the indication? A.—We treat the indication.

Q.—Doctor, is there any medicine which is regarded as indicated treatment for the inflammation due to gonorrhea? A.—Well, it would depend upon the indication in gonorrhea, as in any other disease.

Q.—Are there any circumstances under which medicine would be indicated? A.—In the treatment of gonorrhea?

Q.—In the treatment of inflammation, which might have gonorrheal origin. A.—Yes, sir.

Q.—Would those medicines contain alcohol? A.—They may. Many prescriptions for the purpose do contain alcohol. Montgomery gives one in his textbook.

Q.—Who? A.—Montgomery.

Mr. T. J. Scofield:—That is objected to.

(The latter part of the answer was then read.)

THE COURT:—Strike it out.

Mr. Hough:—That, as I understand, if the Court please, is already in evidence, that prescription.

THE COURT:—It was volunteered by this witness. If it is in, it is in.

To which ruling of the Court the plaintiff, etc., excepted.

Mr. Hough: Q.—Do you know of any such prescription in any textbooks?

Mr. T. J. Scofield:—That is objected to as immaterial.

THE COURT:—The objection is sustained.

To which ruling of the Court the plaintiff, etc., excepted.

THE COURT:—If that question were put, we could put the entire medical library of the country in. It may be that I am wrong here.

Mr. Hough:—Your Honor ruled in the beginning of the trial—

THE COURT:—In cross-examination, I can see very well that it is improper to call the witness' attention to medical works unless he says he relies upon those books and makes them the basis of his answer.

Mr. Hough:—That is proper cross-examination. Now, whether indirect examination you can ask a witness about it, I am not so sure, because you have the book to produce, if it is in the book. The book is perhaps better evidence than the witness who is merely quoting the book as hearsay.

Mr. Hough:—Does your Honor hold then that, without asking the question, we are entitled to read from the book?

THE COURT:—I am not holding at this time that you are entitled to introduce the book, but the book is certainly better evidence than what the witness says on direct examination.

Mr. Hough:—Well, under some circumstances I can conceive that the witness—

THE COURT:—In other words, if it is competent in the book, the book must be produced. If it is not competent in the book, clearly it is not competent here.

Mr. Hough:—Except as indicating what the general practice is.

THE COURT:—Well, I am not sure that it does.

Mr. Hough:—Well, except as to the question of the extent.

THE COURT:—No, I think at this time I will sustain the objection.

To which ruling of the Court the plaintiff, etc., excepted.

Mr. Hough: Q.—Doctor, in those cases where a medicine containing alcohol is given for inflammations of the vagina, which may have their origin in gonorrheal infection, what is the effect of the alcohol in those medicines? A.—It is nil.

Q.—Is it so generally considered?

Mr. T. J. Scofield:—Wait a moment, I object to that, if the Court please.

THE COURT:—He may give his own opinion.

Mr. T. J. Scofield:—Well, I don't object to that.

A.—I think so.

Dr. Thornton stated that medicines containing alcohol are given to young girls at puberty and that in medicinal doses the alcohol has no effect; that they are given to women at the menopause and the alcohol, in medicinal doses, has no effect. He stated that medicines are given during pregnancy as uterine tonics to make labor easier and that viburnum prunifolium and carduus benedictus are such drugs. The witness stated that he would not consider that uterine tonics or sedatives which contained in each dose as much as 48 drops of alcohol had a deleterious effect when taken two to four times a day according to dosage. He believes that such an amount of alcohol would produce no alcoholic habit nor would it have any effect in producing sexual desire.

Q.—Doctor, would you say that a medicine, composed of 30 grains of carduus benedictus and three grains of viburnum prunifolium (or the extractives from them) per dose, in a menstruum of 20 per cent. alcohol, would be indicated generally for menstrual disturbances of women, such as irregularity, exaggeration and suppression? A.—The latter part of the question? Indicated generally?

Q.—Yes. A.—Well, I would not say that it would be indicated generally. It might be indicated in the treatment of those troubles.

Q.—Well, would you say it would be indicated? A.—Yes.

Q.—For menstrual disorders of women, such as irregularity, exaggeration and suppression? A.—Yes, sir.

He believes that such a medicine might be indicated for uterine and ovarian troubles not requiring surgical treatment, and might be indicated for use during pregnancy, at puberty, and at the change of life.

The witness stated that in the treatment of vaginitis it is important to keep the bowels open and very important to take antiseptic douches, that under certain conditions, *carduus benedictus* and *viburnum prunifolium* in the amounts indicated together with antiseptic douches, and medicine to regulate the liver, would be indicated for vaginitis.

Q.—Would you say that such a medicine could act upon the cause of the disease and have a curative effect upon the seat of the trouble? A.—The question is too general.

Q.—What is that? A.—I say the question is too general. On the cause of the disease—it might be one of a hundred. Certain conditions it would act, and others it would not.

Q.—You mean vaginitis might be due to a large number of causes? A.—Yes, sir.

Q.—And whether the medicine would be good, would depend upon the causes? A.—To a great extent.

Q.—Suppose the vaginitis had been due to an unhealthy discharge from the womb, ovaries, tubes or bladder, would such a medicine be indicated? A.—Under certain conditions.

Q.—Suppose the vaginitis was of gonorrheal infection—or origin, rather, would such a medicine ever be indicated? A.—It might.

Q.—Doctor, do you regard displacements, such as ante flexion and anteversion and retroversion, as being pathological where there are no uncomfortable symptoms suggesting those conditions to the woman? A.—Well, a strict interpretation of the word "pathological" would indicate that.

Q.—Well, would you say that that condition would require treatment, if there were no symptoms or group of symptoms? A.—It would depend upon the amount of deviation from the normal. You might have a slight deviation that would require no treatment. To any great extent, it would require treatment.

Q.—If it was to a great extent, would there not be symptoms? A.—Not necessarily.

Q.—Could that be ascertained without a physical examination? A.—Yes, sir.

Q.—How would you ascertain that? A.—When there were no symptoms?

Q.—Yes. A.—No, you could not determine that without examination.

Q.—Did you say that medicine will cure some of those displacements, or rather the symptoms which accompany them? A.—Yes, sir.

Q.—Would these medicines which you have named be indicated for such conditions? A.—In some of those cases; yes, sir.

Q.—Have cases of prolapsus of the womb been cured by medicine, without any surgical operation? A.—Yes, but with the use of the hygienic measures and as to diet and the patient's position.

Q.—And medicine to keep the bowels open? A.—Yes, sir.

Q.—Would this medicine we have been talking about be indicated for that condition? A.—In some cases.

The witness stated that inversion of the womb is a rare condition. He has seen only one case in 28 years. Whether operation was indicated would depend on how recently the inversion had occurred. If it was of recent occurrence, operation is the proper treatment, if of long occurrence it is best to let the person become adjusted to it. The use of such a medicine as discussed is sometimes indicated in those conditions; such a medicine is indicated for inflammation of the womb.

The witness stated that it might be indicated in certain cases of sterility, and in cases of threatened abortion it is one of the best remedies that we have; that the hypotetic medicine composed of 30 grains of *carduus benedictus* or the extractives of 30 grains, and three grains of *viburnum prunifolium*, or their extractives, per dose, in a menstruum of aqueous solution of 20 per cent. alcohol might be indicated for leukorrhea.

The witness stated that there is a connection between the breasts and the female generative organs through the sympathetic nervous system. He stated that the appearance of the breasts might be suggestive of disease in the female generative organs. If the disease is properly treated it is reflected in the breasts.

Q.—In what way? A.—Well, as the general nutrition of the body comes up, after getting rid of the pathological condition of the pelvis, the breasts will begin to fill up and assume their normal shape.

Q.—Doctor, is there such a thing as a scientific and specific remedy for any of these conditions? A.—Well, to what conditions do you refer?

Q.—These female troubles, or any of them? A.—No, there is no specific for all of them.

Q.—Well, would you say that there is a scientific and specific remedy having a curative effect? A.—Yes, sir.

Q.—Doctor, can a woman who has a headache, or pain in the side or back, ever tell that that is due to some menstrual disturbance? A.—Yes, sir.

Q.—Under what circumstances? A.—Why, when she has it repeated over and over, month after month, the occurrence of the headache and pain in the back and side, coming on just before or at her menstrual period.

Q.—Doctor, can the mere fact that a drug is injected into the uterus either inside or outside of the human body, without having any apparent effect upon it, in ten minutes, indicate that that medicine would have no effect upon the womb, if given in the regular way through the mouth? A.—No, sir.

Q.—Would the mere fact that a drug injected in the body of an animal makes no changes, either in respiration, pulse or circulation, indicate that that medicine was worthless for any womb troubles? A.—No, sir.

Q.—Doctor, what is a medicinal tonic? A.—A medicinal tonic is one that improves the vitality or raises the vitality of the body, or of any specific organ of the body.

Q.—May a medicine be both a tonic and a sedative? A.—It may.

Q.—What is the difference between a tonic and a stimulant? A.—A tonic raises the vitality of the part or the body to its normal condition. A stimulant produces an overaction of the part of the body.

Q.—Are there different kinds of tonics? A.—Yes, sir.

Q.—Is there such a thing as a general tonic? A.—Yes, sir.

Q.—Is there such a thing as a uterine tonic? A.—Yes, sir.

Q.—Are *carduus benedictus* and *viburnum prunifolium* known as uterine tonics? A.—Yes, sir.

Q.—What is the difference between a general tonic and a uterine tonic? A.—A general tonic exercises its influence on the whole body, and a uterine tonic more specifically upon the uterus.

Q.—May a medicine be at the same time both a general tonic and a uterine tonic? A.—Yes, sir.

The witness described the condition known as anemia. He stated that the drugs mentioned might do good in a general way as a systemic tonic. He stated that if anemia is cured, menstruation is sometimes established and sometimes not. Frequently, uterine tonics or ovarian stimulants are required to produce menstruation. He stated that every case of puberty is accompanied by symptoms. A small percentage requires some treatment. When all the symptoms of puberty have occurred and menstruation did not come, treatment would be required. He believes that in one of a hundred cases there is dysmenorrhea during puberty.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that the 20 per cent. alcoholic menstruum will extract the resins from *viburnum prunifolium*. The witness uses specific medicines, and the amount of alcohol used to extract the resins from *viburnum prunifolium* may vary from 48 per cent. to 64 per cent. The amount necessary to extract the virtues depends on the herb. To get all the virtues of *carduus benedictus*, from 70 to 78 per cent. of alcohol is required. The medicines are not indicated in all cases of amenorrhea. The same applies to metrorrhagia, menorrhagia, and dysmenorrhea. He does not refer altogether to surgical cases. Amenorrhea is sometimes a surgical condition, for example, where there might be affection of the tubes, or ovaries or cellulitis. Medicine would be indicated in causes of profound anemia. It would make a difference as to what the anemia was due to. You would first have to find out the underlying cause and cure it.

The medicine described by Mr. Hough would not be indicated in any case of profound anemia. The witness stated that menorrhagia is sometimes due to uterine polypi. He has treated a good many cases of uterine polypi with *viburnum prunifolium*. The medicine described by Mr. Hough might be indicated for uterine polypi when there was a contraction of the uterus with a great deal of pelvic congestion, or varicosity with pelvic congestion. He would determine by examination of the patient. He stated that in treating the patients he first diagnosed the condition by making an examination and then prescribed. He would not prescribe until he had done that. He would not say that the medicine was useful in all cases of flooding. He would not consider this medicine a proper scientific treatment in all cases of menorrhagia.

REDIRECT EXAMINATION BY MR. HOUGH

The witness stated that under certain conditions, the addition of alkali to alcohol increased the extractive power. He stated that there was occasionally a case where one might prescribe without making a physical examination.

The witness stated that when any dispensatory speaks of any 30 grains of a drug, it means the extractives from those 30 grains.

DEPOSITIONS*

* The plaintiff—The Chattanooga Medicine Co.—presented some 498 depositions, about 166 being made by physicians. About 115 were read to the jury; the counsel for both sides agreed that the remainder should be considered as in evidence. Some of the depositions will be abstracted later.

May 16, 1916, Morning

TESTIMONY OF DR. WALTER FRANZ VON ZELINSKI

The Court met pursuant to adjournment. Dr. von Zelinski was called as a witness on behalf of the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. WALKER

Dr. von Zelinski testified that he is a physician practicing in Chicago. He graduated from the Bennett Medical College in 1908 and from the Central States College of Pharmacy and attended St. Ignatius College. He is a lecturer on Materia Medica in the department of Pharmacy at Loyola University and instructor of clinical medicine at the Bennett Medical College. He has been connected with the Loyola University as a teacher since 1909. He is a member of the Chicago Medical Society, the Illinois State Medical Society, the German Medical Society of Chicago, the Tri-State Medical State Society of Illinois, Iowa and Missouri; the Association of Military Surgeons and the American Medical Association. He has treated the diseases of women from puberty to menopause. He also does surgery. He testified that he has treated thousands of women of all nationalities. He used to hold clinics in the medical school. He stated that there seems to be an intimate relation between the ovaries and the breasts and diseased conditions of the pelvis manifest symptoms in the breasts. He has operated on conditions in which operation would give relief. He has removed the uterus and the ovaries. He considers retroversions, retroflexions, etc., pathologic in so far as they are deviations from the normal, but it does not necessarily follow that they give rise to symptoms always. The symptoms are the expression of the disease. There may be displacements of the uterus.

He stated that medicines are practically always indicated in pelvic diseases of women. There are many cases of inflammation where surgical treatment is not required. The witness defined endometritis and metritis and vaginitis. He stated that these conditions might be treated by medicines given through the mouth and are not all surgical cases. He would say that 5 per cent. required surgical treatment. All the others are treated medically.

Q.—Doctor, what is a tonic? A.—Well, a tonic as I understand it, is a medicine which so acts upon the system or the organs, as to cause it to perform its function in a nearly normal manner.

Q.—Are there general tonics? A.—Yes, sir.

Q.—Are there tonics that act particularly on any given organ? A.—Yes, sir; there are general and special tonics.

Q.—What do you mean by special tonics? A.—I mean a tonic which influences certain of the organs in the human body.

Q.—How do those tonics act, what is the method by which they act? A.—Well, you mean the general or the special?

Q.—First, how are they taken? A.—Well, they are taken by mouth, or they may be injected under the skin.

Q.—Take those that are taken by mouth; will you tell the jury, both as a general and special tonic, how they act and how they act on the particular organ so far as you observed it, or understand it. A.—Well, a general tonic may cause an increase in the appetite and act indirectly. The patient, through taking more food, is built up, is improved, his blood is improved and certain forms of blood infections may be overcome, mild or severe, and that improves the patient in a general way.

Q.—Now, where they act specially, doctor, how do they act? A.—Well, specially, you would use a uterine tonic or a heart tonic, or a liver tonic so-called.

Q.—What do you mean by a uterine tonic? A.—Well, I mean by a uterine tonic, a medicine which has an effect upon the uterus especially.

Q.—What do you call that, if you have any name, a medicine that contracts a given muscle? A.—Well, I would refer to such a medicine as a stimulant.

Q.—What is pituitrin? A.—Pituitrin is the extract of a gland found in the brain, and it is used as a stimulant of the uterus.

Q.—Do you consider pituitrin a tonic or a stimulant? A.—No, I consider it a stimulant.

Q.—Would you expect the like action of the tonic on the uterus, that you would find from an observation of pituitrin? A.—Would I compare them?

Q.—Yes, would you expect a like action? A.—No, because a tonic may be a sedative at times and may act as a sedative, while a stimulant of course always stimulates and produces more action than it really requires, an overaction, as it were.

The witness is familiar with *carduus benedictus* and *viburnum prunifolium*, through reading and practical experience. He has used both *carduus benedictus* and *viburnum prunifolium* for eight years. He has used them to relieve symptoms of female diseases. He used *carduus benedictus* as specific medicine, *Cnicus Benedictus*, a preparation made in

Cincinnati. It contains from 60 per cent. to 70 per cent. of alcohol. He considers it a fluidextract. He has also used an extract made by Parke-Davis & Company and also a preparation made by Sharpe and Dohme. He has used the fluidextract and tincture of *viburnum*. In the fluidextract, he believes that there was 45 to 55 per cent. of alcohol. He sees no reason why these two drugs should not properly be used in combination. By synergistic action, he understands that the two drugs together have better action than either one alone. He believes that *carduus benedictus* and *viburnum prunifolium* act in the same way. He considers *viburnum prunifolium* more of a special tonic with its more particular effect on the uterus, while he looks on *carduus benedictus* as being more of a general tonic with possibly an effect on the female genitalia. He stated that practically all of the tinctures and fluidextracts in all of the pharmacopeias, all over the world, with one or two exceptions, are made with alcohol and water. There are perhaps thousands of such tinctures and fluidextracts.

Q.—In giving *carduus benedictus* as you have described it, or *viburnum prunifolium* in the liquid form, what consideration, doctor, if any, did you give to the alcohol content of those medicines? A.—I did not consider the alcohol at all.

Q.—Well, why not? A.—Well, because the alcohol is the best solvent to extract the virtues of the drug, and it is a necessary element and the effect of the drug so far overshadows any effect that the alcohol may have, that you pay no attention to it. Then, aside from that, it preserves your drug.

Q.—Now, do you know the medicine known as Wine of Cardui? A.—Yes, sir.

Q.—Assume, doctor, that the medicine, Wine of Cardui, contains the extractives of 60 grains of *carduus benedictus*, and of six grains of *viburnum prunifolium*, in a solution of 20 per cent. alcohol, to the fluidounce, and that the dose is the extractives of 30 grains of the one and three grains of the other in 20 per cent. alcohol. State whether or not, in your opinion, such a medicine given four times a day, would produce in women, young girls, or women at the time of the menopause, an alcoholic habit? A.—No, it is absurd.

Q.—Will you tell the jury why not? A.—Why, because the amount of alcohol is completely oxidized.

Q.—What do you mean by that? A.—I mean that it is completely—it goes through a complete process of combustion in the human body. There is no accumulation, or toxic effect.

Q.—In taking it that way, would there be any cumulative effect or any desire created? A.—Well, not unless—

Q.—I mean, of the alcohol, doctor. A.—Would there be an accumulative effect?

Q.—Of the alcohol. A.—No.

The witness stated as his opinion that *viburnum prunifolium* is a very good uterine tonic and *carduus benedictus* a general tonic, and he believes that he has had results from it in special cases, in which the symptoms were referable to female genitalia.

Q.—Doctor, in treating diseases, as for suppression, irregularity, or exaggeration, in reference to the menstruation of women or girls where surgical operations are not necessary, what would be a proper method of treatment? A.—Well, of course, that would depend upon the cause of the—

Q.—Well, take, say, a case of endometritis. A.—Well, that would also depend upon the cause and the symptoms manifested. The treatment, as a general thing (say that it was not surgical), would be general and local.

Q.—What would the general treatment be, and what would the local treatment be? A.—Well, you would aim to relieve any local condition by applications, direct applications, douches and tampons, and improving the—the general treatment would be to improve the hygiene, recommend a good nourishing and easily digestible diet and give them such medicines as might be indicated by the symptoms. If there was lack of appetite, something to promote the appetite; if there was anemia, something to act upon the blood and increase the number of red blood corpuscles. You might give them a special treatment, if you located a definite infection. You might treat them with vaccines, or bacterins.

Q.—Assuming that it was a malignant infection. Take a case where there was an inflammation, endometritis, and medicines were the method of treatment without the injection of the serums. What sort of medicines would be given? A.—Well, that would—as a rule the medicines are required to act upon the uterus and general functions and of course the improving of the hygiene, and recommending of certain special diets and local applications.

Q.—From what you know of the two medicines—speak louder, doctor. A.—Yes, sir.

Q.—From what you know of the two medicines, *carduus benedictus*, and *viburnum prunifolium*, would they be indicated in cases of that character? A.—They could be used in those cases; yes, sir.

Q.—You are familiar, of course, with amenorrhea, menorrhagia, and all those, flooding and painful menstruation—without repeating the names of them. A.—Yes, sir.

Q.—State whether or not the Wine of Cardui that I have spoken of, with the dosages named, state whether or not that would be a proper medicine to give to a young girl, suffering from dysmenorrhea at the time of puberty, where there was no malformation or misplacement of the uterus. A.—You mean what would be the effect of this medicine?

Q.—Yes. A.—Well, I consider it a mild, harmless tonic. Of course, whether it would have any effect depends upon the cause, but you could use a preparation of that sort, because very often there is a condition of debility there which requires a tonic there. There is a painful condition, reflex pain of various sorts that have their origin in the uterus, in which you could use the viburnum for its sedative, tonic effect.

Q.—In your experience, how many girls whose puberty or menses are establishing themselves at the time of puberty, would you say suffer pain and disagreeable feelings at the time of the monthly period? A.—Oh, I would say 90 per cent. of them.

Q.—Would the medicine, such as Wine of Cardui—

Mr. T. J. Scofield:—What was that? What was that question?

Mr. Walker:—He says 90 per cent. of them.

Mr. T. J. Scofield:—But what was the question?

Mr. Walker:—That young girls at the time of menstruation suffered pain and disagreeable symptoms.

Q.—I mean have symptoms of distress and pain, is that what your answer had reference to? A.—Yes, sir.

Q.—Now, could medicines containing alcohol, tonics, be a legitimate medicine to give for any such conditions of suffering? A.—How much alcohol?

Q.—Well, as prescribed in the dose named of Wine of Cardui that I spoke of a while ago, 48 drops of alcohol to the dose? A.—A medicine like that could be used without any harmful effect. It might do them some good.

Q.—Doctor, take a medicine of that kind, would you refrain from its use on account of the alcoholic content, in a young girl? A.—Not at all. In fact, I might use it because of that amount of alcohol.

Q.—State whether or not in your opinion that would tend to create an alcoholic habit in a girl at the time of puberty? A.—Not at all.

Q.—Or state whether or not in your opinion it would increase her passions at that particular time? A.—No, sir; not any more than the condition itself would.

Q.—Would it enhance anything or increase the condition? A.—No, sir.

Q.—Now, while I am on that subject, doctor, I will ask you in reference to the time of a woman's menopause. Are you familiar with the disease known as cancer? A.—Yes, sir.

Q.—State whether or not in your opinion the taking of the medicine, Wine of Cardui, in the dosages that I have already given you, say three or four times a day, would, in your opinion, tend to mask the cancer, if the cancer was present? A.—Certainly not.

Q.—Will you tell why? A.—Well, because when the cancer produces symptoms locally or general even, that is, manifests itself by pain or local discharges, why so far as a medicine like that masking the symptoms, is a good deal like putting water on a duck's back, because the pain—oftentimes it demands tremendous doses of narcotics to relieve them and the local conditions, such as the discharge—it would have no effect on them whatever.

Q.—Mr. Fowler wants me to ask this; Mr. Fowler wants to know if you deem that an operation can cure cancer after it is there, after there is cancer? A.—Well, if it is discovered in time, you can get at it practically before the symptoms, marked symptoms have set in. I don't believe that it is hardly curable when marked symptoms have set in, if they are there to any extent.

The witness stated that he has had experience with pregnancy; that medicines might be given to relieve symptoms during pregnancy. He has treated cases of uterine displacements medically. He has seen cases where after general and local treatment the uterus has apparently resumed its normal position. He has read the Home Treatment Book of the Chattanooga Medicine Company for 1913. He considers the instructions outlined in that book as being fair treatment. They are reproductions of what you find in the standard works of gynecology. On motion, that portion referring to standard works was stricken out.

The witness mentioned as causes of vaginitis, sexual excesses, infections and as a complication following certain systemic diseases. Discharges from the lining of the uterus cause vaginitis. There was read to the witness a statement from the Home Treatment Book, concerning the causes and treatment of vaginitis. He stated that in a general way it was a useful treatment in such conditions. As far as gonorrhea is concerned it would only be a part of the treatment. He would go much further than that, than the book indicated.

He considers Wine of Cardui together with the treatment mentioned in the Home Treatment Book as a useful treatment in uterine prolapse and displacements. He considers inversion of the uterus an infrequent thing.

Carduus benedictus and viburnum prunifolium would be indicated in some cases of sterility as tonic treatment when there was debility and irritability of the uterus.

The witness testified after objection that the pharmacologic test on a dog or cat or any of the lower animals which did not show a result would not mean anything. He stated

that there were many drugs whose value was known clinically before it had been established pharmacologically.

He mentioned as such drugs, cinchona, digitalis and cascara. He stated that we have a good many drugs whose mode of action is not known, while it is known that they have a clinical effect.

Q.—Now, doctor, suppose a physician operating on a woman who is under anesthesia were to inject into the uterus of such a woman three or four or five teaspoonsful of the medicine Wine of Cardui, that I have been speaking of heretofore, containing the drugs named in the proportion named, and the uterus showed no signs of action, or nothing was observed as to the action of the drug in the uterus in ten minutes. State whether or not in your opinion—state what in your opinion would be the value of such a test in showing or not showing the usefulness of that drug upon a diseased human being. A.—I would consider that a very rotten experiment.

Q.—What do you mean by that? A.—I mean by that that you could not prove a thing by that, whether it acted or prove that it did not.

Q.—What? A.—Because that is an isolated instance, and you don't know what the modifying circumstances might have been there.

Q.—Take the same case, doctor, and assume that after ten minutes had expired in which the Wine of Cardui had been used in that illustration, a certain amount of pituitrin had been injected in the same womb, and the womb contracted in a short space of time, one or two or three minutes, I don't remember which. What would that demonstrate as to Wine of Cardui, if anything? A.—I don't see that it would demonstrate anything. If I could explain that—

Q.—Well, go ahead, why? A.—Well, we have for instance—we have drugs that we use as a heart tonic. Atropin is one, and strychnin is one. I can put some atropin in your eye and dilate your pupil, and if I put strychnin in there it would not do any more than irritate a little bit, but they both will have a stimulating effect on the heart when taken by mouth or injected under the skin. They act in different ways.

The witness stated he first learned of carduus benedictus when he was working as a clerk in a pharmacy sixteen years ago. He would look on carduus benedictus as a mild tonic in cases of pregnancy with disturbances. He uses viburnum prunifolium in certain irritable conditions of the uterus when there is a tendency to miscarry. He believes that he had had beneficial results with viburnum prunifolium in amenorrhea.

Q.—Now, take cases of dysmenorrhea, menorrhagia and amenorrhea; would the carduus benedictus be indicated in any of those cases, independent of viburnum? A.—Yes, in some of those cases.

Q.—Now, when you combine it with viburnum, would you say it would be indicated? A.—Yes, it would be indicated in that way, too.

Q.—Bearing in mind then that the medicine, Wine of Cardui, contains both drugs, would they be indicated—would that medicine be indicated in those cases? A.—Yes, it could be used.

Q.—As you have observed them, the results in those cases with carduus benedictus—you have answered about viburnum prunifolium—what was your opinion of the use of the medicine, as obtaining results? A.—Well, I have got results in those cases in which I have used carduus benedictus.

Q.—Good results? A.—Yes, sir.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

Dr. von Zelinski stated that treatment would depend on the cause of the condition. It would be essential to determine the cause and the treatment would be determined by the cause. You do not treat different causes with the same medicine.

Q.—Well, you would not treat the conditions which resulted from the causes, either, would you, by the same medicine? A.—Well, in a good many of these cases, of course, your patient's vitality becomes lowered, and, as a general proposition, you use tonics.

Q.—Well, I am not asking about tonics. You might use a tonic as a part of your treatment? A.—Yes, sir.

Q.—But I say, depending on the causes you determine to treat, and if you felt you wanted to give a tonic too, as a part of it, that would constitute not the entire treatment, but part of it, isn't that true? A.—Yes, sir.

Q.—That is absolutely true, is it not, doctor? A.—Yes, sir; it is.

Q.—Now, you say in connection with your experience in the practice of medicine, you have found that there are many conditions which arise in female troubles and complaints, which may be treated medicinally—possibly all of them—and that there are also a certain per cent. of them that require surgery, even though you have given them the medicinal treatment; is that right? A.—Yes, sir.

Q.—Now, how does your patient learn, doctor, whether or not the trouble from which she is suffering is one which requires surgical attention? A.—How do we determine that?

Q.—No. I say how does the patient, the woman determine that, or ascertain that fact? A.—Well, as a general rule, they have taken medical treatment, perhaps for a long time, and got no relief, and maybe have gone from one doctor to another, and surgical intervention may have been advised but they refused it, until—

Q.—Now, you take yourself; when a patient comes to you, a woman for treatment for some pelvic trouble, which may or may not require surgical treatment, depending upon what the condition is; how do you determine, without any knowledge of previous treatment, if any, whether or not it is a surgical case, or whether it is a medical case? A.—Why, by obtaining an accurate history of the case, and examining the patient.

Q.—Now then, when you say examining the patient, you mean a physical or a digital examination? A.—Yes, sir.

Q.—In other words, you take the patient's history, what she tells you about it, for what that may be worth— A.—Yes, sir.

Q.—and then you would examine the condition of her pelvic—of her pelvis, for the purpose of finding out what the underlying cause of the trouble was; isn't that true? A.—That is true.

Q.—And it is only in that way that you could determine whether it was a surgical case or not, isn't it, doctor? A.—Yes, sir.

Q.—That is the way you determine that question; and if you found, as the result of that examination, that the condition was a surgical case requiring operation, you would recommend that, and if you found it was not a surgical case, if you found what the underlying cause of the trouble was, you would treat it medicinally, isn't that right? A.—That is right, sir.

Q.—Yes. Now, Doctor, is it not true that a woman who has been suffering from female trouble—which is a pretty general expression, and I suppose covers a wide latitude of ailments and diseases—can such a person tell for herself whether her case is one which requires mechanical, surgical or medicinal treatment? A.—Not always, sometimes.

Q.—Well, now, in what proportions—in what class of cases could she tell that, do you think? A.—Well, she could tell that in certain cases, where the symptoms—

Mr. Walker:—Won't you speak a little louder, doctor.

The Witness:—Yes. The symptoms—she could tell by her personal experience and what she hears from others who recite exactly the same experience.

Mr. T. J. Scofield: Q.—Well now, I am not calling attention to any hearsay matter. I am taking a woman who is suffering from some female trouble of some kind in the pelvis, or arising from some condition in the pelvic organs; and I am asking you whether she herself would be able to say whether her condition required mechanical, surgical or medicinal treatment? A.—Yes, I believe she could.

Q.—You said a little while ago she could in some cases? A.—Yes, I—

Q.—Is that what you mean to say now, in some cases? A.—Yes, sir; she could in some cases.

Q.—But you don't think she could in all cases, do you, doctor? A.—No, I do not.

Q.—Now, in what percentage of cases do you think she would be able to determine whether or not she ought to be treated mechanically, surgically or medicinally? A.—In what percentage of cases?

Q.—Yes. It would be a small percentage, wouldn't it, doctor? A.—Yes, it would be a small percentage.

Q.—A very small percentage of cases? A.—Yes, sir.

Q.—The education which a physician acquires by his study at school and his experience as a practitioner enables him to say, upon an examination, as to the probability as to whether she ought to be treated surgically or mechanically, isn't that true? A.—In the majority of instances; yes, sir.

Q.—A woman has no such knowledge of herself or no such experience, and it is for that reason probably, and inability to diagnose her case, why she cannot tell, in the great majority of cases, whether she requires medicinal, mechanical or surgical attention; isn't that true? A.—That is true.

Q.—Then, as a matter of fact, if I understand your testimony aright, doctor, one of the first things, and one of the essential things which is necessary, is a diagnosis of her condition; isn't that true? A.—Yes—as a medical man; yes, sir.

Q.—As a medical man, that is absolutely true? A.—Yes, sir.

Q.—And that is the first thing you undertake to ascertain when you treat a patient, isn't it? A.—Yes, indeed.

Q.—And in ascertaining that, you ascertain it, as you have said, by taking a history, and then by a thorough physical examination? A.—That is true.

Q.—That is true, is it not? A.—Yes, sir.

Q.—And that is true in all cases, isn't it— A.—Yes, sir.

Q.—as a medical man? A.—Yes, sir.

The witness stated that he could not, without an examination tell whether there were congenital or acquired malformations in the vagina, tubes, uterus or ovaries, nor could he tell whether there was a displacement of the uterus or the kind of displacement without examination.

By such an examination he would know the character and extent of the displacement and whether they needed treatment. He could not tell without examination whether there were any traumatisms from childbirths, or whether there was subinvolution of the uterus. If he made an examination, he could tell whether the condition required treatment medically or whether it required surgical treatment. He could not tell without examination anything positive about inflammations, but if he made an examination he could determine the condition and the treatment. It is true also that in certain cases when he has made an examination of the pelvic organs, it is necessary to examine the secretion to learn the specific germ which is producing inflammation so that he might be in a position to treat it intelligently. It is also necessary to examine the patient whether any new growth exists. After such an examination, he is enabled to tell whether the case is one which may be treated surgically. He would not know whether or not there were conditions existing that medicines could not reach without examination.

Q.—Now then, Doctor, I will ask you whether or not, from these considerations which we have been going over in a fair discussion of what is necessary on the part of a physician, if it is not necessary, in your opinion, in a majority of cases—I say a majority—practically all the cases that are related to uterine conditions and troubles arising therefrom in females, that an examination should be made by the physician— A.—Yes, sir—

Q.—before treatment? A.—as a medical man, I believe that.

Q.—Now, doctor, assume the case of a married woman thirty years of age, who has borne two children, the youngest of which is eight years old. A year after this youngest child was born, she suffered a miscarriage at three months' gestation. At this time she had considerable fever for three or four weeks, with swelling and pain in the lower abdomen, and an offensive discharge from the vagina, which, for the first week or ten days, was bloody in character. During this illness, which confined her to her bed for four weeks, she lost weight, and when she was able to sit up she was poorly and considerably emaciated. During the following few months she gradually became stronger, and was able at the end of that time to get about and attend to light housework. Since that time, though she has lived and cohabited with her husband, and has used no means of preventing it, she has never become pregnant. Her menstrual periods have always been painful, and the flow excessive. She has suffered ever since from a feeling of weight and a bearing down sensation in her pelvis. She has had constant backache and she has had frequent desires to urinate, and the act of urination is painful, giving rise to burning sensation on voiding the urine. She has had leukorrhea constantly for the past seven years; and when her bowels move she has a feeling that her private organs are going to drop out of her pelvis.

Now, Doctor, can you form an opinion on these hypotheses as to the condition which this hypothetical woman is suffering from?

Mr. Walker:—I object to it.

THE COURT:—The question at the present time is whether he can form an opinion now as to what she is suffering from. That may be answered yes or no.

Mr. Walker:—Yes.

The Witness:—Well, from the history of the case—

THE COURT:—No, no. Can you form an opinion from the history as given you by Mr. Scofield?

The Witness:—Yes, sir.

Mr. T. J. Scofield: Q.—What is it, doctor?

Mr. Walker:—Objected to.

THE COURT:—Well, what is the objection, Mr. Walker?

Mr. Walker:—I don't understand that this is cross-examination of anything he was asked. He has answered from a doctor's standpoint how he would ask for an examination and make it, and its benefits. This is only another method of saying he would require an examination. It does not go to the direct examination on the value of the remedies.

THE COURT:—That is true, but are they not entitled to test his—

Mr. Walker:—They may make him their own witness on that.

THE COURT:—test his general knowledge of the subject.

Mr. Walker:—I don't think that goes to the question of his knowledge or ignorance. Suppose he answered yes or no, would the jury know? I would not.

THE COURT:—Well, he says he has an opinion.

Mr. Walker:—All right.

Mr. T. J. Scofield: Q.—Now, what is that opinion, doctor?

THE COURT:—Go ahead.

The Witness:—Well, my opinion is that she has a subinvolved uterus, and probably adhesions, as the result of a septic abortion.

Mr. T. J. Scofield: Q.—Now, I am not asking for probabilities—

THE COURT:—You asked for his opinion, and he gave it to you.

Mr. T. J. Scofield:—That is true, but I am asking him if he had an opinion as to what it was, not what it probably might have been. All right.

Q.—Can you, following the same hypothesis in mind—have you an opinion as to what is causing her sterility for the last seven years? A.—Well—from that history alone?

Q.—Yes. A.—Well, I think it is the result of an endometritis, chronic endometritis.

Q.—Now, can you say, on these hypotheses, whether this hypothetical woman is suffering from uterine prolapse or retroversion or retroflexion or salpingitis? A.—No, I could not say on that history.

Q.—That is, without you made an examination? Is that right? A.—Well, if you take it at the terminal stage there, I doubt that I could diagnose the salpingitis, even with an examination.

Q.—Can you intelligently and can you scientifically, doctor, treat such a woman as I have described by medicine taken by the mouth, without first learning the underlying cause of the trouble? A.—Well, it would not be absolute scientific treatment, but I think that one could get—do considerable good in that case, even without examination, from that history.

Q.—Then you say you could not tell what would be scientific treatment from that history? A.—Not absolute scientific treatment; no, sir.

Q.—Now, doctor, if, upon examination of this hypothetical woman, you found she had a badly lacerated perineum, and a large subinvolved uterus was down within half an inch of the vulva, against the bladder, and that it could not be replaced on account of old inflammatory adhesions; would you say, as a medical man, that, in addition

to general directions as to regulating the bowels with laxatives, the usual advice as to antiseptic douches, sitz baths, etc.—would you expect to cure this uterine prolapse by the use of an alcoholic solution of *carduus benedictus* and *viburnum prunifolium*, such as Mr. Walker has described to you, in a menstruum of 20 per cent. alcohol.

Mr. Walker:—I object to that, on the ground that the treatment in the book advises accompanying it with pessaries under those conditions, in addition to the treatment—and he does not put it all in.

THE COURT:—The book itself does not include the operative case, as I recall it.

Mr. Walker:—Oh, but it tells in cases of that sort that a pessary—

THE COURT:—Well, put in the pessary, Mr. Scofield.

Mr. T. J. Scofield:—Well, then, we will put in the pessary. Put the pessary right in and up against the uterus.

Mr. Walker:—Then let us find out if it is not an operative case—

Mr. T. J. Scofield:—No, no, Mr. Walker, pardon me.

Q.—Would that case be a case for a pessary, doctor, with those inflammatory adhesions in that condition? *A.*—No, it would not be a case for a pessary, but the treatment outlined there would make it easier for the patient.

Q.—How is that, doctor? *A.*—I say the treatment that you have outlined there would relieve the patient of some of her distress, but it would not cure her.

Q.—That is not the question. I ask you whether or not the Wine of Cardui would cure the prolapse? *A.*—No; of course not.

Q.—Now, doctor, if a married woman who had borne children came to you for consultation, and complained of constant backache, a feeling of fullness and weight in the pelvis, and irritation, and profuse whitish discharge from the vagina, and stated that these symptoms were all marked—more marked as she approached her monthly sickness, and that her menses were painful, and her flow excessive; will you please explain to the jury all of the pelvic conditions you know of that would cause such symptoms as I have described there? *A.*—That is, the pain at the menstrual periods and the whitish discharge from the vagina—

Q.—Yes. *A.*—and the bearing down pain, did you say?

Q.—Yes. *A.*—And pains in the back?

Q.—Yes. And excessive flow, doctor, and backache, feeling of fullness and weight in the pelvis, and irritation, and profuse whitish discharge from the vagina; and she stated that those symptoms were all more marked as she approached her menstrual period every month. Now, how many different things might that condition be referable to? Or those symptoms?

Mr. Walker:—Is this the same woman, or another case?

Mr. T. J. Scofield:—This is the same girl.

Mr. Walker:—That is, the adhesions, and the bearing down, and the—

Mr. T. J. Scofield:—No. It is not the same woman, but a different woman complaining of these conditions.

Mr. Walker:—All right.

The Witness:—Well, it might be due—it might be due to an infection—a local infection in the vagina, or in the uterus, or in the tubes. It might be due to a systemic condition, anemia, tuberculosis, diabetes, Bright's disease, heart disease.

Mr. T. J. Scofield:—It might be due to displacements, might it not, also, doctor? *A.*—Well, I am figuring that the displacements may be due to the things I have mentioned.

Q.—Yes. It might be due to polypi, might it not, and morbid growths of different kinds also? *A.*—I don't know. I have not seen polypi produce such symptoms as you have mentioned there.

Q.—So you don't know whether that produces it or not. Now then, in a case like that, in order to get at the underlying truth, to find out what the condition was, you would want to make a pretty careful examination, wouldn't you, doctor? *A.*—Yes, I would.

Q.—Now, then, doctor, take the case of a woman 45 years of age, who comes to you for treatment, and gives a history that for the past eight months she had been troubled with an offensive discharge from the vagina, occasionally tinged with blood; that the condition had been gradually getting worse and worse until now the odor from this discharge is very offensive; that she was losing weight; her skin was becoming somewhat yellow, and she had a feeling of weight and a dragging sensation in her pelvis. Would you be able to tell, without an examination, what this woman was suffering from, doctor? *A.*—How old did you say she was?

Q.—Forty-five, about. Forty-five is the question. *A.*—I could only surmise.

Q.—Well, by examination you could tell, couldn't you? *A.*—By—yes—

Q.—By a proper examination? *A.*—Microscopical examination, perhaps.

Q.—What would you surmise, doctor? *A.*—Why, I would surmise some foreign growth.

Q.—Would you have an opinion as to whether it was a malignant growth, a cancerous growth or not? *A.*—No; I would not venture such an opinion.

Q.—Well, from the symptoms indicated in the question, it might be a cancerous growth, might it not? *A.*—Well, all I can say about that is that cancer sometimes produces such symptoms.

Q.—Yes. Now, assume again, doctor, that upon examination you found that she had cancer of the neck of the womb; and assume it to be a fact that she had been taking Wine of Cardui in tablespoonful doses three or four times a day for eight months, for this condition. Would you give it as your opinion, as a medical man, that this was a proper form of treatment for this condition? Answer yes or no.

Mr. Walker:—Objected to. There is no claim anywhere that this is a proper form of treatment for cancer.

THE COURT:—He may answer.

To which ruling of the Court the plaintiff, etc., excepted.

The Witness:—Well, you mean that is the treatment alone—

Mr. T. J. Scofield:—Yes.

The Witness:—giving Wine of Cardui?

Mr. T. J. Scofield:—Yes.

The Witness:—No. That is not a proper treatment.

Mr. T. J. Scofield: *Q.*—Now, doctor, if a woman came to you with a history of amenorrhea, and you learned that she was 18 years of age; that her menstrual period developed at the age of thirteen; and that she had been regular for about three years, and since that time she had only been unwell once or twice; and you found upon examination that she was profoundly anemic; and upon further examination you determined that her anemia was due to hookworm disease. If you learned further she had been taking Wine of Cardui uninterruptedly for the past three years for this condition, amenorrhea, would you give it as your opinion, as a medical man, that the use of Wine of Cardui was a proper and a scientific treatment for the cure of her anemia? *A.*—No.

Q.—Or amenorrhea either? What is your answer? *A.*—My answer is that you might get some symptomatic relief for the amenorrhea, but it would not cure the hookworm.

Q.—I am asking you whether or not it would cure the amenorrhea and the anemia, that treatment, under those circumstances? *A.*—Well, amenorrhea is a symptom.

Q.—I understand, but— *A.*—You relieve symptoms; you don't cure them.

Q.—Yes. *A.*—And the cause of that symptom, I take it, leads back to the anemia, and the anemia leads back to the hookworm.

Q.—And this treatment would not cure the hookworm, would it? *A.*—No, sir; it would not.

Q.—Suppose you take the same hypothetical question I have given you, and instead of the words "hookworm," suppose you put in there "malaria," that was causing the amenorrhea—or the anemia—would Wine of Cardui be proper treatment for that? *A.*—It would be a harmless tonic, but it would not be proper treatment.

Q.—I am not asking that. Would it be a proper and scientific treatment for amenorrhea? *A.*—It would not be a specific treatment; no, sir.

Q.—Suppose it is syphilis, instead of hookworm or malaria; would Wine of Cardui be a specific and proper treatment for that? *A.*—It would not be a specific treatment; no, sir.

Q.—Suppose, instead of being due to hookworm or malaria or syphilis—suppose the condition was due to tuberculosis; would Wine of Cardui be a proper and a specific treatment for tuberculosis? *A.*—Well, there is no recognized specific treatment for tuberculosis.

Q.—Just answer yes or no. Would it or would it not? *A.*—I cannot say yes or no. I must have some latitude.

Q.—All right. *A.*—We give tonics in tuberculosis; and a tonic may be indicated here, and, of course, we direct our efforts to the causal factors.

Q.—Well, would the Wine of Cardui cure the tuberculosis? *A.*—No, it would not.

Q.—Now, Doctor, when you take care of a pregnant woman, with a view to attending her in confinement, is it your custom to make urinalyses during the last few months of her pregnancy? *A.*—I make it every month; and the last few months every two weeks.

Q.—Why is it you do that, doctor? *A.*—Because I can gage of the functioning powers of the patient's kidneys by that test.

Q.—Suppose, upon such examination from time to time, you would find that a good deal of albuminuria were present in the urine; would you consider there was any danger of the development of eclampsia? *A.*—Well, it would depend, it would all depend on what was causing the albuminuria.

Q.—Well, suppose she had Bright's disease, or nephritis, then would you say there would be any danger of eclampsia? *A.*—There would be a possibility of eclampsia; yes, sir.

Q.—Now, under such circumstances, doctor, would you think it good treatment to give your patient a medicine containing the equivalent of 96 drops of whisky three or four times a day, in such a condition? *A.*—I don't think 96—I do not think the equivalent of 96 drops of whisky would do any particular harm.

Q.—You think it would be good treatment, do you, doctor? *A.*—Not good treatment; no, sir.

Q.—It would not be good treatment? *A.*—I do not say that it would not be good treatment; no, to give the equivalent of 96 drops of whisky.

Q.—Doctor, are you the same Dr. von Zelinski who was employed by the Jiroch Medicine Company, or its attorneys, to testify in a criminal proceeding here, or in a case here before Judge Landis, a few months ago? *A.*—No, I have never—

Q.—You never heard anything of the kind? *A.*—No, sir.

Q.—Doctor, are you, or are you not, connected with the concern known as Chicago School of Refraction? *A.*—I do some teaching for them; yes, sir.

Q.—Reading from the catalog, which is copyrighted 1916, by the Chicago School of Refraction, I find that Dr. W. F. von Zelinski is one of the board of directors of that school. You are the doctor, are you? *A.*—That refers to me; yes, sir.

Q.—That refers to you. Reading also from the catalog, I find that Walter Franz von Zelinski, M.D., Ph.G., Sc.B., Professor of Anatomy, Histology and Physiology of the Eye. Does that refer to you, doctor? *A.*—Yes, sir; it does.

Q.—I notice, as I say, in that catalog, that you have the letters Sc.B. after your name. *A.*—Yes, sir.

Q.—And that represents what? *A.*—Bachelor of Science; Scientific Baccalaureus.

Q.—From what school did you obtain the Bachelor of Science degree? A.—From St. Ignatius College.

Q.—When? A.—1910.

Q.—Is it not true, doctor, that the Chicago School of Refraction is a concern which teaches the fitting of spectacles, on the mail order plan? A.—I do not know about that. I understand that they have an extension course. I have prepared some lectures on anatomy for them.

Q.—Are there any students at all in actual attendance on a residence course given by the Chicago School of Refraction? A.—Well, I will answer that—

Mr. Walker:—I object to it.

THE COURT:—What difference does that make?

The Witness:—I lecture to thirty to thirty-five students every Wednesday night.

Mr. T. J. Scofield:—Now, then, doctor, finally, I want to ask you whether or not—are you connected with the Chicago College of Medicine and Surgery? A.—No, sir.

Q.—Well, you know Dr. Funck there, who is professor of materia medica, don't you? A.—Yes, sir; I know him.

Q.—Well, do you agree with Dr. Funck, that a solution which contains the equivalent of 96 drops of whisky—

Mr. Walker:—I object to it now in that form.

Mr. T. J. Scofield:—What is it?

Mr. Walker:—I object to the question now in the form in which you put it, "Do you agree?"

THE COURT:—What difference does it make, Mr. Walker, whether he puts it in that form, or whether he states what Dr. Funck says, and then asks, "Is that your opinion also?"

Mr. Walker:—It really does not make any difference, if the form is good—

Mr. T. J. Scofield: Q.—(Continuing)—as to whether or not the use of a medicinal solution containing the equivalent of 96 drops of whisky to each dose would be a scientific and specific remedy with a curative effect in the case of gonorrheal vaginitis?

Mr. Walker:—I object.

The Witness:—What is in the solution?

Mr. Walker:—Go ahead.

Mr. T. J. Scofield: Q.—The solution concerning which we have been talking, doctor. A.—The solution of which we have been talking?

Q.—Yes, the Wine of Cardui solution. A.—And you want to know if it has a specific effect?

Q.—Well, I am asking you if it is a scientific and specific remedy for gonorrheal vaginitis. A.—You mean has a destructive effect on the gonococcus?

Q.—You are a physician; don't you understand what a specific and scientific remedy means? A.—Yes, but my understanding of a specific may differ from yours—my understanding.

Q.—Well, you answer it as you understand it. Is it a specific and a scientific remedy for gonorrheal vaginitis? A.—Why, no.

Mr. T. J. Scofield:—That is all.

Mr. Walker:—That is not all of it—with a curative effect, doctor?

The Witness:—Oh, it may have an indirect curative effect. It is not a specific.

THE COURT:—Any redirect examination?

Mr. Walker:—Yes.

REDIRECT EXAMINATION BY MR. WALKER

Q.—Is amenorrhea ever accompanied by typhoid fever? A.—Yes, sir.

Q.—Can you cure typhoid fever with Wine of Cardui? A.—Not to my knowledge.

Q.—Are there sometimes cases with amenorrhea that also have diarrhea? A.—Well, more likely they would have metrorrhagia.

Q.—Could you cure the diarrhea with Wine of Cardui? A.—I do not think so. I do not know.

Q.—Suppose they had cholera; might they have amenorrhea with cholera? A.—Yes, sir.

Q.—Do you think you could cure the cholera with Wine of Cardui? A.—No; I don't.

Q.—Or if they had a toothache, do you think you could cure it with Wine of Cardui, if there was an accompanying amenorrhea at the same time? A.—I do not know, I don't think so.

Q.—Take that first case. I have forgotten how many adhesions there were in that first illustration; at the latter end, if the womb was—I do not remember whether it was half out or all out or what part of it was out. Do you think the woman there would know that her womb was down and out? A.—I think she would.

Q.—Do you think she would have any difficulty in diagnosing it then? A.—She could diagnose the fact that it was out.

Q.—Yes. Now, doctor, tell me some cases, if you know of any, where a woman can tell what is the matter with her when she has some genital disturbance or difficulty? A.—Well, a woman can describe the symptoms, although she might not be able to name the disease.

Q.—Yes. A.—She can tell that her womb is protruding out of the vagina. She can tell whether she has any distress on urinating, or—

Q.—You think she might know that? A.—Yes.

Q.—Yes. A.—And she can tell if she has backache and bearing down pain, or if she is constipated, or if she feels weak and indisposed, and if she has headache.

THE COURT:—She can tell anything that she has intelligence enough to make a note of?

The Witness:—Yes, sir.

Mr. Walker:—Wait a minute, I am not through. Wait a minute. I am requested to ask another question.

Q.—Doctor, in your opinion, would the 46 drops of alcohol in this medicine, taken as prescribed, have any detrimental effect on a woman who is pregnant, even if she had nephritis? A.—Not to my belief.

RECROSS-EXAMINATION BY MR. T. J. SCOFIELD

Q.—Doctor, typhoid fever is a fever which runs some two or three weeks, or four, generally, is it not? A.—Yes, but—

Q.—But amenorrhea, as I understand it, is constant—is a chronic condition and runs for months and months? A.—No, I do not understand it as such.

Q.—You don't? A.—No, not for months and months.

Q.—You would not call it amenorrhea, if it did not continue—the absence of menstruation continue right along? A.—You see, we have various kinds of amenorrhea. We have a physiological amenorrhea in pregnancy.

Q.—Yes, but— A.—And we may have the change of life—

Q.—I am not referring to any physiological amenorrhea like pregnancy or after the menopause. I am talking about the case of a girl—the amenorrhea that is produced by typhoid fever, would be a matter of one period at least, wouldn't it? A.—At least; yes, sir.

Q.—And no more, possibly? A.—And no more, possibly.

Q.—So far as the diarrhea and colic and those things are concerned—

Mr. Walker:—Cholera.

Mr. T. J. Scofield: Q.—Cholera. Those are transient conditions, are they not? A.—No, I would not say that cholera is a transient condition.

Q.—What would you say they were? A.—Cholera may be a fatal disease.

Q.—I am referring to the length of time they last, doctor, if they would produce amenorrhea, as to how long the amenorrhea would be supposed to result, from those conditions? A.—It would all depend upon what effect the cholera had upon the general system.

Q.—Yes. A.—It may have lowered the vitality, and the disease may have been so severe that there may be amenorrhea over a longer period of time.

Q.—What do you mean by that, a longer period of time? A.—It may last six or seven or eight months.

Q.—It acts very much like malaria, doesn't it? A.—Sometimes.

Mr. T. J. Scofield:—That is all.

Mr. Walker:—One question.

Q.—Would it be any easier to cure typhoid with this medicine because it ran three weeks, than it would consumption, because it ran three years? A.—Would it be any more easy?

Q.—Yes—Wine of Cardui. A.—I do not know as you can cure either one with that.

Q.—Does the time limit on either disease make any difference to that fact? A.—Not a bit.

Whereupon an adjournment was taken until 2 o'clock p. m. of the same day, May 16, 1916.

May 16, 1916, Afternoon

The court met pursuant to adjournment. Depositions were read.

Whereupon the further hearing of said case was adjourned until the following day, May 17, 1916, at 10:30 o'clock, a. m.

May 17, 1916, Morning

TESTIMONY OF DR. GEORGE C. AMERSON

Dr. G. C. Amerson was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. WALKER

Dr. George C. Amerson testified that he is a surgeon. He graduated from the Hahnemann Medical College of Chicago and College of Physicians and Surgeons of the University of Illinois. He is ex-intern of the Cook County Hospital and was attending surgeon on the Cook County Hospital staff for eight years. He was on the staff of the Frances E. Willard Hospital for seven years. He is at present attending surgeon of the Garfield Park Hospital and the West Side Hospital of Chicago. He is professor of surgery in the Chicago College of Medicine and Surgery, and in the Illinois Post Graduate School of Medicine.

He testified that he is a member of the Chicago Medical Society, the Illinois State Society, the American Medical Association, the Tri-State Medical Society, the National Association of Military Surgeons; that he is captain surgeon of the Illinois National Guard. He has devoted himself exclusively to surgery for five or six years. He has treated all phases of diseases peculiar to women, covering thousands of cases, from puberty to the menopause.

Approximately 50 per cent. of the cases of women's diseases before he specialized in surgery were cases where the conditions were not surgical. Most of the cases which he sees now are referred cases, treated by medicine before they come to him. He stated that practically all girls suffer from pain and other symptoms at puberty, and that medicines taken by mouth are indicated at this time. He stated that women at the menopause usually suffer with symptoms directly due to the menopause and that at such times, uterine tonics and

sedatives would be indicated as well as general tonics. He stated that, in a pregnant woman not suffering from any symptoms except the ordinary symptoms of pregnancy, uterine tonics and general tonics would be indicated. He stated that at the menstrual period, during pregnancy there are symptoms such as cramps and pains with some menstrual flow and the same medicines are indicated at this time.

Q.—In those cases, doctor, where you prescribed a uterine tonic, will you tell the jury how the tonic acts, how it can act, and have any effect at all? A.—Well, we have what are known as general and special tonics, tonics that seem to have a seat of selection or preference for their localized actions, like uterine tonics, and we have hepatic tonics for the liver, and we have cardiac tonics for the heart and so forth, and those special tonics are picked up of course by the blood stream, but seem to show a selective action on the special organs like the uterus, and increase the tone.

Q.—A little louder. A.—Increase the tone and act as a tonic to that particular organ. That would be a special tonic.

Q.—May a medicine be a tonic and at the same time a sedative? A.—Yes, sir.

Q.—What do you call a medicine in your nomenclature that in a short time or over a time contracts spasmodically or acts upon the uterus to contract it, what do you call such a medicine as that? A.—It would probably be a stimulant.

Q.—Do you distinguish in your practice between a stimulant and a tonic? A.—Yes, sir.

The witness stated that in cases of threatened abortion, the treatment is rest, sedative treatment and uterine tonic, to stop the uterine expulsive action of the uterus, and he stated that during pregnancy a tonic treatment is given which relieves childbirth and makes it more normal.

Dr. Amerson stated that he is familiar with *viburnum prunifolium*. He has been using it for the last fourteen years and considers that it has therapeutic value. He is familiar from his reading and contact with doctors with *carduus benedictus*, although he has never used it in his practice. He believes *carduus benedictus* is a valuable therapeutic drug in most cases where there are female diseases because it belongs to a group or class of drugs which belong to that class of diseases although he himself has never used it.

Q.—Doctor, suppose a woman had tuberculosis, where it was not in any of the genitalia of the woman, where it was not in the womb or ovaries, or located in the pelvis. Could you tell by a mere digital examination through the vagina that she had tuberculosis? A.—No, sir.

Q.—Or that she had malaria? A.—No, sir.

Q.—Or that she had croup? A.—No, sir.

Q.—State whether or not, doctor, in your opinion, a drug might be valuable, if a woman was suffering with amenorrhea or dysmenorrhea at the same time that she was suffering with consumption, in easing the distressing conditions that arose from the genital trouble independent of the consumption, or the other trouble? A.—I believe it would.

Q.—Would a tonic be helpful in the general relief of the woman, independent of the specific disease of tuberculosis? A.—Yes, sir.

Q.—Or malaria, or whatever that disease might be? A.—Yes, sir. It is part of the treatment.

Q.—In your opinion, is there any drug or tonic that will cure tuberculosis? A.—No, sir.

Dr. Amerson stated that he has never treated hookworm. He stated that practically all drugs used by physicians in liquid form contain alcohol as a solvent. He considers the alcohol negligible in prescribing the drugs. It has no deleterious effect. He does not think the prescribing of medicine which contains 20 per cent. of alcohol at puberty would tend to give the girl an alcoholic habit or tend to develop the passions. He defined vicarious menstruation as a periodical establishment of a hemorrhage from some orifice other than the uterus at the time of the expected menstruation. In such cases general tonics, uterine tonics and pelvic tonics would be indicated; *viburnum prunifolium* would be indicated. It would also be indicated in amenorrhea, dysmenorrhea, menorrhagia and metrorrhagia.

The witness stated that he has done every type of operation there is on the female pelvis. He stated that there are malpositions of the uterus that are not surgical cases and they occur often where the patient is unconscious of them. He would not expect the patient to have any information about this condition if there were no symptoms. He stated that there are cases of prolapse that are best treated medically. He would not consider the alcohol in Wine of Cardui as deleterious to the people taking it in the prescribed doses, either at puberty, pregnancy or the menopause. He would not expect it to produce Bright's Disease at the time of pregnancy because of its alcoholic content.

Q.—Will you tell the jury why you think the alcohol would be negligible in those cases, with the use of this drug in the proportions named? A.—Well, it is in solution. It is diluted, and is acting as the vehicle for drugs. The amount of alcohol would be considered negligible, because it would very rapidly oxidize in the stomach and probably stimulate to a certain extent, or promote the absorption of the drug that it was acting as vehicle for.

Q.—Do you limit the oxidization of the drug to the stomach? You said stomach. A.—Not entirely; no, sir.

Q.—That would be one of the processes? A.—One of the processes, yes, sir.

Q.—Now, doctor, are you at all acquainted with the synergistic action of drugs, and what is meant by that term? A.—Yes, sir.

Q.—In your practice, do you ever use *viburnum prunifolium*, in combination with other drugs to accomplish the purpose that you desire in diseases of women? A.—Yes, sir.

Q.—From what you know of *carduus benedictus*, and of *viburnum prunifolium*, state whether or not, in your opinion, a medicine containing the two drugs would be at all injured by the fact that the two drugs were in combination? A.—I think not; it might be benefited.

Q.—Then you find no criticism of the use of the drugs together? A.—No, sir.

Q.—Doctor, state whether or not, in your opinion, the trying out of a drug upon an animal, such as a dog or cat, without being able to note the effect of the drug, either on the respiration or circulation of the animal, is a proof that the drug would be nonpotent and inefficient if given to a human being in sickness.

Mr. T. J. Scofield:—Wait a moment, I do not think Dr. Amerson has qualified as a pharmacologist.

THE COURT:—No, he has not.

Mr. Walker:—I do not think he has to.

THE COURT:—He has qualified as a physician, and he may give his opinion for what it is worth.

Mr. Walker:—I am speaking as a doctor.

To which ruling of the Court the defendants, etc., excepted.

A.—It would be valueless.

Mr. Walker: Q.—You think such a test would be valueless? A.—Yes, sir.

Q.—Do you, doctor, make a distinction between a pharmacological test on a medicine and a clinical test? A.—Yes, sir.

Q.—How many medicines within your knowledge, if you can tell, are used without reference to their pharmacological findings, but as a result of the clinical information? A.—Well, there are thousands of drugs that are recommended for use only a few of which have ever been proven pharmacologically.

Q.—Are they in use? A.—Yes, sir.

Q.—Many of them? A.—Yes, sir.

There was then read to Dr. Amerson, an abstract of the test performed by Dr. J. Clarence Webster. He stated that it would decidedly not be a proof that the medicine was inefficient if given to a human being by way of the mouth for any disease that the woman might have, because the action of the drug locally does not disprove that it has medicinal value. The fact that the uterus blanched after pituitrin does not indicate to him that the previous drug which did not cause this action had no action on the uterus.

He stated that inflammation such as endometritis might be aided by medical methods. Where there are adhesions, they do not necessarily require surgical operation. His opinion is that Wine of Cardui would be a proper medicine under these conditions. The alcohol would not be injurious nor would it increase the inflammation. He usually found in amenorrhea, metrorrhagia, etc., the general system required toning up.

The witness stated that he had read the Home Treatment for Women for 1913.

Q.—Have you read that chapter of the book also, on vaginitis? A.—Yes, sir.

Q.—I call your attention, for the purposes of this question, under the head of "Vaginitis," to a sentence, "the most frequent cause of vaginitis is gonorrhea, brought on by infection, sexual excess or unhealthy discharge from the womb, ovaries, tubes or bladder." Now, is gonorrhea itself brought on by sexual excess, where there is not the germ of gonorrhea? A.—No, sir.

Q.—Is it brought on by an unhealthy discharge from the womb, ovaries, tubes or bladder, where there is not the germ present of gonorrhea? A.—No, sir.

Q.—You read this sentence yourself, did you? A.—Yes, sir.

Q.—Now take a case—is vaginitis brought on by gonorrhea? A.—Yes, sir.

Q.—State whether or not, in your opinion, doctor, there is a drug or a medicine that will cure, anywhere, any kind of medicine, that will cure by killing the microbe itself, the gonorrheal microbe? A.—No, sir.

Q.—Then how is it treated, and how does medicine act, if at all, in reference to that germ? A.—Well, the treatment consists of local treatment—

Q.—Well, tell us what you mean by local treatment? A.—Local treatment would be tamponing or medicated douches, or possibly even stronger solutions than we usually use, to inhibit possibly the bacteriological activity of the superficial organisms; and the general treatment would be tonics to increase the resistance and efficiency of the tissue involved, thereby increasing a natural power in the tissue itself

to inhibit or restrict or destroy the bacterial activity. There is no medicine—

Q.—Do you—go ahead, doctor. A.—that I know, locally, that will by the natural resistance of the tissue; and the cure is brought about by the natural resistance of the tissue that is invaded overcoming the bacterial activity.

Q.—And is medicine indicated, doctor, to enforce and assist the tissues, through the blood supply, to perform that function and eradicate the germ? A.—Any medicine that would increase the tone or the resistance of the tissue would be valuable in the treatment of the infection.

Q.—Now, doctor, would a medicine such as Wine of Cardui, that I have spoken about, be deleterious to the blood supply or the tissues of the organs, and would it increase the ability of the gonococci germ to propagate itself, by reason of the alcoholic content in such medicine? A.—No, sir.

Dr. Amerson stated that treatment described in this book for falling of the womb, amenorrhea, metrorrhagia, etc., not including the medicine is a practical and proper treatment. Assuming that a tonic is indicated, Wine of Cardui would be such a tonic. He stated that there was a connection through the sympathetic nervous system between the breasts and the female reproductive organs. The breasts are valuable in making a diagnosis of the diseases of the pelvic organs. If the woman is in a run down condition, he stated you would expect drooping or falling breasts. Anything that would improve the general health and development of a woman would naturally improve any part of her and thus aid in restoring the condition of the breasts. He has never prescribed Wine of Cardui to his patients. He stated that Wine of Cardui would be indicated as a general tonic during parturition.

Q.—I don't suppose, as a physician, you prescribe proprietary medicines in your practice at all? A.—Not very often.

Q.—Have you ever used Hayden's Viburnum? A.—Yes, sir.

Q.—Have you used any of the Parke-Davis preparations of drugs? A.—Yes, some of them; not very many of them.

Q.—And in what cases have you used Hayden's Viburnum? A.—Oh, in cases where viburnum would be indicated.

Q.—Well, is that in reference to diseases of women? A.—Diseases of women.

Q.—Do you know how much alcohol is in that, doctor? A.—I don't exactly; I believe about 40 per cent. of alcohol.

THE COURT:—How much did you say?

The Witness:—Forty per cent.

The witness described various conditions which might produce sterility in women. In such conditions, uterine tonics would be indicated.

The witness is familiar with leukorrhea and its treatment. Hygienic and local treatment with uterine tonics would be indicated.

CROSS-EXAMINATION BY MR. SCOFIELD

Dr. Amerson testified that after his graduation from the Chicago Homeopathic School in 1902, he became an intern in the Cook County Hospital. He was there as a homeopathic intern for 18 months. During the time he was intern he took the senior course at the College of Physicians and Surgeons, extending over two years. While an intern he did not practice according to the homeopathic methods strictly but with leeway. He used drugs singly and in combination. He used them in combination homeopathically. He says the teaching of homeopathy is for individual prescribing, but the practice of it is in combination. He graduated from the College of Physicians and Surgeons in 1904 and went immediately into practice. In the last five or six years, he has been doing surgery entirely. Shortly after he graduated from the Cook County Hospital he was appointed associate surgeon on the staff and he spent all his spare time in the Cook County Hospital in this work. His work was surgery. He became attending surgeon in 1906. When he saw cases, he determined whether they were to be treated surgically or medically by a general examination to find out what the cause of the trouble was.

This applies practically to all conditions of the female pelvic organs. He testified that he could not tell what was the cause of the condition until he made an examination, nor could he tell the treatment until he had made an examination.

Q.—In other words, you would not consider it a safe proposition to guess at a condition when it was possible for you to ascertain it; that is right, is it not? A.—I would not consider it—

Q.—What is that? A.—I would not consider it a guess—I would not want to guess.

Q.—Well, you would not want to let the patient decide for herself either, what the condition was, would you? A.—No, sir.

The witness testified that the woman could not make a diagnosis of her condition. She could tell whether she had pain. Sometimes the physician cannot make a diagnosis by his examination. The physicians do the best they can.

Dr. Amerson testified that sometimes a woman would state that she had leukorrhea or whites, which is a symptom. He named some of the conditions which may produce leukorrhea. It is possible for the physician by the history and general examination and examination of the discharge—which he invariably makes—to tell the cause of the condition and the treatment. The treatment of ordinary leukorrhea and gonorrhea which he gives is usually along the same lines although one might add serologic treatment. It would not make any difference whether the condition was gonorrheal or otherwise as to what medicines are given by mouth. It would not make any difference in the douches although the latter might be more frequent and the stringency increased, if the case was one of gonorrhea.

Q.—Now, what does the astringent do? What is the effect of the astringent, some astringent generally, in the douche? A.—It contracts the tissues.

Q.—Would you consider it good treatment to contract and lock up these tissues, with the gonococci there?— A.—It is used right along.

Q.—in the mucous membrane? A.—It is used right along.

Q.—I am not asking you that. I am asking you if you consider that it would be good treatment for you to give a douche that was an astringent which, as you say, would be for the purpose of shrinking up, and which, in its effect, would lock up the gonococci in the mucous membrane, with the possibility of its working its way up into the bladder, or into the fallopian tubes and ovaries? A.—The gonorrheal organisms are already implanted in the cells and the tissues, and your astringent would contract the vessels, and possibly have a disposition to localize it, rather than disseminate it through the tissue.

Q.—Then you put it upon the basis that that might result? A.—Yes, sir.

Q.—You say possibly it might. What do you mean by that? A.—I said also that I might possibly use an astringent. I don't mean by that that I use an astringent all the time, or that I would cauterize them all the time.

The witness stated that such a treatment was surgical. He stated that he did find cases of pyosalpinx which were due to gonorrhea and some authorities stated that practically all cases of pyosalpinx are due to gonorrhea.

He described the way the gonococcus reaches the fallopian tubes by extension up from the vagina. It may go through the urethra to the bladder and produce cystitis. The treatment of vaginitis, assuming that it was not already beyond the cervix, would be local with perhaps some general tonic. He sometimes gives medicated douches containing boric acid and argyrol or silver solution for the purpose of inhibiting the germ which he does not believe they do. When argyrol and nitrate of silver are used in the eye of an infant, they are not put there to kill the germ but primarily to irrigate, and secondarily, he believes, it inhibits the gonococcus.

Q.—In what way does it inhibit the action? A.—By its astringent action, I suppose.

Q.—It kills it, doesn't it, doctor? A.—You can say kill it, if you want to.

Q.—What? A.—You can say kill it, if you want.

Q.—That is what it does— A.—It kills it for all practical purposes.

Q.—Don't you know, doctor, the state laws require you to do it for that very purpose? A.—Recently I believe it does—it is compulsory.

Q.—And the reason, and the object of it is for the destruction of that germ; isn't that true?

Mr. Walker:—That is objected to. The fact that the state law requires it, we don't object to, but that the state law requires it for that purpose, we do object to.

THE COURT:—Objection sustained.

To which ruling of the Court the defendants, etc., excepted.

Mr. T. J. Scofield: Q.—I will ask you, if you don't know, as a matter of fact, that that is the purpose for which you give that drug under those circumstances, to babies?

Mr. Walker:—That is another matter. All right. Answer that.

The Witness:—To kill the germ?

Mr. T. J. Scofield: Q.—Yes. A.—Yes, you can say kill, if you want. A better word would be "inhibit."

Q.—All right. So you make a distinction between inhibit and kill. A.—Yes, sir; because we have lots of organisms in our mouth, throat and nose that are not active.

The witness stated that he ordinarily does not give the same treatment in acute gonorrhea in women that he gives for ordinary catarrh of the womb. He gives directions for preventing transmission of the disease to others.

Whereupon an adjournment was taken until 2 o'clock p. m. of the same day, May 17, 1916.

(To be continued)

Correspondence

Endocrinopathic Inheritance

To the Editor:—In the letter of Dr. Irving F. Stein (*THE JOURNAL*, June 3, 1916, p. 1811), in which he gives a heredity chart of a family through three generations, one original parent of which had diabetes, an apparent exception to transmission of endocrinopathic characteristics is presented. In analyzing this chart, we first note that only an absence of a normal metabolic factor (diabetes) is presented—and no absence of a normal growth factor, in the parents. In the analysis of my paper (*THE JOURNAL*, May 6, 1916, p. 1438), I drew a conclusion that metabolic disturbances were seemingly recessive in the male and dominant in the female. On this basis, only the families of the daughters of the individual No. 3 of Dr. Stein's chart could be considered in the endocrinopathic inheritance. The number of such offspring is shown by the chart to be seven. Of these seven individuals, four are males and therefore apparently immune. Of the three females (who are probably still quite young) *one already has an endocrine disturbance—obesity*. That is, 33½ per cent.! Furthermore, while growth abnormalities are easily distinguishable, yet metabolic disturbances (diabetes, hypoglycemia and hyperglycemia, calcium and phosphorus disturbances, etc.) can frequently only be determined by careful laboratory analyses. Unless this has been done by Dr. Stein, it would be unfair to reject any individuals merely on normal appearances. I do not know what criteria Dr. Stein uses to distinguish metabolic disturbances, but I would be much interested to know whether vagotonia, muscular fatigability, tachycardia, bradycardia, pigmented skin, abnormalities of hairy growth, and similar conditions were among them. I should also like much to know just what Dr. Stein means by "simple goiter."

WALTER TIMME, M.D., New York.

Treatment of the Neuropathic Child

To the Editor:—In *THE JOURNAL*, June 3, 1916, p. 1816, in the discussion of papers read before the Medical Society of the State of New York at Saratoga Springs, I am quoted as saying:

When the mother brings such a child to me complaining of night terrors, bed wetting and nervous symptoms, I usually prescribe bromids and Fowler's solution and let it go at that.

The reporter either misunderstood me, or else did not listen to what I had to say. If you will read the rest of the discussion as published you will see that it is inconsistent with the statement quoted above. In fact, it was the crux of my discussion that physicians are apt to minimize the importance of studying the nervous child from every point of view possible, including organic disease, heredity, environment and economics. I uttered a warning that when a child, as described above, is brought to a physician, he should not be satisfied with a diagnosis of "nervousness" and send it away with a prescription for bromids or Fowler's solution, and feel that he has discharged his duty to his patient and to society at large, because many of these children later in life fill the asylum, homes for epileptics and reformatories.

MOSES KESCHNER, M.D., New York.

Infant Mortality Rate of Passaic, N. J.

To the Editor:—In the Current Comment on "The Baby's Chance for Life" (*THE JOURNAL*, May 27, 1916, p. 1707) concerning the infant mortality rate in 144 cities based on figures supplied by the New York Milk Committee, it was stated that Passaic, with a rate of 193.5, had the highest rate of all the reporting cities. This statement started an uproar here, and good will no doubt be the result.

As a matter of fact Passaic does not deserve this bad eminence. Investigation shows that a very material error was made in compiling the vital statistics for the New York Milk Committee in this city, and that the true infant mor-

tality rate for Passaic in 1915 was not 193.5 but 136.1. Under separate cover are sent copies of the *Daily News* giving all the evidence in the case.

As the mistake was made here, we shall have no cause for complaint if *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* will now aid us in correcting the false report which by now has been read in every part of the United States.

The state department of health, at Trenton, records our infant mortality rate for 1915 as 136.1, and a checking up of the figures here shows this to be correct. Our vital statistics are kept separate from the board of health, and it was in answering the New York Milk Committee's questions that the error was made.

We realize that Passaic is not perfect, but we do feel that we should be saved from the consequences of this blunder.

G. M. HARTT, Passaic, N. J.

Editor, *Passaic Daily News*.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

IS AROMATIC SPIRITS OF AMMONIA A DESIRABLE PREPARATION?

To the Editor:—The dosage of aromatic spirits of ammonia is given as 30 minims often repeated; that apparently means about 20 drops of alcohol, with a little over 1 grain of ammonium carbonate, and a little less than 3 drops of aqua ammoniac.

Where the effect of ammonia or its carbonate is wanted, would it not seem better to prescribe aqueous solutions, those who still find alcohol useful in medicine prescribing it as whisky or otherwise? In other words, does this preparation still deserve a place in the pharmacopeia?

W. R. T., M.D.

ANSWER.—Aromatic spirits of ammonia is an old-fashioned complex mixture; its reputation has little scientific basis. Whatever effect it may have is probably psychic, to a considerable degree, at least. Such effect might be expected from the irritation of the nasal mucosa by the ammonia and the flavor and odor of the lemon, lavender and nutmeg oils. The physical effect, if any, is probably due to the alcohol, though the ammonium carbonate and combined ammonia may have some restorative action by their irritation of the gastric mucosa or by their neutralization of nauseating acids in the stomach.

Our correspondent's point is well taken. When ammonium carbonate is to be given, it is better to give it in aqueous solution. When alcohol effects are desired, whisky is a better medium for administration.

INTRAVENOUS PRODUCTS COMPANY—TREATMENT OF SHOCK

To the Editor:—1. Please give me the status of the Intravenous Products Company of Denver. They are claiming great results. Is their treatment safe, sane and trustworthy?

2. Can a better treatment of "shock" be given than those of our textbooks?

PRACTITIONER.

ANSWER.—1. *THE JOURNAL*, March 25, 1916, p. 978, discussed several of the preparations made by the Intravenous Products Company.

2. Up-to-date textbooks, by reliable authors, are presumed to give the best treatment. For treatment of shock, see *Therapeutics*, *THE JOURNAL*, May 6, 1916, p. 1464.

PROPORTION OF PHYSICIANS TO POPULATION

To the Editor:—Please let me know in what number of *THE JOURNAL* there appeared an article regarding the proportion of physicians to population.

A. W. VALENTINE, M.D., Washington, D. C.

ANSWER.—In *Queries and Minor Notes*, *THE JOURNAL*, Feb. 1, 1913, p. 388, statistics are given as taken from the census of 1910 and the third edition of the American Medical Directory. In *THE JOURNAL*, May 27, 1916, p. 1736, statistics appear as taken from the fifth edition of the American Medical Directory, and the 1915 estimate of the U. S. Census Bureau.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALABAMA: Montgomery, July 10. Chairman, Dr. W. H. Sanders, Montgomery.

ALASKA: Juneau, July 5. Sec., Dr. H. C. De Vigne, Juneau.

ARIZONA: Phoenix, July 5-6. Sec., Dr. John Wix Thomas, 306 Goodrich Building, Phoenix.

COLORADO: Denver, July 4. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

CONNECTICUT: Regular, New Haven, July 11-12. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven; Homeopathic, New Haven, July 11, Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven; Eclectic, New Haven, July 11, Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

DISTRICT OF COLUMBIA: Washington, July 11-13. Sec., Dr. Edgar P. Copeland, The Rockingham.

INDIANA: Indianapolis, July 11-13. Sec., Dr. W. T. Gott, 84 State House, Indianapolis.

MAINE: Augusta, July 6-7. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

MASSACHUSETTS: Boston, July 11-13. Sec., Dr. Walter P. Bowers, 1 Beacon St., Boston.

NEW MEXICO: Santa Fé, July 10. Sec., Dr. W. E. Kaser, East Las Vegas.

NORTH DAKOTA: Grand Forks, July 4. Sec., Dr. G. M. Williamson, Grand Forks.

OKLAHOMA: Oklahoma City, July 11. Sec., Dr. R. V. Smith, 502 Daniel Bldg., Tulsa.

OREGON: Portland, July 5-7. Sec., Dr. L. H. Hamilton, Medical Bldg., Portland.

PENNSYLVANIA: Philadelphia and Pittsburgh, July 11-13. Sec., Mr. Nathan C. Schaeffer, Department of Public Instruction, Harrisburg.

RHODE ISLAND: Providence, July 6-7. Sec., Dr. Gardner T. Swarts, Room 313 State House, Providence.

SOUTH DAKOTA: Deadwood, July 11. Sec., Dr. Park B. Jenkins, Waubay.

UTAH: Salt Lake City, July 3. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

VERMONT: Burlington, July 11-13. Sec., Dr. W. Scott Nay, Underhill.

WASHINGTON: Tacoma, July 4. Sec., Dr. C. N. Suttner, Walla Walla.

WEST VIRGINIA: Charleston, July 11. Dr. S. L. Jepson, Charleston.

Graduate Medical Classes in North Carolina

According to a letter from Dr. W. S. Rankin, secretary of the North Carolina State Board of Health, and to later news reports, a novel scheme for bringing graduate medical instruction where it is more readily accessible to physicians has been established in North Carolina. Under the auspices of the state board of health and the state university, since June 5, classes have been held in six cities of North Carolina, to be continued for seventeen weeks. The classes in each city have at present from eight to fifteen members. The course is opened each week at 11 a. m., with a lecture covering one hour and a clinic of two hours. The instructor is in Raleigh on Monday, and in Weldon, Tarboro, Wilson, Goldsboro and Selma on the other five days of the week, respectively. The course deals with diseases of children, and the instructor is Dr. Louis Webb Hill of Boston. Another class has since been organized in the western part of the state, the instructor being Dr. Jesse R. Gerstley, a Chicago physician, who likewise gives lectures and clinics in children's diseases.

Each physician enrolled in these classes, after signing an application blank, deposited \$20 and agreed to pay a further sum should additional funds be necessary to cover the expenses of the course. It was understood that the University of North Carolina was to assume all financial obligations and to return to those registered any receipts in excess of actual expenses. It was also understood that the university would give proper academic credits to those who attended 85 per cent. of the course.

The clinics in both of these courses have been generally supplied with patients by the physicians enrolled. The patients are not charged for the service, and the classes are given an opportunity to observe the later methods of diagnosis and treatment. Thus far sufficient and valuable material for the conducting of the clinics has been readily found.

In planning a course of home study, four elements had to be considered: there were needed a class room, an instructor, clinical material and a class of physicians. With these four elements provided, graduate work could be done anywhere. The idea of these classes grew out of the necessity for some

graduate training among the general practitioners who from the nature of their work and practice, or because of small incomes, found it impossible to go to distant cities or abroad for graduate instruction, or to pay the enormous expense involved. The average practitioner, from an income ranging from \$1,000 to \$1,800, is not able to pay the price for such instruction. In the two classes about 130 physicians have been enrolled. Under the old plan these physicians would have paid between \$400 and \$500 each, or a total of at least \$52,000, for their instruction; they would have been required to leave their practice while studying, and would possibly have received even less instruction than the new plan provides with its outlay of approximately \$4,000, and the physician is free to study at home. By this arrangement doctors may attend lectures and clinics without interrupting their general practice. If the two classes now being conducted prove to be as successful as conditions now indicate, other classes will be organized, and other subjects will be taught.

Hawaii January Report

Dr. R. W. Benz, secretary of the Hawaii Board of Medical Examiners, reports that four candidates were licensed, Jan. 25, 1916. The following colleges were represented:

College	Year Grad.	Total No. Licensed
Rush Medical College.....	(1907)	1
Johns Hopkins University.....	(1914)	1
University of Pennsylvania.....	(1898) (1899)	2

Arkansas Reciprocity Report

Dr. T. J. Stout, secretary of the State Medical Board of the Arkansas Medical Society, reports that six candidates were licensed through reciprocity from March 24 to May 9, 1916. The following colleges were represented:

College	Year Grad.	Reciprocity with
College of Physicians and Surgeons, Chicago.....	(1908)	Illinois
College of Physicians and Surgeons, Keokuk.....	(1875)	Oklahoma
University of Louisville.....	(1914)	Tennessee
Memphis Hospital Med. Coll....	(1909)	Mississippi; (1911) Oklahoma
Vanderbilt University	(1911)	Tennessee

Arizona April Report

Dr. John Wix Thomas, secretary of the Board of Medical Examiners of Arizona, reports the written examination held at Phoenix, April 4-5, 1916. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 9, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
College of Physicians and Surgeons, Chicago.....	(1897)	(1897)	78.6
Northwestern University	(1902)	(1902)	77.3
Rush Medical College.....	(1914)	(1914)	80.1
Johns Hopkins University.....	(1901)	(1901)	83.2
University of Minnesota.....	(1912)	(1912)	82.4
University Medical College, Kansas City.....	(1904)	(1904)	77.4
Washington University	(1913)	(1913)	81
Memphis Hospital Medical College.....	(1892)	(1892)	76.3
McGill University	(1890)	(1890)	77.2

Ohio April Reciprocity Report

Dr. George H. Matson, secretary of the Ohio State Medical Board, reports that 18 candidates were licensed through reciprocity, April 4, 1916. The following colleges were represented:

College	Year Grad.	Reciprocity with
Rush Medical College.....	(1914, 2)	Illinois
Fort Wayne College of Medicine.....	(1896)	Indiana
University of Louisville.....	(1902)	W. Virginia
Baltimore Medical College.....	(1911)	Maryland
College of Physicians and Surgeons, Baltimore.....	(1913)	Maryland
Tufts College Medical School.....	(1904)	Illinois
University of Michigan Medical School.....	(1902)	New York
Univ. of Michigan Homeopathic Med. School.....	(1914)	Michigan
Washington University	(1901)	Missouri
Albany Medical College.....	(1900)	New York
Cornell University	(1907)	New York
University and Bellevue Hosp. Med. College.....	(1915)	New York
Medico-Chirurgical College of Philadelphia.....	(1906)	Penna.
University of Pennsylvania.....	(1904)	Penna.
Meharry Medical College.....	(1912)	Texas
Marquette University	(1915)	Wisconsin
University of Palermo.....	(1906)	Missouri

District of Columbia April Report

Dr. Edgar P. Copeland, secretary of the Board of Medical Supervisors of the District of Columbia, reports the oral and written examination held at Washington, April 11-13, 1916. The total number of subjects examined in was 16; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 7, of whom 4 passed and 3 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Georgetown University.....	(1909) 79;	(1915)	80.1
Chicago Hospital College of Medicinc.....	(1915)		82.1
University of Michigan Medical School.....	(1894)		75.8
FAILED			
Baltimore Medical College.....	(1905)		69.5
Medico-Chirurgical College of Philadelphia.....	(1915)		73.1
Temple University	(1915)		70.3

Two candidates were licensed through reciprocity from Jan. 31, 1916, to March 30, 1916. The following colleges were represented:

College	Year Grad.	Reciprocity with
American Medical Missionary Medical College.....	(1902)	Maryland
College of Physicians and Surgeons, Memphis.....	(1911)	Georgia

Book Notices

AMERICAN PUBLIC HEALTH PROTECTION. By Henry Bixby Hemenway, A.M., M.D. Cloth. Price, \$1.25 net. Pp. 283. Indianapolis: Bobbs-Merrill Company, 1916.

This work is for laymen, and gives such an account of public health work in the United States as will bring home to its readers first, the economic value of an efficient service and, secondly, that the latter can be obtained only by the employment of full time specialists in hygiene.

GAMES AND EXERCISES FOR MENTAL DEFECTIVES. By Hilda A. Wrightson. Cloth. Price, \$1.25. Pp. 100, with illustrations. Cambridge, Mass.: Caustic-Claflin Company, 1916.

This little book contains explicit instructions (accompanied, when necessary, by diagrams) for playing 115 extremely simple games and exercises adapted to the feeble-minded. Dr. H. H. Goddard well says in his introduction:

"The teacher unfamiliar with feeble minds will perhaps think some of the games here described of no value. It is always hard for the more intelligent to understand the less intelligent, for normal teachers to understand defective children. It should be remembered that the joy of accomplishment is one of the greatest joys of life for all grades of intelligence. It is the fact that the list includes games adapted to the simplest minds which constitutes one of its excellencies."

NERVOUS CHILDREN: PREVENTION AND TREATMENT. By Beverley R. Tucker, M.D., Professor of Neurology and Psychiatry, Medical College of Virginia. Cloth. Price, \$1.25 net. Pp. 147. Boston: Richard G. Badger, 1916.

The intention of this book is praiseworthy, but in execution it apparently fails. On the one hand, those readers who are willing to devote some study to causes and principles deserve a more thorough and painstaking exposition than these few pages afford; and, on the other, the needs of the readers who want merely explicit advice covering the details of the care and management of nervous children seem to be no more adequately met in the offhand, sketchy treatment accorded to practical subjects.

STUDIES IN ETHICS FOR NURSES. By Charlotte A. Aikens. Cloth. Price, \$1.75 net. Pp. 320. Philadelphia: W. B. Saunders Company, 1916.

This is a practical book written by a practical nurse and teacher. The first section discusses the nurse herself, her personality, conduct and duty, with particular consideration of the qualifications needed for success in her profession. In the second part the problems of the training school are taken up, while the third part is devoted to the nurse after graduation. The plan of the book is to state a principle and follow with a discussion of a number of concrete problems involved, supplementing this discussion with the proposal of a number of pertinent questions. The carrying out of this plan is most satisfactory.

Medicolegal

Validity of City Milk Ordinance with Higher Requirements than Statute

(Kansas City vs. Henre (Kan.), 153 Pac. R. 548)

The Supreme Court of Kansas, in affirming a judgment in favor of the city, holds that a city ordinance, passed in pursuance of legislative authority to make regulations to secure the health of the city, which fixes a higher standard of food value in the milk sold within the city than is provided in statutory regulations as to the sale of milk throughout the state, and which imposes a more severe penalty for the violation of the ordinance than is annexed by the legislature for the violation of the statute on the same subject, is not repugnant to the laws of the state, unreasonable or invalid. The court says that there is a conflict in the authorities on this question; but, under the view which has been taken in Kansas, additional regulations and superadded penalty are not repugnant to the state statute, nor can they be deemed unreasonable. It may be necessary to make additional requirements and stricter regulations and to impose more severe penalties in a congested district like a city than are made and enforced in a rural district.

Malpractice in Failure to Change Treatment

(Van Boskirk vs. Pinto (Neb.), 155 N. W. R. 889)

The Supreme Court of Nebraska reverses a judgment for \$1,500 obtained by the plaintiff for alleged malpractice in the diagnosis and treatment of an injury to his ankle caused by a fall of about 15 or 18 feet, May 4. The court believes that the defendant's substantial rights were injuriously affected by the submission to the jury of the question as to negligence in the original examination and diagnosis. The court is convinced that if the defendant was guilty of any negligence at all it was in failing to change his manner of treatment after he had reason to believe that a fracture had occurred. It appeared that another physician was called first, and that he and the defendant diagnosed the injury as being a severe sprain. The ankle was placed in splints and the patient placed in charge of a nurse who was instructed to pour liniment on it. The other physician then gave the case over to the defendant. Three or four days after the injury the splints were removed, the foot placed on a pillow with a sandbag to support it, and the nurse was directed to massage the ankle and move it as much as the patient could stand. The patient remained under the defendant's care in the hospital seventeen days. At the time he left he was unable to bear his weight on the injured foot without pain or to walk without crutches, and finally the foot remained fixed in such a position that the front part of it was left at a downward angle from the normal position. July 11, he suggested to the defendant that he would like a roentgenogram taken, and one was. It disclosed that the fall had caused a slight impacted fracture of the forward part of the astragalus and a rupture or raising of the periosteum on the posterior portion of this bone. The defendant testified that he had an idea on the Saturday following the injury that there was a fracture of the articular ends of the bones, and that from May 11 he treated the case with the view that the ankle was fractured, etc. The plaintiff's petition, after pleading negligent diagnosis, in substance alleged that the defendant wrongfully advised him that his injuries were being properly treated and that he would soon recover the use of his foot and ankle, and that, relying thereon, he was induced to allow the defendant to continue to treat the injuries until about June 22, when the plaintiff was discharged from further treatment, and that if the defendant had properly diagnosed and treated the injury he would have wholly recovered in two or three months and would have had the unimpaired use of his limb. The court says it is with some hesitancy that it has come to the conclusion that under these allegations proof of negligent and unskilful treatment, after the defendant had reason to believe a fracture had occurred, might be made. There was sufficient evidence on this point to go to the jury.

The question whether a physician and surgeon, after having reasonable grounds to believe that he made a mistake in diagnosis and that a fracture existed in a case in which the injury had been considered by him to be merely a sprain, exercised reasonable and proper care and skill after he reached such conclusion, is a matter, under proper pleadings and instructions, for a jury to determine. A physician or surgeon, when he accepts employment to treat a patient professionally, must exercise such reasonable care and skill in that behalf as is usually possessed or exercised by physicians or surgeons in good standing, of the same system or school of practice, in the vicinity or locality of his practice, having due regard to the advanced state of medical or surgical science at the time, and he is not liable for a mistake in judgment made in diagnosing a physical injury where he used such ordinary and reasonable care and skill, even though his judgment may be erroneous.

Negligent Treatment of Child—A Competent Witness

(*Van Sickle vs. Doolittle (Ia.)*, 155 N. W. R. 1007)

The Supreme Court of Iowa reverses a judgment on a verdict directed for the defendant, a homeopathic physician who was charged with malpractice in the treatment of a girl 9 years and some months of age. The girl appeared to have been in good health until Saturday, and then complained only of a headache. On Sunday the defendant was called and treated her until Wednesday afternoon, when she died. It was alleged that he failed to exercise ordinary care and skill in endeavoring to cure her of her ailment, in that he "neglected to see her with such frequency as the case demanded; by neglecting to give her proper medicine and skilful treatment; by neglecting and refusing to do anything for her relief and cure when it became apparent that she was in a dangerous and precarious condition, and by unskilfully and negligently administering to her certain medicine . . . which was injurious to her at the time of its administration, and which the defendant, if he had used proper care and skill, ought not to have administered to said child in the circumstances at said time existing." The defendant testified, among other things, that he left bryonia in one vial, and a dilution of aconite and gelsemium in another; could not tell exact strength, thought there was the equivalent of about two thirds of a drop of tincture of aconite; that a homeopathic physician never gives medicine for diseases, but on the indications, etc. The court says that nothing short of setting out the evidence in detail could well illustrate the manner of the defendant's diagnosis of the condition and symptoms of the child, the dilatoriness with which he attended her when summoned to her bedside, his peculiar method of preparing the medicine to be administered, and his utter lack of appreciation of his obligation to his patient when in sore need of relief. The jury might well have found that after Tuesday morning her ailment was serious, and yet that the defendant gave her scant examination and apparently was unable to say whether she was afflicted with typhoid fever, brain fever, smallpox, gastritis, influenza or paralysis. He might then have been found to be negligent in diagnosing her condition or symptoms and therefrom ascertaining her ailment. Not attending the child for several hours after undertaking to do so, when summoned, in view of her condition, might well have been found to be negligence on his part. His testimony left much uncertainty as to the quantity and quality of any remedy administered, and whether it was appropriate to the symptoms manifested, and the jury might have found this to be in such infinitesimal quantities as to have no physiologic effect on her system. The court has little difficulty in finding that the evidence was such as to carry the issues as to the defendant's negligence on the first three grounds of alleged negligence to the jury. Its only difficulty is in determining whether or not death might have been found to be in consequence of such negligence. This is always a question of probability in such cases, for no one can say absolutely whether a patient, even though properly treated, would have survived. The inquiry necessarily is whether recovery would have been the more likely in that event and a cure in all reasonable probability effected.

After a recital of the conditions and symptoms of the girl from Saturday until the time of her death, as shown by the evidence, including the treatment given by the defendant, a physician of the regular or allopathic school was asked what, in his opinion, as indicated by the symptoms revealed in the question, the child was probably suffering from. The court holds that it was error to sustain an objection to the question as above, and also to it with all references to medicines administered withdrawn, on the ground that the witness was incompetent because he belonged to a different school.

Society Proceedings

COMING MEETINGS

Montana State Medical Association, Miles City, July 12-13.
Washington State Medical Association, Seattle, July 12-14.

THE AMERICAN ASSOCIATION OF IMMUNOLOGISTS

Third Annual Meeting, held in Washington, D. C., May 11-12, 1916

The President, DR. JAMES W. JOBLING, Nashville, Tenn.,
in the Chair

Relation of Lipoids to Immune Reactions

DR. JAMES W. JOBLING, Nashville, Tenn.: Peterson and I have shown that bacteria are protected from the action of ferments by the unsaturated fatty acid compounds present in the cells, and that oxidizing agents such as iodine, hydrogen peroxid, etc., will destroy this protective action. We also found that soaps injected intravenously into guinea-pigs in proper doses produce the symptoms and postmortem findings of anaphylaxis. We investigated, first, the action of lipoids when given with the intoxicating dose of antigen, and secondly, the influence of increasing the antitryptic power of the serum. We found that increasing the antitryptic power of the serum, and the addition of soaps to the intoxicating dose, enabled the animal to resist several times the amount of the specific protein fatal for the controls, while a smaller dose of the antigen was required when lipoid-free proteins were used. The removal of lipoidal anti-ferments from serum permits the formation of toxic substances which we have termed "serotoxins." These toxic substances are formed through the action of the serum proteases on the serum proteins as soon as the protective lipoidal substances are removed. The lipoids of the body are of far reaching consequence in almost all vital cellular phenomena.

Inadequacy of the Anaphylatoxin Theory of Anaphylaxis

DR. RICHARD WEIL, New York: The test tube reaction differs from the anaphylactic reaction in the living animal or in the suspended uterus. According to the physical theory, the reaction is an expression of the alternation of cellular equilibrium which results when external antigen is brought into contact with cellular antibody. In guinea-pigs the conclusion seems unavoidable that anaphylactic death is due to a cellular reaction, and that the serum plays no rôle therein. There is no question, on the other hand, that during the prolonged or delayed shock of the dog, striking alterations occur in the chemical composition of the blood. These changes are due in the first instance to the freeing of protease, as a result of the reaction of the sensitized cells to the antigen. It still remains to determine whether the changes in the serum produced through the activity of the protease are really the cause of the latter symptoms, or merely accompaniments of the shock in this species. Even in the former event, the primary step in the entire reaction, namely, the discharge of protease, would be cellular.

The Protein Poison

DR. VICTOR C. VAUGHAN, Ann Arbor, Mich.: Casein yields a large percentage of protein poison which, after the removal of all traces of mineral acid, is strongly acid in and of itself. It does not give the ninhydrin test until after being split up with acid. The poison gives a skin reaction in all persons,

and it is not without harm when administered by the mouth. Animals can be poisoned acutely or chronically by oral administration. In chronic poisoning by feeding, extensive fatty degeneration results. The protein poisons from diverse proteins are not identical. The protein poison from casein combines with certain unbroken proteins. In this combination the acidity of the poison is neutralized and its physiologic action diminished. The protein poison may be extracted from the tissues of animals killed with it, and its presence demonstrated and amount roughly estimated by intravenous injections of guinea-pigs.

Specific Character of Immunity Reactions

DR. E. C. L. MILLER, Richmond, Va.: For many years it has been recognized that immunity reactions are specific. However, when more detailed study is given to some of these immunity reactions, their specific character seems less sharply defined. The specific character of a protein, at least for the anaphylactic reaction, and probably for other biologic reactions, depends, not on the protein as a whole, but on certain parts or qualities or chemical groups in the protein molecule. The reason biologically related proteins react similarly is that they have inherited certain common groups from a common ancestor; but it should cause no surprise that entirely unrelated species should occasionally possess common groups. Immunologists have been inclined to assume that antigen and antibody are related to each other in an absolutely specific way, and if indications of an antibody were found, it was assumed that it must have been produced by its own antigen. There have been plenty of instances in which no such antigen could be found; but they were ignored.

DISCUSSION

DR. H. GIDEON WELLS, Chicago: In studying the fundamental principles of biologic processes, one must reduce the elements involved to the simplest possible. Unfortunately we apparently cannot get below the whole protein molecule, as one end of our reactions, and generally must use the warm blooded mammals as the other side of the equation. The best we can do, therefore, is to use pure protein. Those proteins which differ greatly from the majority of proteins are especially favorable materials for purification, such as noncoagulable ovomucoid of egg white, or alcohol soluble proteins of the grains. Using such isolated proteins, we have found evidence that, delicate as the specificity of immunologic reactions seem to be, immunologic differences do not seem to occur between proteins that cannot also be differentiated chemically. By comparative study of different proteins isolated from the hen's egg by anaphylaxis, I was able to distinguish five proteins definitely distinguishable from one another by this means. Proteins of the egg that cannot be differentiated by chemistry cannot be differentiated by anaphylaxis.

DR. JOHN A. KOLMER, Philadelphia: More and more importance is being attached to the rôle of the lipoids in this field. It has been proved that toxic substances may be prepared of various animal and vegetable proteins by the method employed by Dr. Vaughan, and that likewise toxic substances can be produced in normal and immune serums by the addition of such substances as kaolin and agar capable of producing anaphylactic-like symptoms and lesions in experimental animals; but it is not yet clear what relations these observations bear to the mechanism of anaphylaxis. I should like to ask Dr. Vaughan if he is prepared to make any further statement in regard to the relation between his protein poison and the mechanism of anaphylaxis.

DR. VICTOR C. VAUGHAN, Ann Arbor, Mich.: I observed the appearing and disappearing wave of toxicity in serums being incubated with agar and other foreign bodies. I spent much time in trying to measure these waves and catch the rhythm of the toxicity, but without results. I am not yet ready to abandon the idea that a protein poison is formed in anaphylactic shock. No one can tell whether this is due to a chemical or a physical process. I can conceive that a body so complex as the protein molecule may be dissociated and a poisonous action developed even by high dilution. If so stable a body as sodium chlorid can be broken up into its

ions by dilution, is it not possible that even more marked alterations might occur in a highly complex molecule? I am convinced of the fact that the blood contains proteins from which a protein group is easily detached.

DR. RICHARD WEIL, New York: Time has established the truth of the cellular theory of anaphylaxis, so that in the guinea-pig, at all events, it seems certain that serum changes with the production of anaphylatoxin can play no rôle in the typical evolution of shock. It would be a mistake, however, to assume that the process which takes place in the guinea-pig must necessarily be universally applicable to the anaphylactic phenomenon throughout the animal kingdom. We know that as between the guinea-pig and the dog, for instance, certain striking differences exist. We know with certainty that serum changes of a chemical nature accompany anaphylactic shock in the dog. This fact, however, by no means argues that these changes are productive of the anaphylactic symptoms. These symptoms may result from the gradual development of the cellular response to the antigen, taking place, however, more slowly and more gradually than in the guinea-pig, just exactly as diphtheria toxin produces its effect slowly and gradually. It still remains to determine whether serum changes in the dog, resulting in the production of some unidentified substance, described as anaphylatoxin, are simply an accompaniment of anaphylactic shock in that animal, or are actually productive of the symptoms.

Leukocytosis and Its Importance as a Diagnostic Sign in Vaccine Treatment

DR. JOSEPH HEAD, Philadelphia: I have taken fifty-four of my vaccine patients and made 714 separated blood counts containing complete data. Thirty-three of these fifty-four cases did not in the course of the treatment give a leukocyte count of over 20,000, but twenty-one cases did show transitory leukocyte counts of over 20,000 that jumped up like a rocket, only in a few days to sink back to 8,000 or 4,000, with either no symptoms to speak of or an indisposition so slight as to be almost negligible. This series of cases certainly indicates that a transient leukocyte count cannot be considered of itself an infallible sign of pus or even of semiacute inflammation of a serious nature. Persistence of the leukocytosis, accompanied with a great reduction in the number of red cells and hemoglobin, would indicate a condition of an entirely different significance. Blood count work is of great value in determining vaccine dosage. In one or two cases in which the infections were chronic or general, the blood counts were of no value as a guide, but ordinarily they will give accurate sensitive warning of an oncoming reaction. There is, however, no one special phase to be looked for as peculiarly diagnostic; it is the way the blood acts generally under the treatment that should be noted. If the hemoglobin, red cells and white cells are fairly normal in number, size and staining capacity, or if the constituents of the blood under vaccine treatment show a steady improvement, the vaccine dosage can be maintained or increased; but if the dose of vaccine is followed either by leukocytosis or leukopenia, or the red cells or hemoglobin drop off, or if poikilocytes or nucleated red cells appear, the vaccine dosage should be watched with great caution, and if unfavorable symptoms develop, the vaccine should be stopped, at least temporarily.

Action and Therapeutic Effects of Leukocytic Extract

DR. W. E. RICHARD SCHOTTSTAEDT, Toledo, Ohio: This work has been carried on with leukocytic extract prepared from leukocytes obtained from the blood of normal animals. Subcutaneous injections in normal individuals and patients suffering from acute infections produce a marked leukocytosis. The leukocyte increase is often 300 per cent., and is highest ten or twelve hours after the administration of the extract. The increase in the neutrophil elements is particularly marked, and coincident with it is a less marked increase in the eosinophil cells. Clinically, striking beneficial results have been obtained following its use in acute infections, such as furunculosis, pneumonia, acute bronchitis and acute tonsillitis. Chronic affections have had a less striking clinical improvement, though the leukocytic increase has been as marked as in the foregoing cases.

DISCUSSION

DR. W. EGBERT ROBERTSON, Philadelphia: From the clinical standpoint, the work of Dr. Head has very important bearings. In mouth infections there are two features which are very important. Not only is there a very high count of eosinophils, 17 per cent., which is difficult to explain, but there are other conditions difficult to explain.

DR. WILLIAM LINTZ, Brooklyn: We have made experiments with guinea-pigs and rabbits, inoculating them every two hours, and it was interesting to note the marked polymorphonuclear count that followed, as well as the marked leukocytosis. Leukocytic extract was prepared by us, and we find that we get the best results by the use of distilled water. Out of from fifteen to eighteen cases of pneumonia, in which there was a decided leukocytosis, not one patient was benefited by the use of the leukocytic extract.

Anaphylactic Food Reactions in Dermatology, With Special Reference to Eczema

DR. ALBERT STRICKLER, Philadelphia: Fourteen food products have been tried out in the attempt to demonstrate their relation to various skin diseases. The method of injection employed was the endermic one. The dose used was 0.1 c.c. In none of our cases was there any manifestation of soreness of the arm or enlargement of the associated lymph glands. We studied forty-six cases of eczema, ten cases of urticaria, thirteen of acne, and eleven of psoriasis. From this study we conclude that anaphylactic skin tests are of value in the etiologic diagnosis and in the treatment of various diseases of the skin. These reactions find their greatest value in eczema. In chronic urticaria, acne and psoriasis, the tests are disappointing. Approximately 20 per cent. of individuals affected with eczema are not sensitive to any of the common foods. Normal persons do not react to these tests.

Allergic Skin Reactions as an Index of Immunity

DR. JOHN A. KOLMER, Philadelphia: Our studies demonstrated that there is no experimental support for the theory that allergic skin reactions may be taken as an index to resistance and immunity, so far as it is possible to determine the presence of antibodies in vitro.

Comparative Studies of the Wassermann and Hecht-Weinberg Reactions in Syphilis, With Special Reference to Cholesterinized Antigens

DR. JOHN A. KOLMER, Philadelphia: In 82 per cent. of serums examined, the results of the Hecht-Weinberg and Wassermann reactions were the same. In fifteen per cent. the Wassermann was negative and the Hecht-Weinberg test was positive. Of these reactions the positive Hecht-Weinberg tests were largely correct and occurred mostly with the serums of syphilitic persons under vigorous treatment; in 3 per cent. the Wassermann was positive and the Hecht-Weinberg was negative; all of these occurred with the serums of persons in the latent tertiary stages of syphilis. With the serums of persons known not to be syphilitic, the Hecht-Weinberg test showed about 10 per cent. falsely positive reactions; most of these reactions occurred with the alcoholic extract of syphilitic liver, and fewest with the extract of acetone insoluble in lipoids. All of these serums yielded negative Wassermann reactions with all antigens. The Hecht-Weinberg test was found unreliable in the diagnosis of syphilis on account of the tendency to yield proteotropic reactions; it was more delicate than the Wassermann test, however, and had its greatest value in a negative reaction as a control on treatment with the serums of known syphilitics.

DISCUSSION

DR. EDWARD B. VEDDER, Washington, D. C.: I wish to ask Dr. Kolmer whether he has used antigen in a dilution of 1:6 instead of the customary dilution of 1:10, as recommended by Walker in order to determine whether syphilitics were cured. I should also like to ask if the use of antigen in this quantity (1:6) in the ordinary Wassermann would not furnish as good evidence of a cure as that obtained by the use of the Hecht-Weinberg test.

DR. OSCAR BERGHAUSEN, Cincinnati: I have been in the habit of using cholesterinated antigens, Noguchi's and others, and it is possible to get a reaction, especially in the concentrated reactions. My experience has been that after determining a positive Wassermann, using the same technic with the Hecht-Weinberg method, positive reactions were obtained. The results seem to be entirely dependent on the antigen used. My experience has led me to believe that the Hecht-Weinberg test is the real one and the Wassermann is the control test.

DR. JOHN A. KOLMER, Philadelphia: I have not used Dr. Walker's method with large doses of cholesterinized antigen. Owing to the antilytic properties of cholesterin I did not employ any of these extracts unless the anticomplementary unit of each was at least twenty times greater than the antigen unit. In a study of the nonspecific reactions observed with the Hecht-Weinberg technic with normal serums, all the serums had been likewise subjected to the Wassermann test, and all reacted negatively with all antigens, including the cholesterinized extracts.

(To be continued)

AMERICAN PEDIATRIC SOCIETY

*Twenty-Eighth Annual Meeting, held in Washington, D. C.,
May 8-10, 1916*

The President, DR. ROWLAND GODFREY FREEMAN, New York, in the Chair

Physiologic Action of Atmospheric Conditions

DR. FREDERICK S. LEE, New York: Except under extraordinary conditions, the harmfulness of expired air is not due to its chemical compounds, but to certain physical factors. If it is not too moist, too warm or too still, air is not harmful. When an external temperature is fairly comfortable, an elevation of it, especially when accompanied by humidity, is deleterious; and this deleteriousness is more pronounced when the air is stagnant. An electric fan will obviate some of the bad effects; but it is better to reduce the temperature, and the good effect is assisted by reduction of the humidity. Cool, dry air, in motion, is the most physiologically wholesome aerial envelope for the body. Uniformity should be avoided; there should be frequent and marked changes. Artificial ventilating systems should be combined with window ventilation.

Mode of Infection in Pyelitis of Infancy

DR. RICHARD M. SMITH, Boston: In favor of the ascending route is the greater frequency of pyelitis in girl babies; but aside from this, there is no experimental or clinical evidence in its support. The hematogenous route is supported by clinical and experimental evidence, which shows that the colon bacillus may enter from the gastro-intestinal tract into the blood and be excreted by the kidney, causing inflammation at the point of excretion, namely, the pelvis of the kidney. Bacteria may also gain entrance to the blood from the genital organs, especially in the female, in whom exposure to contamination is particularly easy. The anatomic difference between the organs in the two sexes explains the greater frequency of the disease in female infants.

DISCUSSION

DR. HENRY F. HELMHOLZ, Evanston, Ill.: In some experiments in animals, I found that in three out of twelve cases I was able to show, by means of the roentgenogram taken immediately after the injection, that there was a reflux from the bladder into the ureter.

Diet and Growth in Infantile Scurvy

DR. ALFRED F. HESS, New York: There is a gradual falling off in growth at about the seventh or eighth month in many babies who have been fed on pasteurized milk. Many of these infants do not show the typical symptoms of scurvy. Tachycardia, however, is an early and typical symptom. Growth in both length and weight is markedly affected, both finally ceasing. When orange juice, orange peel juice or

potato water was added to the diet, there was often a super-growth, which continued until the normal weight and length for the infant's age was reached, when the rate of growth became normal. Following the discontinuance of this antiscorbutic food, although the infants sometimes continued to gain for a month or two, there was a gradual flattening of the curve of growth. As soon as orange juice was again given, however, a sharp gain was manifested, showing that the babies were receiving some essential constituent of the food that had been lacking. Putting these babies on unpasteurized milk had the same effect as giving fruit juice with the pasteurized milk. Orange juice and orange peel juice did not lose their antiscorbutic elements by being boiled, although milk did. While pasteurized milk affords security against infection, it must be considered as an incomplete food, lacking the elements necessary to proper nutrition and growth. This is probably the reason that infants fail to gain at about the seventh or eighth month of life, and begin to grow better as soon as fruits and vegetables are added to their dietary. During the early months, they are probably protected by the antiscorbutic elements inherited from their mothers. One should commence giving them orange juice at about the age of 1 month, so as to prevent the development of the scorbutic state. It is probable that other factors than lack of growth are concerned in the production of infantile scurvy. A diet may possess growth-producing properties, and yet be unable to afford a means of preventing or curing scurvy.

DISCUSSION

DR. L. EMMETT HOLT, New York: Unless we who are interested in the production of good milk and certified milk make strong our disapproval of the general pasteurization of all milk, it will not be many years before we shall be face to face with the fact that it will be impossible to secure any but pasteurized milk. We see bad effects from its use less frequently among the babies of the poorer people, because they give other food than milk to their babies much earlier than has been customary among the better class of people. The treatment to counteract this scorbutic tendency should be begun early and continued.

DR. CHARLES M. HERRMAN, New York: If orange juice, when boiled, retains its antiscorbutic power, why does simply heating the milk destroy the antiscorbutic elements in it?

DR. SAMUEL S. ADAMS, Washington, D. C.: Within the last ten days, I have had cases of scurvy in children who had been fed on the best pasteurized milk delivered in Washington. I am not opposed to home pasteurization under proper supervision, but I am opposed to commercial pasteurization. Many dealers resort to pasteurization in order to sell bad milk.

DR. A. D. BLACKADER, Montreal, Que.: This winter I had two patients brought to my office for obscure symptoms, partly nervous, and associated with defective growth. There was rapid disappearance of all the symptoms under the use of orange juice and unpasteurized milk.

DR. HENRY L. SHAW, Albany, N. Y.: Some years ago, I was opposed to pasteurization; but during the last year I have been in a position to see the reports of certain milk-borne epidemics that came to the New York board of health, and my opinion has changed completely. There were sixteen epidemics outside of New York City which were positively traced to the milk. I do not think that tuberculosis is the greatest danger from the use of raw milk. Sore throat, scarlet fever and diphtheria are carried in this way. I used to advise the giving of orange juice after the third month, but shall recommend henceforth that it be given earlier.

DR. PERCIVAL J. EATON, Pittsburgh: Commercially pasteurized milk is not all real pasteurized milk. In many cases, it is only sterilized. The cases that come to my mind were all in babies fed on so-called pasteurized milk. We get better results by using the raw certified milk, if the certification is properly done, than by having all milk pasteurized.

DR. S. M. HAMILL, Philadelphia: We should come to the defense of properly prepared raw milk. The tendency to make pasteurization apply to all grades of milk is so mani-

fest that it is incumbent on us to take some action very promptly. The medical profession should not recognize the establishment of milk commissions that are absolutely unprepared to do the certification of milk. We should state definitely what certification should mean. I am in favor of the pasteurization of all milk other than the certified. There are dangers from unsatisfactory pasteurization, however, and from improper care of the milk after pasteurization; but they are not so great as from the use of raw milk. I have had as many cases of scurvy from the use of raw milk as when pasteurized milk was employed.

DR. HENRY L. COIT, Newark, N. J.: I have discarded the word "pasteurize," because I have found that I can accomplish more with mothers by using the word "refine." The most important thing is to obtain initially clean milk. I, too, am opposed to commercial pasteurization.

DR. HENRY HEIMAN, New York: Whether we have been giving milk raw or pasteurized, scurvy has been discovered, just the same. Pasteurized milk is not the proper food for children, and it will soon cease to be pasteurized if it is not kept properly after the bottle is opened. Last year I gave 5 drops of orange juice in water with sugar at the age of 1 month. It contains the salts necessary for growth.

DR. PHILIP VAN INGEN, New York: Since the pasteurization of milk has become general, we do not read much of an increase in the death rate from scurvy, but we do read of the decrease in the death rate from diarrheal diseases.

DR. MAYNARD LADD, New York: I have seen half a dozen cases of scurvy develop among babies who were presumably fed on raw milk; but on investigation, I found that in these cases an error had been made by overheating the milk before giving it to the babies. They were really getting pasteurized milk.

DR. ALFRED F. HESS, New York: If it is once realized that pasteurized milk is inadequate as a food, there will be fewer cases of scurvy following its use. To supply this deficiency, all that is necessary is to give with it either orange juice or potato water. Some persons have a predisposition to scurvy. In infants, the susceptibility depends partly on the amount of essential substances which the mother had and the food which she took during her pregnancy, and partly on the length of time the infant was nursed. Certain substances will stand boiling in a watery solution, such as orange juice, when they will not stand boiling in a medium rich in fats and proteins.

The Hospital Care of Premature Infants

DR. L. E. LA FETRA, New York: The experimental observations were made at Bellevue, where the police department brings all foundlings. I have gone through the records of the last 200 cases, and found thirty in which the infants were saved and discharged with sufficient weight to make it probable that the mothers could care for them successfully. One hundred and eighteen died during the first three days. Thirty-six per cent. of those who lived beyond three days were saved. It is most unusual that any baby weighing less than 2½ pounds can be saved. The symptoms are extreme muscular feebleness and inability to nurse. The mother may have abundant milk, and the baby good digestion, but it cannot obtain nourishment on account of its muscular weakness. It radiates more heat proportionately than a normal infant, and is very susceptible to temperature changes. There is a great tendency to attacks of cyanosis, and great susceptibility to infection. A disease, however, is not always fatal. So far as possible, the condition of intra-uterine life should be simulated in treating these babies. They should be kept in an even temperature, approximating that of the human body, and shielded from all sorts of external shocks. The skin should be protected from contagion, and the eyes from light. The inhaled air should be moist, warm, and as free as possible from germs. The food should be such as to require the least possible digestive effort. The most satisfactory incubator is that devised by Edwin A. Cragin, but I think that usually it is not a good thing to put the baby in an incubator. It is better to set aside a small room and have it kept at the proper temperature. Such a room is also

of advantage in managing feeble infants that are not premature, but whose temperatures are subnormal. The food must be put into the baby's mouth, and often into its stomach. It is best to use the Buck feeder, which teaches the baby to suck. Breast milk mixed with whey is the best food.

Further Experience with Homogenized Olive Oil Mixtures

DR. MAYNARD LADD, Boston: The method dealt with is based on the substitution of olive oil for cow's fat in milk modifications, in order to get rid of the volatile fatty acids of cow's milk, which, in cases of fat intolerance and difficult feeding, with malnutrition, were assumed to be sources of irritation and indigestion. The emulsion of olive oil is brought about by the use of the homogenizing machine invented by M. Caulin of Paris. In a series of thirty-seven cases which had been unsuccessfully fed on an average of 6.3 months each, with a gain of only 5 ounces a month, successful results were obtained by the use of this method. Over a period of 4.7 months in the same series, the rate of gain was increased to 18.15 ounces a month, with a corresponding improvement in the general condition of the patients. This represents a gain of 363 per cent. over that of the previous feedings. Favorable results were also obtained in another series of cases of convalescents from infectious diarrhea, the usual loss of weight being considerably diminished.

A Method for Preparing Synthetic Milk for Studies of Infant Metabolism

DRS. HENRY I. BOWDITCH and ALFRED W. BOSWORTH, Boston: Better control of the elements entering into the composition of infant feeding in liquid form led to experiments, with the subsequent result of the preparation of synthetic milk for the study of infant metabolism. The method consists in four steps: First, the preparation of isolated food materials for use in making milk. Second, the reassembling of these materials to give a mixture of the desired percentage composition. Third, the emulsification of the fat and the solid or insoluble constituents entering into the composition of the food. Fourth, the pasteurization or sterilization of the food, after it has been made. In appearance, this synthetic milk strongly resembles the natural food, the emulsion being quite permanent. The cream rising after long standing may be easily shaken back into the mixture.

Some Early Symptoms Suggestive of Protein Sensitization in Infancy

DR. B. R. HOOBLER, Detroit: When a sufficient amount of unaltered protein is absorbed, a reaction takes place, known as protein sensitization. This is not of an explosive character, as in acute anaphylaxis, but is suppressed. The symptoms may be divided into five groups, relating, respectively, to the skin, the upper respiratory tract, the lower respiratory tract, the digestive system, and the nervous mechanism. These symptoms come and go with great rapidity. Even minutes will sometimes calculate the length of their stay. Often but one will appear; and later, in the same child, there will be different manifestations. The symptoms gradually increase in severity and variety. They appear more frequently, and remain longer. Some continue throughout the lifetime of the individual, but others disappear. Many of these are also symptoms of other common diseases. When, however, they appear and reappear many times in the same infant early in its life, one should be on the lookout for protein sensitization. It is important that the condition be recognized early; then it need not go on to its extreme manifestations.

DISCUSSION

DR. OSCAR M. SCHLOSS, New York: I have had a large number of skin tests made in infants with chronic nutritional disorders, with inconclusive results. It has been demonstrated in many instances that biologically perceptible protein may occur in the blood stream after the ingestion of certain protein foods, and that this is excreted in the urine. In animals, the absorption of this unaltered protein leads to sensitization; but this has not been demonstrated to occur regularly in human beings. Often several members of the

same family are affected with the same allergic condition. This probably explains the idiosyncrasies of some children to foods they have never before ingested. There must be in human beings some state of the tissues, either inherited or acquired, that is different from the definite sensitization of an animal by a foreign protein. I have had four cases of asthma that had a definite relation to food. In all, desensitization was accomplished with good results.

DR. FRITZ B. TALBOT, Boston: The condition of anaphylaxis that gives symptoms of asthma is a relatively rare one. In looking through the hospital records, I found very few cases of asthma that might have been of anaphylactic origin, but more among the skin cases. I have not been able to find any connection between erythema and anaphylaxis. The mild cases have been due to external irritation. In some cases of urticaria, the symptoms are all due to anaphylaxis. I have been unable to connect milium rashes with any anaphylactic phenomena. The symptom of rough skin may sometimes be connected with anaphylaxis, but it may also be connected with deficient thyroid secretion. There are two forms of eczema, one of which apparently has no connection with anaphylaxis and is cured by merely reducing the fat in the food. In the other, Dr. Schloss and others have found definite skin tests. We believe that these cases are of anaphylactic origin, but they do not always do well when we take out the food that gives the skin test. Of the symptoms connected with the respiratory system, wheezing, when there are râles in the chest, with no fever and nothing else to explain it, is of anaphylactic origin; but what we should make our diagnosis on are the typical râles of chronic bronchitis and, coincidentally with these, a prolonged expiration. In the majority of cases, croup is not of anaphylactic origin; but in a few instances, there is no question that it is. There is also no question that some digestive disturbances are of anaphylactic origin. The symptom of restlessness is usually due to too many visitors and too much grandparent.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

June, XI, No. 6, pp. 405-473

- 1 *Congenital Obliteration of Bile Ducts; Diagnosis and Suggestions for Treatment; Report of Case. J. B. Holmes, Baltimore.
- 2 *Nonprotein Nitrogenous Constituents of Blood and Phenolsulphonephthalein Test in Children. J. S. Leopold and A. Bernhard, New York.
- 3 *Cutaneous Reaction From Proteins in Eczema. K. D. Blackfan, Baltimore.
- 4 Case of Nonparasitic Chyluria, Chronic Nephritis, in Child. A. Hymanson, New York.
- 5 *Skin Manifestations With Streptococcus Infection. A. B. Schwartz, Chicago.
- 6 *Case of Acute Myelogenous Leukemia in Infant. J. H. M. Knox, Jr., Baltimore.

1. **Obliteration of Bile Ducts.**—Congenital obliteration of the bile ducts is said to be not an extremely rare disease. Over 100 cases have now been reported. Holmes' patient died when 15 weeks of age. The child's skin had been yellow since birth, his eyes were yellow, and the urine stained the napkin. The conditions found at necropsy were these: an anomalous arrangement of the hepatic ducts, absence of the common duct throughout the greater part of its extent, an impervious condition of the cystic duct with abnormalities of the gallbladder, and a moderate grade of cirrhosis of the liver.

2. **Nonprotein Constituents of Blood and Phenolsulphonephthalein Test in Children.**—In a series of fifty children free from evidences of renal disease, chemical examination of the blood gave the following results: the total nonprotein nitrogen varied between 19 and 40 mg. per 100 c.c. of blood, the average being 28 mg.; the urea nitrogen varied between

8 and 21 mg., the average being 12 mg.; the uric acid varied between 0.6 and 3.2 mg., the average being 1.8 mg.; the creatinin varied between 0.5 and 4 mg., the average being 1.5 mg.; and the phenolsulphonephthalein varied between 50 and 96 per cent., the average being 70 per cent. A smaller number (16) of cases with renal involvement were examined. In acute nephritis the nonprotein nitrogen constituents were found within normal limits; the phenolsulphonephthalein excretion was diminished. In chronic nephritis the nonprotein nitrogen constituents were usually increased, while the phenolsulphonephthalein excretion was diminished. In passive congestion the nonprotein constituents were normal while the phenolsulphonephthalein was diminished. In one case of sarcoma of the kidney with normal urinary findings the nonprotein constituents, with the exception of uric acid, were normal. The latter was slightly increased. The phenolsulphonephthalein excretion was diminished.

3. Cutaneous Reaction from Proteins in Eczema.—Of forty-three patients without eczema examined by Blackfan, only one showed any evidence of susceptibility to protein by cutaneous and intracutaneous tests. Of twenty-seven patients with eczema, twenty-two gave evidence of susceptibility to proteins. Egg white, cow's milk and woman's milk were the substances that most frequently caused a reaction. If there was a reaction from one protein there usually was a reaction from several. Blackfan found that the intracutaneous test is more delicate than the cutaneous, but gives results that are more difficult to interpret. The removal of some or all of the animal proteins from the food brings about great improvement in some cases of eczema in older children and adults. With infants it is not successful, first, because it is impossible to feed an infant for a long time on a diet that contains no animal protein, without the risk of seriously affecting his nutrition, and second, because there is a strong tendency for the eczema to return, even though a protein-poor diet produces early improvement, and even though the protein-poor diet is continued.

5. Skin Manifestations with Streptococcus Infection.—Schwartz cites the case of a child, who, during an attack of bronchopneumonia, developed a generalized streptococcic infection. This was exhibited clinically by the almost simultaneous appearance of a purulent arthritis, erythema nodosum and erysipelas. A streptococcus was cultivated from the blood, from a joint effusion, and from an excised nodule. A suspension of the organism from these three sources was injected intravenously into three rabbits. Those receiving the bacterial growth obtained from the excised node and from the joint effusion died within forty-eight hours from septicemia. The rabbit which received the streptococcus isolated from the patient's blood was killed on the fifth day after injection. The right ankle joint was swollen and contained purulent fluid. Cultures from this joint gave a streptococcus.

6. Myelogenous Leukemia in Infant.—Besides the extreme youth of Knox's patient (9 months), the rapid course of the disease, less than three weeks, is noteworthy. There was no enlargement of the lymphatic glands or of the spleen and no evidence of hemorrhage or of necrosis of the mucous membranes. The symptoms apparently were referable to the gastro-intestinal tract. The great number of leukocytes in the circulating blood, 200,000 per c.mm. was too many to be accounted for by a possible focus of infection and directed attention to a further study of the blood. The differential count of the leukocytes showed the presence of a large number of myelocytes from the bone marrow and suggested the diagnosis of acute myelogenous leukemia.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

May, LXXIII, No. 5, pp. 769-996

- 7 *Syphilis in Its Relation to Obstetrics. E. P. Davis, Philadelphia.
8 *Syphilis in Relation to Some Social Problems. S. Pollitzer, New York.
9 *Syphilis of Internal Genital Organs in Female. G. Gellhorn and H. Ehrenfest, St. Louis.

7, 8 and 9.—Abstracted in THE JOURNAL, June 3, p. 1817.

American Journal of Physiology, Baltimore

June, XL, No. 4, pp. 503-612

- 10 *Effect of Ether Anesthesia on Electric Activity of Nerve. A. Forbes, R. McIntosh and W. Sefton, Boston.
11 *Method for Maintaining an Artificial Circulation Through Tibia of Dog, With Demonstration of Vasomotor Control of Marrow Vessels. C. K. Drinker and K. R. Drinker, Baltimore.
12 *Blood Pressure in Hemorrhage and Its Restoration. A. W. Downs, Philadelphia.
13 Structure of Fibrin-Gel and Theories of Gel-Formation. W. H. Howell, Baltimore.
14 Tension of Carbon Dioxid and Percentage Saturation of Hemoglobin in Venous Blood at Rest and at Work. W. M. Boothby and I. Sandiford, Boston.
15 Determination of Character and Quantity of Respiratory Change of Arterial Pressure in Man by Means of Korotkoff Sounds. F. E. B. Foley, R. G. Coblenz and C. D. Snyder, Baltimore.
16 Conduction of Painful Afferent Impulses in Spinal Nerves. S. W. Ranson and P. R. Billingsley, Chicago.
17 *Differences in Rhythmicity and Tone in Different Parts of Wall of Stomach. W. C. Alvarez, San Francisco.

10. Effect of Ether Anesthesia on Activity of Nerve.—In their experimental work the authors found that even when etherization in the cat is pushed to the point of abolishing respiration and causing death, the nerve trunk remains functionally active and exhibits what appears to be essentially normal action currents. With direct application of ether vapor to the isolated nerve muscle preparation, the action current in nerve regularly persists at least as long as contraction in the muscle, and in almost every instance longer. The evidence, so far as it goes, supports the view that nerve impulse and electric disturbance are inseparable.

11. Nerve Supply of Bone Marrow.—The existence of vasomotor nerves to the marrow is demonstrated by the Drinkers. These nerves respond on electric stimulation and on injection of epinephrin by causing vasoconstriction.

12. Blood Pressure in Hemorrhage.—Downs says gratifying results may be hoped for from the intravenous administration of normal salt solution. When the blood pressure has reached the level of shock, 30 to 50 mm., restoration of blood pressure and maintenance of the vital functions of the organism are a possibility, but cannot be expected with any certainty. In general it is stated that in hemorrhage injection of amounts of saline solution in excess of the amount of blood lost will give the best results; in severe cases the use of large amounts of normal salt solution, 50 to 100 c.c. per kilogram of body weight, is most likely to be attended by a successful outcome.

17. Rhythmicity and Tone in Musculature of Stomach.—Alvarez suggests that the gastro-intestinal tube may originally have been constructed so that the rhythmicity of any one segment varied inversely as the distance from the pharynx. The rate of contraction of the stomach muscle varies inversely as the distance from the cardia. The tone seems to be higher on the lesser than on the greater curvature.

American Journal of Roentgenology, New York

May, III, No. 5, pp. 243-292

- 18 Respiratory Movements of Heart and Diaphragm. G. W. Holmes, Boston.
19 Negative and Positive Roentgen Diagnosis of Gallstones. J. T. Case, Battle Creek, Mich.
20 *Roentgenologic Diagnosis of Duodenal Ulcer. R. D. Carmin, Rochester, Minn.
21 Collargol Injection of Uterus and Tubes. C. Gottlieb, New York.
22 Treatment of Carbuncles by Roentgen Ray. K. Dunham, Cincinnati.
23 New Timer for Roentgentherapy. R. H. Stevens, Detroit.

20. Abstracted in THE JOURNAL, Nov. 13, 1915, p. 1752.

Annals of Ophthalmology, St. Louis

April, XXI, No. 2, pp. 219-434

- 24 Optic Atrophy—Observations on Series of Cases of Unusual Interest. F. Krauss and S. H. Brown, Philadelphia.
25 Internal Secretory System in Ophthalmology, With Special Reference to Goiter. R. S. Lamb, Washington, D. C.
26 Perimetric Studies of Normal and Pathologic Blind Spot of Mariotte. L. C. Peter, Philadelphia.
27 Massive Subconjunctival Injections of Cyanid of Mercury in Dangerously Injured or Infected Eyes. E. L. Jones, Cumberland, Md.
28 Fracture of Descemet's Membrane. S. Walker, Jr., Chicago.

- 29 Eye Records Designed Especially for Office Use. F. R. Spencer, Boulder, Colo.
30 Hole in Disk. J. H. Claiborne, New York.

Annals of Surgery, Philadelphia*June, LXIII, No. 6, pp. 641-777*

- 31 Treatment of Fractures by Methods of Suspension and Extension. J. M. Flint, New Haven, Conn.
32 Foreign Bodies in Respiratory Tract; Report of Cases. N. W. Green and L. T. LeWald, New York.
33 *Tuberculosis of Breast; Report of Ten Cases. L. Durante and W. C. MacCarty, Rochester, Minn.
34 Dental Plate in Esophagus. G. D. Gregor, Watertown, N. Y.
35 Aperiosteal Stump and Its Care. H. H. M. Lyle, New York.
36 Method of Facilitating Infiltration Anesthesia. W. Bartlett, St. Louis.
37 Calcareous Degeneration of Prostate Gland; Report of Case. G. S. Peterkin, Seattle.
38 Technic of Suprapubic Cystostomy in Badly Infected Cases. H. Williams, London.
39 *Shirring Round Ligaments. J. W. Long, Greensboro, N. C.
40 Urethroplasty at Base of Glans Penis; Report of Case. C. W. Shropshire and C. Watterston, Birmingham, Ala.
41 Pathologic Diagnosis of Diseases of Appendix Based on Study of One Thousand and Five Hundred Specimens. E. Moschowitz, New York.
42 Treatment of Retrocecal Appendix. H. A. Shaw, Seattle.
43 High Intestinal Stasis. J. E. Sweet, M. M. Peet and B. M. Hendrix, Philadelphia.
44 *Experimental Colonic Stasis. C. H. Frazier and M. M. Peet, Philadelphia.
45 Jejunal Ulcer, Following Gastro-Enterostomy for Duodenal Ulcer, with Complete Closure of Gastric End of Stoma. N. Ginsburg, Philadelphia.

33. **Tuberculosis of Breast.**—In the ten cases observed by Durante and MacCarty there were three in which no primary focus was clinically demonstrable; there were three associated with tuberculosis of the lungs and three cases associated with no other clinical tuberculous lesion other than tuberculosis of the axillary lymphatic glands, and one which was associated with a pleurocostal lesion. Only one of the ten patients was a male. The ages of the patients varied from 22 to 52. The left breast was affected six times, the right four times. The nipple was retracted in only two cases. Only one patient complained of severe pain. All but one, the man, had some pain. In only one case was the skin ulcerated; in two others it was slightly inflamed.

39. **Shirring Round Ligaments.**—The operation termed by Long "shirring the round ligaments," is applicable only in those cases in which it is expedient to open the abdomen. The first step is to seize the round ligament about midway with forceps. A round needle, armed with linen or silk, is thrust through the ligament close to the pelvic brim, just at its exit from the internal inguinal ring. The needle is again put through the ligament about a quarter of an inch farther toward the fundus. This is repeated again and again, until sufficient length of the ligament has been sutured to insure the proper degree of shortening. The last puncture of the needle is usually made through that portion of the ligament which is traumatized by the bite of the forceps. By pulling lightly on the ends of the suture the ligament begins at once to "shirr," as a dressmaker would say. Shirring the ligament necessarily shortens it.

44. **Experimental Colonic Stasis.**—The results of the experiments recorded by Frazier and Peet would seem to indicate that mere stagnation of feces in the colon of the dog, when on a normal mixed diet, does not lead to the formation of toxic substances of note, at least in the presence of the normal flora of the canine colon. The fact that these dogs remained in perfect health and gained in weight would indicate that simple colonic stasis in the dog is harmless and suggests to the authors that the dire effects attributed to colonic stasis in man were, in part at least, due to some other cause than the absorption of the products usually formed in simple fecal stagnation.

Archives of Diagnosis, New York*April, IX, No. 2, pp. 91-190*

- 46 Indications for Operative Interference in Duodenal Ulcer. J. B. Deaver, Philadelphia.
47 Value of Deep Percussion in Diagnosis of Subacute Intra-Abdominal Disease. H. Neuhof, New York.
48 Etiology and Diagnosis of Infective Diseases of Biliary Ducts. G. A. Friedman, New York.

- 49 Bands and Adhesions in Cecal Region. H. E. Stein, New York.
50 Lane's Kink and Band. H. E. Stein, New York.
51 Prognosis of Pulmonary Edema. T. F. Reilly, New York.
52 Chronic Bronchitis, Emphysema and Asthma. J. Epstein, New York.
53 Diagnostic Errors in Senile Cases. I. L. Nascher, New York.
54 Symptom in Extra-Uterine Pregnancy. H. J. Lehnhoff, Lincoln, Neb.
55 Differential Diagnosis of Diarrheas in Bottle Fed Infants. R. H. Dennett, New York.

Boston Medical and Surgical Journal*June 8, CLXXIV, No. 23, pp. 815-856*

- 56 Cholecystitis; Changes Produced by Removal of Gallbladder. E. S. Judd, Rochester, Minn.
57 Nephropexy; Report of Cases. R. H. Gilpatrick, Boston.
58 Acute Perforation of Ulcers of Stomach and Duodenum; Report of Case. M. T. Field, Salem.
59 Postoperative Treatment. H. G. Giddings, Boston.
60 Streptococcal Infection Simulating Diphtheria. D. M. Lewis, New Haven, Conn.
61 Interesting Contact Case of Diphtheria. J. A. Ceconi, Boston.

June 15, No. 24, pp. 857-890

- 62 Respiratory Exchange, with Description of Respiration Apparatus for Clinical Use. (To be continued.) F. C. Benedict and E. H. Tompkins, Boston.
63 Studies of Basal Metabolism in Disease and Their Importance in Clinical Medicine. J. H. Means, Boston.
64 Physician and Prevention of Industrial Accidents. H. J. Cronin, Cambridge.
65 Two Cases of Syphilis of Lung. A. Post, Boston.

California State Journal of Medicine, San Francisco*May, XIV, No. 5, pp. 169-210*

- 66 Adequate Institutional Care of Tubercular. P. H. Pierson, San Francisco.
67 Course of Fresh Syphilis as Treated by Newer Remedies. V. G. Vecki, San Francisco.
68 Fresh Syphilis and Newer Remedies. E. D. Chipman, San Francisco.
69 Modern Treatment of Syphilis. H. E. Alderson, San Francisco.
70 Treatment of Syphilis in Primary Stage. D. W. Montgomery, San Francisco.
71 Present Status of Salvarsan Treatment. H. Morrow, San Francisco.
72 Inconspicuous, Every Day Forms of Thyroid Insufficiency. H. R. Harrower, Los Angeles.
73 Oral Hygiene from Educational and Economic Viewpoint. G. S. Millberry, San Francisco.
74 Preoperative and Postoperative Care. O. McNeile, Los Angeles.
75 National Quarantine and Its Function. A. C. Reed, San Francisco.
76 Why Corrective Lenses Often Fail to Give Relief to Headaches Due to Eye-Strain. R. O'Connor, Oakland.
77 Plasmodium Malaria (Quartan) Type New to California; Report of Two Cases. J. C. Geiger and F. L. Kelly, Berkeley.
78 Slow Poisoning by "Christian Science." R. B. Dempsey, Vallejo.
79 Rubella. W. W. Behlow, San Francisco.

June, No. 6, pp. 211-258

- 80 Conservation of Vision. G. H. Kress, Los Angeles.
81 *Human Cases of Rabies in California and Their Treatment. J. C. Geiger, Berkeley.
82 Conservative Treatment of Fractures of Long Bones and of Wounds Complicating Them. (To be concluded.) J. T. Watkins, San Francisco.
83 Large Cysts in Bladder; Report of Cases. H. Meyer, San Francisco.
84 Bacteriology of Nasal Sinus Diseases. J. J. Kyle, Los Angeles.
85 Twenty-Seven Transfusions at St. Luke's Hospital. F. W. Birch, San Francisco.
86 Some Neurologic Conditions in Children. H. W. Wright, San Francisco.

81. **Rabies Epidemic in California.**—Of the thirty-three cases of rabies analyzed by Geiger, nine were having administered the Pasteur treatment or had completed the regular course. Of these, three came down with definite symptoms on the seventeenth day of treatment and one on the nineteenth day. Of the remaining, two showed symptoms in four days, two fifteen days, and one three weeks after the completion of the full course of treatment. Twelve of the patients were bitten in the face and two were attributed to the inoculation of the virus into scratches and wounds with the saliva of the animal doing the biting. One patient was bitten through the tongue. The balance of the bites were on numerous parts of the body. The shortest time of death after being bitten was sixteen days. This occurred in two instances, both patients being bitten on the face. Of the remaining cases, death in six occurred three weeks after being bitten, in two four weeks, in seven five weeks, in two six weeks, in one seven

weeks, in three eight weeks, in two nine weeks, and in one eleven weeks. The duration of illness in the majority of instances was three days, the longest being ten. In every instance but one, and that by a cat, the bites were caused by dogs. In only six of the cases were the wounds cauterized at all, five of these being with nitric acid. In fourteen instances, the diagnosis of rabies was proved by microscopic examination and animal inoculation, in three by microscopic examination alone, and in three by animal inoculation alone, and in fourteen by symptoms. Every sedative used failed to control the nervous condition in any way whatever. In four of the cases, quinin was used during the course of the disease without any effect.

Canadian Medical Association Journal, Toronto

May, VI, No. 5, pp. 385-480

- 87 Hospital Diets and Their Relation to Treatment of Certain Diseases. E. G. McCullough, Boston.
- 88 Medical Beliefs and Superstitions of Keltic Race. J. Cameron, Halifax.
- 89 Prostatic Hypertrophy and Treatment by Suprapubic Prostatectomy. C. L. Fuller, Toronto.
- 90 Results of Year's Work in Treatment of Acute Appendicitis. E. R. Secord and L. H. Coates, Brantford.
- 91 Amebic Dysentery. Amebic Abscess of Liver. A. H. Gordon, Montreal.
- 92 Double Facial Paralysis. G. S. Mundie, Montreal.

Journal of Cutaneous Diseases, Boston

June, XXXIV, No. 6, pp. 415-488

- 93 How Can We Improve Our Hospital Service? C. J. White, Boston.
- 94 *Two Cases of Idiopathic Hemorrhagic Sarcoma (Kaposi). T. C. Gilchrist and L. W. Ketron, Baltimore.
- 95 *Psoriasis as Sequel to Acute Inflammations of Tonsils; Report of Case. J. M. Winfield, Brooklyn.
- 96 Monilethrix; Report of Six Cases. (To be continued). G. M. MacKee and I. Rosen, New York.

94. **Idiopathic Hemorrhagic Sarcoma.**—Three different methods of treatment were used by Gilchrist and Ketron in one of their cases and with excellent results. The patient was given daily intramuscular injections of $\frac{3}{4}$ grain of the cacodylate of sodium, and after ten days this was gradually increased to 2 grains. The hands, legs and feet were exposed daily to mild, soft Roentgen rays, and radium (10 mg. old measure) was applied for twenty-four hours to one nodule after another, on the arms and legs, until about 90 lesions were treated. After six weeks, the patient was remarkably better. The edema of the hands and feet had almost completely disappeared after three weeks' treatment, and the hands could be closed. In cases in which the Roentgen rays were applied, the induration had disappeared but the pigmentation remained. The radium applications gave decidedly the best results, causing the induration and pigmentation both to entirely disappear, leaving the skin practically normal. After six weeks' treatment, one could say, that his skin lesions were 75 per cent. better. The second patient was treated with filtered Roentgen rays and the lesions entirely disappeared and there has been no recurrence within the last ten months. The disease was found to be not auto-inoculable.

The authors' studies show that the lesions begin in the skin as angiomas, due to a proliferation and dilatation of the blood capillaries, which are very frail at first and liable to rupture. This is followed by a proliferation of the interstitial connective tissue and endothelium, which gradually obliterates the blood spaces, forming solid tumors. In the early stages these resemble, in some areas, young connective tissue, in other areas, sarcomas. As the lesions grow older they assume a more fibrous aspect, and may undergo involution. Coexistent with the formation of the tumors there is a sclerosis of the small arteries supplying them, causing a gradual decrease in the amount of blood. To this is due, most likely, their later evolution as well as involution. From this beginning, then, as a cutaneous angioma or later angiosarcoma, the disease spreads by metastases which first appear in the neighborhood of the primary lesion, and later become widespread both in the skin and internal organs leading, in many cases, to death.

95. **Psoriasis, Sequel to Inflammations of Tonsils.**—Six cases all following some inflammation of the tonsils are

cited by Winfield. In one case the skin disease followed enucleation of the tonsils. Examination of smears taken from the throat failed to show any reason for the high temperature. In another case the skin disease was the sequel of a streptococcic sore throat. Psoriasis followed an attack of follicular tonsillitis in four cases. No etiologic light was thrown on the cause of the skin disease by bacteriologic examinations of the follicular contents and other secretions from the throat.

Journal-Lancet, Minneapolis

June 1, XXXVI, No. 11, pp. 309-339

- 97 *Medical Treatment of Diabetics Preparatory to Surgical Treatment. D. M. Berkman, Rochester.
- 98 Preventable Field; Relation of Practicing Physician, Local and State Health Officer. I. J. Murphy, St. Paul.
- 99 *Early Diagnosis of Intussusception in Children Under Three Years of Age. A. W. Abbott, Minneapolis.
- 100 *Raynaud's Disease; Some Unusual Types. G. D. Head, Minneapolis.

97. **Medical Treatment of Diabetics.**—The material for Berkman's report was drawn from the histories of the patients operated on in the Mayo Clinic during the past year in whose urine the presence of sugar was positively demonstrated. The purpose was to establish a method of determining the operability of such patients, and reasonably rapid and safe course of treatment preparatory to and after operation. The first object was to render the patient's urine sugar free as soon as possible; and for this no better procedure was found than that advocated by Allen. The use of sodium bicarbonate has become routine; and, Berkman and his associates feel that it has contributed in no small degree to the recovery of their patients. It is used in dram doses by mouth six to eight times daily, three or four days before the operation. This treatment is resumed as soon as possible after operation. Should the surgeon find it necessary to give rectal salines, soda is administered in this way also. They have on two or three occasions found it advisable to give it by intravenous injections in 5 per cent. solution. During the postoperative observation the urine is watched carefully, although keeping it free from sugar is more difficult, and is not as important, as before operation. Twenty-six glycosuric patients came to operation. Two patients died, a mortality of 7.7 per cent. Eight patients were passing less than 10 gm. of sugar in twenty-four hours on an ordinary diet; and, other conditions being satisfactory, they required very little preoperative treatment, and that largely for the purposes of observation.

99. Abstracted in THE JOURNAL, January 22, p. 304.

100. **Raynaud's Disease.**—The cases cited by Head vary from the rule in their manifestations. In one case the fingers became white as if frozen (dead fingers). In another case the disease was associated with attacks of pain in the abdomen, accompanied by vomiting and diarrhea and associated with a blue cyanotic appearance of her hands and feet. Urine examination revealed a specific gravity of 1.020, a large amount of albumin and a few hyalin and granular casts. A third patient complained of a feeling of pressure over the lower chest and upper abdomen, which she described as "growing greater and smaller like a bubble expanding and contracting." She had no pain with these attacks. The fingers became marble-white and felt numb. The attack lasted about five minutes. A fourth patient had angiospasm of such a high degree as to produce, not only a series of puzzling abdominal symptoms, but also fainting attacks, polyuria, girdle pain, etc.

Laryngoscope, St. Louis

May, XXVI, No. 5, pp. 869-936

- 101 Articulatory Disturbances of Speech. O. Glogau, New York.
- 102 Tuberculosis of Larynx with Special Reference to Use of Tuberculin. H. Hastings, Los Angeles.
- 103 Malignant Hypernephroma of Ethmoidal Region. H. Arrow-smith, Brooklyn.
- 104 Control of Hemorrhage in More Extensive Operations on Nose and Jaws. L. W. Dean, Iowa City, Iowa.
- 105 Case of Von Mikulicz' Disease. S. L. Olsho, Philadelphia.
- 106 Improved Killian Speculum for Operation on Antrum of Highmore. J. J. Sullivan, Jr., Scranton, Pa.
- 107 New Instruments. J. J. Sullivan, Jr., Scranton, Pa.

Medical Record, New York*June 10, LXXXIX, No. 24, pp. 1029-1070*

- 108 Roentgenographic Control of Pneumothorax Treatment of Pulmonary Tuberculosis. I. S. Hirsch, New York.
- 109 Gastrohydrorrhea in Cirrhosis of Liver Accompanied by Pyloric Stenosis; Report of Cases. M. Einhorn, New York.
- 110 Case of Osteochondrofibroma or Osteitis Fibrosa; Report of Case. V. P. Gibney, New York.
- 111 Case of Complete Congenital Atresia of Ileum. R. H. Fowler, Brooklyn.
- 112 Case of Carcinoma of Esophagus Perforating into Right Bronchus. J. Guttman and I. W. Held, New York.
- 113 Case of Congenital Elevation of Scapula. S. Cohen, New York.
- 114 Is Myopathy Related to Disorders of Internal Secretions? G. P. McCouch and S. D. W. Ludlum, Philadelphia.
- 115 *New Theory of Function of Lymphocytes. D. Meredith, Wichita Falls, Texas.

115. **New Theory of Function of Lymphocytes.**—That there are both male and female cells within the body is an original theory with Meredith. He believes that the small lymphocyte is the male cell. For instance: Through the enzymes liberated by the dissolution of a dead cell, leukocytes and lymphocytes are attracted, the one to remove the dead tissue and the other to repair the damage. These same enzymes acting as a foreign body stimulate the adjoining cell, which begins to swell and get ready, as it were, for the male element, just as the ovum does for the spermatozoa, and when it becomes impregnated goes through the caryokinetic change, with a division of the cell into daughter cell, to take the place of the dead cell. Meredith does not think that it is necessary for a lymphocyte to come in actual contact with the cell that it impregnates, but that it does excrete from it nuclear material, when irritated, an enzymic body, which, when it comes in contact with cells that are beginning to proliferate, impregnates these cells, bringing about a true mitosis or indirect division of the cell thus impregnated.

Michigan State Medical Society Journal, Grand Rapids*June, XV, No. 6, pp. 273-326*

- 116 Use of Chloroform as Obstetric Analgesic. W. H. Morley, Detroit.
- 117 Ether in Obstetrics. F. S. Kellogg, Boston.
- 118 Scopolamin-Morphin in Labor. Study of Twenty-One Cases. C. E. Boys, Kalamazoo.
- 119 Nitrous Oxid-Oxygen Analgesia in Obstetrics. C. H. Davis, Chicago.
- 120 Practical Application of Schick Reaction. G. Sewell, Detroit.
- 121 Symptoms and Early Diagnosis of Cancer of Large Intestine. L. J. Hirschman, Detroit.
- 122 Relationship of Heredity and Environment on Psychosis. I. L. Polozker, Detroit.
- 123 Case of Otogenic Pharyngeal Abscess with Review of Literature. C. B. Fulkerson, Kalamazoo.
- 124 Osteoma of Frontal Sinus; Report of Case. C. C. Probert, West Branch.
- 125 Histopathologic Studies of Multiple Sclerosis. T. Klingmann, Ann Arbor.
- 126 Reports on Use of Dakin's Solution (Hypochlorous Acid). C. B. G. de Nancrede and R. W. Kraft, Ann Arbor.
- 127 Case of Pseudohypertrophic Muscular Dystrophy. C. D. Camp, Ann Arbor.
- 128 Case of Leukemia without Hyperleukocytosis. Q. O. Gilbert, Ann Arbor.

Missouri State Medical Association Journal, St. Louis*June, XIII, No. 6, pp. 251-304*

- 129 *Miners' Consumption in Southwestern Missouri; Report of Case. A. J. Lanza, Washington, D. C.
- 130 Treatment of Epithelioma by Roentgen Ray. J. L. McDermott, Kansas City.
- 131 What St. Louis Medical Supply Depot of U. S. Army Is and What It Does. T. U. Raymond, St. Louis.
- 132 Medical Preparedness. W. A. Wickline, Jefferson Barracks.
- 133 Experiences at Military Training Camp. R. E. Wobus, St. Louis.
- 134 Choice of Operation in Various Classes of Cases of Retrodisplacement of Uterus. H. S. Crossen, St. Louis.
- 135 Present Status of Argyll-Robertson Pupil. M. W. Jacobs, St. Louis.
- 136 Will Profession Have to Be Reeducated on Subject of Appendicitis? J. Y. Brown, St. Louis.
- 137 Fractures of Wrist. M. B. Hendrix, Caruthersville.

129. **Miners' Consumption.**—A series of physical examinations was made by Lanza embracing 720 miners. Definite signs of lung injury were found in 433, or 60 per cent.; 103 of these latter also had tubercle bacilli in their sputum. Throughout this series the most prominent symptom was dyspnea on exertion. The dyspnea was gradual, almost

insidious, in its onset, and there was evident a connection between its severity and the length of time the miner had worked in sheet ground. The dyspnea was usually accompanied by cough and expectoration, but even dyspnea severe enough to incapacitate for work was seen without these other symptoms being present. The majority of the patients looked well, and aside from the dyspnea felt well. In many cases the dyspnea was severe, often urgent, and it was remarkable how men in this state continued to work underground. Pain in the chest, diminished expansion, and loss of weight were constant symptoms throughout. Loss of weight, while frequently present, was not marked until the third stage was reached. Cough antedated dyspnea when, as was sometimes the case, the latter was ushered in by a bronchitis, but more often the cough did not appear until after the dyspnea. Night sweats were not frequent. Hemorrhages were comparatively frequent, 3.3 per cent. of those in the first stage, 10 per cent. of those in the second stage, and 25 per cent. of those in the third stage, both tuberculous and nontuberculous, having had one or more. The prognosis in miners' tuberculosis after the first stage is bad. Lanza pleads for the accurate reporting of deaths from miners' tuberculosis because efforts to overcome an important industrial disease of this sort depend largely on reliable death statistics.

New Mexico Medical Journal, Las Cruces*May, XVI, No. 2, pp. 27-69*

- 138 Local Anesthesia in Major Surgery. O. S. Fowler, Denver.
- 139 Arterial Hypertension. T. C. Sexton, Las Cruces.
- 140 Medical Nomenclature. W. W. Dill, Albuquerque.
- 141 Typhus. H. M. Cornell, Las Cruces.

New York Medical Journal*June 3, CIII, No. 23, pp. 1057-1104*

- 142 Definite Management of Pneumonia. (To be continued). S. Solis-Cohen, Philadelphia.
- 143 Case of Hour Glass Gallbladder. R. S. Fowler, New York.
- 144 Lye Stricture of Esophagus. H. Arrowsmith, New York.
- 145 Diagnosis of Ureteral Calculus. V. C. Pedersen, New York.
- 146 Sarcoma of Tibia with Metastasis to Chest. E. P. Tompkins, Roanoke, Va.
- 147 Cases of Presenile Gangrene—Thrombo-Angiitis Obliterans. C. Goodman and E. P. Bernstein, New York.
- 148 Device for Protection Against Tubercle Bacillus. R. A. Keilty, Philadelphia.
- 149 Unusual Complications in Case of Glaucoma from Atropin. T. Y. Sutphen, Newark, N. J.
- 150 Pellagra; Clinical Report on State of New York. J. M. Winfield, New York.
- 151 Curatelle and Modern Psychiatry. G. W. Jacoby, New York.

June 10, No. 24, pp. 1105-1152

- 152 Therapeutic Resources of Saratoga Springs. S. Baruch, New York.
- 153 Surgery of Heart. W. W. Babcock, Philadelphia.
- 154 Delayed Gastric Digestion. M. E. Rehfuess, Philadelphia.
- 155 Definite Management of Pneumonia. (Concluded). S. Solis-Cohen, Philadelphia.
- 156 Case of External Dislocation of Knee; Report of Case. R. H. Fowler, New York.
- 157 Epidemic Pneumonia in Tropics. J. H. Egbert, New York.
- 158 Apparatus for Intravenous Salvarsan Injection. L. R. Kaufman, New York.

June 17, No. 25, pp. 1153-1208

- 159 Some of Larger Problems of Medical Profession. R. Blue, Washington, D. C.
- 160 Failures in Diagnosis. W. S. Gordon, Richmond, Va.
- 161 Focal Sepsis. J. Daland, Philadelphia.
- 162 Roentgen Ray Diagnosis of Surgical Complications Within Chest. G. E. Pfahler, Philadelphia.
- 163 Corroborative Diagnosis of Mastoiditis by Means of Roentgen Ray. H. Hays, New York.
- 164 Meningitis; Report of Seven Cases. R. C. Rosenberger and D. J. Bentley, Jr., Philadelphia.
- 165 Typhus. E. K. Tullidge, Philadelphia.
- 166 Camp Sanitation. P. W. Huntington, New York.
- 167 Radium in Gastric Carcinoma. C. E. Field, New York.
- 168 Leukocyte Count of Appendicitis. J. E. Robinson, Temple, Texas.
- 169 Cardiac Dilatation as Complication of Apical Pulmonary Tuberculosis. M. Grossman, New York.

New York State Journal of Medicine*May, XVI, No. 5, pp. 223-278*

- 170 Will Private Practitioner Determine Future of Public Health Work? H. Emerson, New York.
- 171 Treatment of General Infections by Serums and Vaccines. A. MacFarlane, Albany.

- 172 *Materials Which Are Available for Thyroid Feeding and Their Therapeutic Uses. J. Rogers, New York.
173 Importance of Early Recognition of Arteriosclerosis. L. F. Bishop, New York.
174 *Syphilis as Etiologic Factor in Epilepsy. W. T. Shanahan, Soneya.
175 Syphilis of Stomach. R. B. Morris, Olean.
176 Cancer from Medical Standpoint. L. D. Bulkley, New York.
177 Glenard's Disease; Report of Cases. B. C. Loveland, Syracuse.
178 Accidents and Injuries of Eyes—Their Prevention and Treatment. F. P. Lewis, Buffalo.
179 End Results in Cases Operated for Salpingitis. E. M. Stanton, Schenectady.
180 Two Cases of Acute Intestinal Occlusion Following Parturition. J. L. Greeley, Jamestown.

172. **Materials Available for Thyroid Feeding.**—Many cases which present thyroid enlargement and other symptoms which cannot definitely be classified as those of either hypothyroidism or hyperthyroidism may fail to be relieved by any kind of thyroid medication, but may have their disturbance improved or cured by feeding with material derived from some other organ. The nucleoproteins, globulins and coagulable proteins obtained respectively from the suprarenal, the pancreas, the thyroid, the pituitary and the ovary are sometimes efficacious. The dosage of these proteins is from $\frac{1}{2}$ to 1 grain given by mouth three or four times daily. Rogers cites a number of very interesting cases. One was a case of typical myxedema illustrating hyperthyroidism after commercial thyroid feeding. Relief was obtained only by feeding with thyroid proteins. In another case of typical myxedema, relief was found by feeding with the thyroid "residue." Thyroid residue proved quite valuable in a number of cases of postoperative hyperthyroidism. One case of persistent menorrhagia with mild hypothyroidism was relieved by feeding thyroid "residue."

174. **Syphilis in Epilepsy.**—In a series of 836 patients at the Soneya Colony on whom a Wassermann test was applied to the blood serum by Shanahan, but twenty-two, or 2.48 per cent., gave a positive reaction. Included in the number on whom tests were applied were all of those patients at the colony whose history or physical condition was at all suspicious as regards the existence of syphilis. The natural inference to be drawn from tests applied at the colony and elsewhere is, that syphilis plays a less active rôle as a causative factor in the occurrence of epilepsy than has heretofore been thought.

Pennsylvania Medical Journal, Athens

May, XIX, No. 8, pp. 581-646

- 181 Importance of Prevention of Industrial Accidents and Occupational Diseases. F. D. Patterson, Harrisburg.
182 Vaccine Treatment of Chronic Suppurative Otitis Media. G. M. Coates and M. S. Ersner, Philadelphia.
183 Operative Treatment of Strabismus. H. F. Hansell, Philadelphia.
184 Nonoperative Treatment of Strabismus. W. Reber, Philadelphia.
185 Etiology and Treatment of Trachoma. C. S. Rebeck, Harrisburg.
186 Factors Influencing Present Mortality of Peritonitis. D. B. Pfeiffer, Philadelphia.
187 Treatment of Undescended Testicle. J. H. Gibbon, Philadelphia.
188 Department of Health Laboratory and What It Has Done for Physicians of State. J. B. Rucker, Jr., Philadelphia.
189 Relationship Between Division of Medical Inspection and Physician. A. A. Cairns, Philadelphia.
190 Case of Attached Twins. J. K. Kiser, Kittanning.

South Carolina Medical Association Journal, Greenville

May, XII, No. 5, pp. 127-156

- 191 Psychiatric Aspects of Pellagra. W. C. Sandy, Columbia.
192 One Year's Experience with Model Vital Statistics Law in South Carolina. J. A. Hayne, Columbia.
193 Digestive Disorders in Infants. M. Ladd, Boston.

Southern Medical Journal, Birmingham, Ala.

June, IX, No. 6, pp. 483-576

- 194 Etiology and Treatment of Arthritis. E. D. Holland, Hot Springs, Ark.
195 *Influence of Potassium Iodid on Luetin Test. R. Lyons, New Orleans.
196 Focal Infections; Results of Overcoming Same. W. C. Mayes and C. F. Wilson, Memphis, Texas.
197 *Psychoses Associated with Pellagra. W. C. Sandy, Columbia, S. C.
198 Relation of Pellagra to Nutrition. M. O'Malley, Washington, D. C.
199 Better Babies Movement. B. L. Arms, Galveston, Texas.

- 200 Use and Abuse of Public Health Laboratory. C. R. Stingily, Jackson, Miss.
201 *Cancer of Mouth and Tongue with Special Reference to Metastases in Neck. J. S. Horsley, Richmond, Va.
202 Treatment of Suppurative Appendicitis. S. Leigh, Norfolk, Va.
203 Differential Diagnosis of Diseases in Right Upper Quadrant of Abdomen. A. C. Scott, Temple, Texas.
204 Peritonitis and Its Rational Treatment. U. Maes, New Orleans.
205 Preparatory Treatment for Transportation of Injured. B. Saunders, Fort Worth, Texas.
206 Secondary Tonsillar Hemorrhage. H. B. Decherd, Dallas, Texas.
207 Tonsil Factor in Bad Breath. W. R. Thompson, Fort Worth, Texas.

195. Abstracted in THE JOURNAL, Dec. 11, 1915, p. 2119.

197. **Psychoses Associated with Pellagra.**—One of the most common psychoses associated with pellagra, according to Sandy occurring twenty-eight times in 100 cases, is the infective exhaustive psychosis. Manic depressive insanity occurred sixteen times. There were four cases of symptomatic depressions; fourteen of dementia praecox. Fifteen cases of senile psychosis or senile dementia; three epileptic imbeciles or idiots, three cases of constitutional inferiority with episodes of some kind and three were not insane.

201. **Cancer of Mouth and Tongue.**—Summarizing the results of the eight patients treated by him, Horsley says, that all were advanced cases and seven were late cases with either a recurrence from a previous operation or incision or marked involvement of the glands of the neck. Three had both recurrence and glandular involvement. Four of the eight cases are living today (November, 1915). Of these, three are in good health and without any signs of recurrence for periods of thirteen months, three years, and three years and eleven months, respectively. The remaining patient who is living had a recurrence, for which he was operated on four weeks ago. He is now doing well and has some chance for permanent recovery. Of the four patients who are dead, two died of recurrence, one from sudden stoppage of the heart an hour after an operation for plastic closure of the defect in the mouth. This patient died with a recurrence, but not because of it. Another patient died of an indefinite lung lesion. Of the four deaths and one patient with a recent recurrence, three had had an incision for diagnostic purposes with operation done several days later and two had incomplete operations followed by rapid recurrence. In none of the three patients now living and who have been free from recurrence for from over one year to nearly four years was a preliminary incision made, but in the five remaining cases, four of whom are dead and one who has had a recent recurrence, a preliminary incision or incomplete operation was done in each instance from several days to several weeks before the radical operation was undertaken.

Vermont Medicine, Rutland

May, I, No. 5, pp. 129-156

- 203 Clinical Notes on Alcoholic Multiple Neuritis. C. H. Deau, Salisbury.
209 Neisserian Infection Complicating Pregnancy. O. N. Eastman, Burlington.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Surgery, London

April, III, No. 12, pp. 585-758

- 1 Analysis of Sixty Cases of Gunshot Fractures of Femur. E. W. H. Groves.
2 Treatment of Fractures of Femur at Casualty Clearing Station. A. Bowlby.
3 Gunshot Fractures of Femur. E. K. Martin.
4 Study of Symptoms and Complications of Gunshot Wounds of Solid Abdominal Viscera. G. H. Makins.
5 Gunshot Wounds of Solid Abdominal Viscera. C. Wallace.
6 Seventy-Five Cases of Gunshot Wounds of Chest. J. L. Menzies.
7 *Flapless Amputation. M. Fitzmaurice-Kelly.
8 Case of Trench Foot in Absence of Frost. S. G. Luker.
9 Traumatic Rupture of Common Bile Duct in Boy Six Years Old. G. E. Waugh.
10 Simple Goiter and Its Treatment. F. N. G. Starr.
11 Some Surgical Uses of Celluloid; Technic of Fracture Operations. G. S. Thompson.
12 *Gunshot Wounds of Cranium; With Special Reference to Those of Brain. R. Whitaker.

7. Flapless Amputation.—The method which gives the best chance of life to the patient is that which leaves the nutrition of the stump unimpaired to the end; in which, in other words, the nutrition is not cut off by the undermining of flaps; and now, after nearly two years experience, Fitzmaurice-Kelly considers gaseous gangrene as an absolute indication for a flapless amputation. Other conditions for which he employs the method, though for different reasons, are certain cases of compound comminuted fractures and of multiple wounds. The advantages claimed for this method are: That it saves life; that it saves length of limb; that the risk of secondary hemorrhage is lessened; that it arrests the spread of infection, whereas in flap amputations sepsis often recurs in the flaps, and spreads up from their base; and that it is possible where no other method is possible. As to the technic: the skin and deep fascia are divided, usually in circular fashion, but sometimes more skin can be gained by making the incision oblique; after retraction has occurred the muscles are divided at the level of the retracted skin—not too quickly, so as to allow a retraction of the layers; then the bone is sawed flush with the muscle; vessels are secured and nerves carefully shortened. The surface is slightly concave at first if the operation has been done properly, but soon becomes convex from further retraction. This, however, once the face is fairly clean, is overcome easily by extension. Strips of strapping are laid up the limb to the joint above, fixed with circular bands, and then carried down to a large ring of malleable aluminium to which a weight extension is attached. In the middle the stump is easily accessible for dressing. In this way all that has been lost by retraction can be regained rapidly, and it is rarely necessary to do more than remove a length of bone with a Gigli's saw.

12. Gunshot Wounds of Cranium.—Whitaker claims that the brain and its coverings have a greater power of resistance to sepsis than they have been given credit for. To this general statement there are two exceptions: If the infection be (a) streptococcic, or (b) intraventricular, the resistance is low. The brain and its coverings also have a very much greater power of recovery from an injury than the early signs and symptoms caused thereby would suggest. The apparent hopelessness of a brain injury should not be allowed to influence an operator—working in suitable environment—in arriving at a decision whether to interfere or not. While it is obviously desirable that every case of gunshot wound of the brain requiring operation should be thus treated at the earliest possible moment, yet Whitaker's experience has shown that if this operation be performed inadequately, or under unfavorable circumstances, the risk to the patient of introducing a new and more virulent infection is such a real one, that his interests may well be best served by those responsible for his transit to a base hospital, if they confine their attention to active disinfection and careful frequent dressing, and possibly the administration of antistreptococcic serum until his arrival there. Of the cases that arrived at the general hospital without having been previously operated on, 3 per cent. had streptococcic infection. Of the cases that arrived having already been operated on 58 per cent. had streptococcal infection.

Assuming that the patient has arrived at the base hospital: When in doubt, operate. In performing the operation, it is better to err, if at all, on the drastic side rather than the conservative. Prolonged hunting for fragments of bone, etc., known or thought to be lodged in the brain substance, is inadvisable. The element of time is of great importance in these operations. It is the type of infection rather than the extent of the injury itself which is the determining factor of the prognosis. In a small proportion of cases, after the wound has healed and after a latent period of several weeks, there arises a fatal infection by the *Staphylococcus albus*, either in the form of septicemia or of a secondary infection of a hemocephalus. It is desirable that all cases of head injury should be kept quiet with drugs for as long as may be necessary, and fed as much as possible from the earliest moment in order to obviate the extreme emaciation which is characteristic of the more severe cases. The cases must be dressed every twelve hours, and with the utmost care. The

recovery of an infected brain wound depends on the maintenance of the freest possible drainage.

British Medical Journal, London

May 27, 1, No. 2891, pp. 745-776

- 13 Louse Problem at Western Front. (To be continued.) A. D. Peacock.
- 14 Soldier's Foot and Treatment of Common Deformities of Foot. R. Jones.
- 15 *Case of Traumatic Arteriovenous Aneurysm of Subclavian Artery and Vein. C. Berkeley and V. Bonney.
- 16 *Case of Penetrating Wound of Heart. R. G. Dixon and P. McEwan.
- 17 *White Gangrene; Report of Cases. A. J. Hull.
- 18 Simple and Inexpensive Methods for Fermentation Tests and for Obtaining Cultures of Anaerobes. J. M. Beattie.

15. Arteriovenous Aneurysm of Subclavian Artery and Vein.—A rifle bullet struck the authors' patient just outside the axillary border of the right scapula near its inferior angle, emerging just above the middle of the right clavicle. The wound of entrance was healed and the wound of exit practically healed, but underlying it in the subclavian triangle was a pulsating swelling about the size of a double walnut. There was a very marked thrill, which could be felt and heard even so far as the bend of the elbow. The right arm was entirely paralyzed. A diagnosis of arteriovenous aneurysm of the third part of the subclavian artery and vein and injury to the brachial plexus was made, and as the swelling in the neck was steadily enlarging and the patient was painfully conscious of the loud thrill, it was decided to operate. The operation consisted of an excision of the sac and the second and third parts of the artery. The sac lay between the third part of the subclavian artery and vein, and communicated with both. The aperture into the vein was fortunately small, and was situated about the point where the external jugular joins it. The sac wall was very thin. Its front part was formed by the deep cervical fascia; behind and above it adhered to the brachial plexus, while the first rib and clavicle had limited it below. Eight months after the operation no abnormal pulsation could be found in the neck, nor any pulsation at all in the arm, which was normal in warmth and color. The arm, however, was still paralyzed, though there was some return of power in the muscles of the shoulder and the flexors of the forearm. There was loss of sensation over that part of the hand supplied by the ulnar nerve.

16. Penetrating Wound of Heart.—In the case recorded by Dixon and McEwan the patient was wounded, while in the upright position, by a rifle grenade. There was a small wound one-half inch to the inner side and one-half inch above the left nipple. His temperature rose to 102 F., pulse 130, respiration 45. He was semiconscious all the time he was in this hospital. He knew his name, regiment, and home address, but kept on trying to get out of bed, and was often delirious. He never complained of any pain either in the chest or arm, but suffered considerably from thirst. The heart sounds were normal. There were signs of fluid in both pleural cavities, more on the right than on the left side. There was neither cough nor expectoration. He lived fifty-nine and one half hours after receiving the injury, and having during that time been conveyed from the regiment to the field ambulance, and from that unit to the clearing station. At the necropsy a small external wound, situated just above and internal to the left nipple, was traced transversely inward for about 2 inches through the subcutaneous tissue and chest muscle; its subsequent course was through the sternum, leaving the internal mammary artery intact; then through the edge of the left lung, the pericardium, the right ventricle and the pericardium; finally the missile was found imbedded in the right lung.

17. White Gangrene.—The condition described by Hull appears to be an acute streptococcal infection, and is, in appearance, not unlike phlegmasia alba dolens, but is attended by the local circumstances associated with gangrene and the general effects of an acute toxemia. This form of gangrene has only been seen in the lower extremity. The skin is glazed and white, moist, cold and pits on firm pressure. A very firm edema is present, and the distal pulse

in the limb cannot be felt. The glazed white appearance of the distended skin, instead of the usual redness, seems particularly characteristic. Early in the condition the patient is extremely ill, with clammy, sweating face, and running pulse. The condition is extremely fatal, and death occurs in about twelve hours. The infection is so rapidly fatal that little change in the color of the limb has been noticed. In those cases which have survived somewhat longer, it has been found that, during the last few hours, the limb has become mottled black and the discharge exceedingly foul. No gas has been noticed in the discharge, and no crackling has been detected in the tissues. The appearance is somewhat suggestive of deep seated pus, owing to the tension of the skin, but, on making an incision into the limb, the wound merely oozes serum. In the more severe and extensive forms the infection is so severe and the patient's condition so serious that no treatment appears practicable. Amputation gives the only chance of recovery, and is successful when the infection is localized.

Journal of Tropical Medicine and Hygiene, London

May 15, XIX, No. 10, pp. 117-128

- 19 Epidemic Cerebrospinal Meningitis as Seen in Anglo-Egyptian Sudan. A. J. Chalmers and W. R. O'Farrell.

Lancet, London

May 27, I, No. 4839, pp. 1069-1110

- 20 Typhus in Serbia. R. O. Moon.
21 Arrangements for Care of Cases of Nervous and Mental Shock Coming from Overseas. W. A. Turner.
22 *Congestion in Treatment of Cases of Epidemic Cerebrospinal Meningitis. D. Forbes and E. Cohen.
23 *Treatment of Gunshot Wounds by Packing With Salt Sacs. A. J. Hull.
24 Anatomic Position of Localized Foreign Bodies. J. Metcalfe and E. N. Keys-Wells.
25 Simple Tertian Malaria in French Flanders. A. C. Rankin.
26 Warfare Neuroses of Throat and Ear. J. F. O'Malley.
27 Cases of Head, Abdominal and Joint Injuries. H. E. Brown.
28 Odor of Paint as Cause of Plumbism. H. H. Moyle.
29 Diabetes Insipidus Developing Suddenly, With Uterine Fibroids; Hysterectomy. J. Oliver.
30 Case of Acute Tetanus With Hematemesis. V. M. Métivier.
31 Notes on Camp Sanitation. A. White.

22. **Treatment of Epidemic Cerebrospinal Meningitis.**—The treatment advocated by Forbes and Cohen is said not to interfere with concurrent treatment. Congestion of the cerebral vessels is brought about by raising the foot of the bed not on blocks, but on stools or lockers, so that the bed and the patient's body, no pillow being allowed, make an angle of from 14 to 23 with the floor. The method is said to influence the course of the disease profoundly; five cases so treated are reported. In mild cases in a few days a normal temperature and free movement of the head result, and the recovery is uninterrupted. In more severe cases the temperature rises and the patient more gradually recovers, the recovery being at first accompanied either or both by increased tension of cerebrospinal fluid and a greater migration of polymorphs. If the foot of the bed has been raised too high there may be very severe headache and persistent vomiting due to a too great congestion and its results. In such cases, if the bed is lowered and the tension is relieved by puncture, the patient gradually recovers.

23. **Packing of Gunshot Wounds with Salt Sacs.**—The solid salt sac used by Hull consists of a two-walled sac of suitable size made of bandage, between the layers of which four layers of gauze are placed. The interior of the sac is filled with salt and the tail of the bandage forms a drain. These sacs are made in several sizes, sterilized in an autoclave, and stored ready for use. One or more of them are used to pack the wound, the intervals between the sacs being filled with gauze. A tube of perforated zinc or rubber may be passed into the depth of the wound in cases of large septic wounds. Long slender sacs are made to fill bullet tracks. Small sacs are made for draining tracks in the brain. The free end of the sac is passed into a vessel containing saline solution and the wound then drains by capillary attraction. A fine rubber tube may be run in along each sac, and drip irrigation carried out if required. The salt remains undissolved for several days and when the sacs are removed from

a wound at the end of a week undissolved salt still remains. Hull claims that a wound cavity filled with gauze and salt may be considered as effectively drained as if the cavity were inverted and the walls dressed as a surface wound. Every portion of the surface area is drained by the osmotic action of the salt, and the capillary action of the gauze and bandage is continually removing the discharge and producing a continuous and automatic drainage and lavage of every portion of the interior of the wound.

Sei-I-Kwai Medical Journal, Tokyo

May, XXXV, No. 5, pp. 23-28

- 32 Schlatter's Disease; Report of Cases. S. Ikawa.
33 Some Complications in Typhoid. Y. Takaki.

Bulletin de l'Académie de Médecine, Paris

May 16, LXXI, No. 20, pp. 583-606

- 34 Localized Tetanus. Bazy.
35 *Ultimate Outcome After Resection of Joints for War Wounds. (Valeur fonctionnelle des membres après résections des grandes articulations pour blessures de guerre — 1914-1915.) Nové-Josserand and Tuffier.
36 Variability of Symptoms in Tardy Tetanus. L. Bérard and A. Lumière.
37 *Perivascular Neuritis After Contusion of Limb. (Contusion profonde et massive du membre inférieur. Intervention sur le sympathique périvasculaire.) R. Le Fort.
38 Standardization of Catgut. E. Quénu and Others.

35. **Functional Outcome of Resection of Joints.**—This communication reviews the outcome after 1,132 resections of shoulder, elbow or wrist and 678 of the hip, knee or ankle. Primary resections gave unsatisfactory results for the shoulder in 80 per cent. and for the elbow in 70 per cent., while the proportion was only 32 per cent. in the secondary resection cases. The primary resections were made more hastily, without care to retain enough periosteum, or else the lesion was too destructive to permit function or repair. Even at the worst, the limb was saved, and this in itself is ample ground for rejoicing. Primary resection gave better results for the knee than the elbow, while, with secondary resection, the elbow fared better than the knee. See also Paris Letter in THE JOURNAL, June 17, p. 2000.

37. **Painful Myositis and Neuritis After Contusion.**—The contusion occurred during the explosion of a bomb and the right leg swelled for two weeks but there were no erosions. The muscles of the leg atrophied and two large bunches could be palpated, but the main symptom was the atrocious, spontaneous pain without any definite location. After six months of this martyrdom, unmodified by the numerous measures applied, Le Fort decided to act on the sympathetic nerve. Instead of obtaining access to it by way of the abdomen or the sciatic or femoral routes, he attacked it in the popliteal region, stripping the popliteal artery over a stretch 6 cm. long. The artery was found abnormally contracted, without perceptible pulsation. Improvement set in within four or five days and has progressed constantly since. The trouble in such cases involves vessel and nerve; it may possibly be from infiltration with blood of the sheath of the vessel. Denudation of the artery for a certain stretch combats this. It proved effectual also in a case of an extreme edematous condition of the hand following a wound of one finger.

Journal de Médecine de Bordeaux

May, LXXXVII, No. 7, pp. 121-142

- 39 The War Nurse. (De l'utilisation de la femme comme infirmière en temps de guerre. Qualités et devoirs de l'infirmière.) C. Fromaget.
40 Mechanism of Infection of Brain and Meningitis After Fracture of Skull. (Enfoncement du temporal par coup de pied de cheval et fracture transversale de la base.) L. Rocher and Daudin-Clavaud.
41 Anomalies in the Muscles of the Axilla. (Anomalies musculaires du creux axillaire.) Princeteau and Jeanneney.
42 Immobilization in Case of Extensive Wounds. (Brancard-gouttière immobilisateur pour grands blessés.) J. J. Matignon.

Journal d'Urologie, Paris

October, 1915, I I, No. 5, pp. 505-600

- 43 *Bullet in Bladder Removed by Natural Route. (L'extraction par les voies naturelles des balles de la vessie.) F. Legueu.

- 44 *Transvesical Prostatectomy Under Local Anesthesia. C. Perrier.
 45 *Eosinophilia Not Constant With Hypertrophied Prostate. (L'éosinophilie permet-elle de diagnostiquer l'hypertrophie prostatique?) C. Perrier and J. Muster.
 46 *Deep Injections of Alcohol in Treatment of Neuralgia From Cancer in Bladder-Prostate Region. (Traitement des névralgies dans les affections vésico-prostatiques.) L. A. Surraco.
 47 *Technic for Nephrotomy and Nephrostomy. G. Marion.

43. **Extraction of a Bullet From the Bladder.**—Legueu has always had to operate to get out fragments of shells from the bladder, but he has been able to remove by the natural route all the smooth bullets that have forced their way into and remained in the bladder. The first thing is to be sure the bullet is actually inside the bladder, and loose. The history of the case and roentgenoscopy are not always instructive; in one case the bullet entered by way of the shoulder. The hematuria indicating the perforation of the bladder wall may escape detection, while in the reclining position the bullet in the bladder causes no functional disturbance and there is nothing to suggest that there is a bullet in the bladder until the man begins to be up and about. Then vague pains at micturition may attract attention to the pelvis. When the bullet changes its place abruptly with change of position, it is generally loose in the bladder. He seizes it with a lithotrite, No. 00, the blades of which are hollowed out a little. The bullet is then easily drawn out by the tip or base. Cystoscopy and anesthesia are not required.

44. **Transvesical Prostatectomy Under Local Anesthesia.**—Perrier combines various procedures for local anesthesia of the region, and extols the harmless and complete analgesia he has thus realized with the minimum of trouble and inconvenience. The abdominal-vesical wall is anesthetized by infiltration and also the region on a line from ischium to ischium, passing in front of the anus. This permits painless deep injection of the same solution; under guidance of the left forefinger in the rectum, it is injected under the capsule of the prostate, using needles 12 or 15 cm. long. With this finger the capsule can be felt distending as this is done. Then with the same needles and a 1 per cent. solution, the sacral nerves are blocked and the prostatectomy can then be done without fear of causing any pain, even under the most adverse circumstances, as in the obese.

45. **Eosinophilia With Enlargement of the Prostate.**—Perrier and Muster have been examining for eosinophilia in all cases of prostate enlargement and found it marked in 33 per cent. of their twenty-two cases. The absence of eosinophilia, however, in all the other cases deprives it of practical value as a sign of hypertrophy of the prostate. Legueu reported recently that he had found eosinophilia marked in 87 per cent. of his cases of adenoma while the eosinophils were below the normal figure in the cancer cases, among his eighty-five patients.

46. **Alcohol Injections in Treatment of Sacral Neuralgia.**—Surraco refers to the agonizing pains in the sacral region in the course of cancer in the bladder, prostate or urethra. He places the patient under the influence of scopolamin and morphin and then injects the alcohol through the holes in the sacrum to act on the second, third and fourth nerves. The second hole is on a horizontal line about 2 cm. below the posterior superior iliac spine. The other holes are about 2 and 4 cm. below this, about 2 cm. from the line of the spinous processes. The needle is introduced for half a centimeter and 2 c.c. of alcohol are injected in each hole, each side of the median line. In four extremely severe cases of neuralgia from cancer in the bladder or prostate a single sitting banished the neuralgia permanently during the three or five months to date in three cases. A second injection was required in the other.

47. **Technic for Nephrotomy and Nephrostomy.**—This exposition of the fundamental principles for these operations is profusely illustrated. Marion warns particularly against secondary hemorrhage; it is liable to occur toward the end of the second week, especially in kidneys with normal parenchyma but slightly infected. The oozing may burst open the healing incision. If sure of the other kidney, it may be wiser to remove the bleeding organ, otherwise, ligation and tamponing under constant supervision.

Lyon Médical, Lyons

May, CXXV, No. 5, pp. 141-176

- 48 Amebic Abscess of the Liver Latent up to Perforation; Three Cases. Cros and de Teyssier.
 49 *Paraffin Spray for Wounds. (Note sur la paraffination et la curation des plaies.) H. Bertoye.
 50 *War Wounds of the Chest; Fifty-Three Cases. (Les plaies pénétrantes de poitrine par projectile de guerre. Le syndrome hémopleuronumonique.) Piéry. Concluded.
 51 The Depopulation of France and Means to Remedy It. R. Lépine. Concluded.

49. **Paraffin Spray for Wounds.**—Bertoye sprays a mixture of paraffin and petrolatum or wax on wounds and says that it protects the wounded tissues from injury from without, and that the dressings do not stick and the wound heals faster. The paraffin can be medicated when desired. The spray can be applied without fear of infection from the hands, and it is proving an ideal dressing for superficial lesions, mild burns, etc., as well as deep wounds after they have been cleared out and drained, reducing the pain and hastening healing. He adds that as the paraffin layer is lifted by pus accumulating below, there need be no fear of holding back secretions.

50. **Wounds of the Chest.**—Piéry here summarizes his conclusions from study of fifty-three cases of penetrating wounds of the chest. There is always intrapleural hemothorax and pneumonia always develops, the fever chart showing its rise and fall and relapses. The tardy resolution and tendency to relapses are the special features of this type of injury. Repose and revulsion, with ipecac and digitalis to combat the congestion in the lungs, are the main factors in treatment. No attempt at operative treatment should be made; the hemothorax in particular should be respected, he insists. The extraction of the projectiles in the wall should be deferred as long as possible. Convalescence should be guarded with special care, particularly against chilling. Prompt pleurotomy is indicated if pus is revealed by puncture.

Paris Médical

May 20, VI, No. 21, pp. 473-488

- 52 Winter in a War Prisoners' Camp. (Dans un camp de prisonniers en Allemagne.) Ribadeau-Dumas.
 53 Filiform Drainage Ensures Rapid Healing of Mammary Abscesses Without Scar. (La guérison rapide et sans cicatrice des abcès du sein.) H. Chaput.
 54 Electrotherapy for War Wounds. (Considérations sur l'utilisation du courant sinusoïdal alternatif dans l'électrothérapie de guerre.) O. Genevoix.
 55 Suggestions for Safeguarding Interests of Physicians Absent on Active Service. (Le service médical des populations civiles et la défense des clientèles des confrères mobilisés.) Granjux.

Presse Médicale, Paris

May 18, XXIV, No. 28, pp. 217-224

- 56 "Fraternitas Medicorum." F. Helme.
 57 *Glycuronic Acid in the Urine; Variations in Health and Disease. (La glycuronurie.) H. Roger.
 58 Disturbance in Growth of Hair on the Limbs as Sign of Nerve Lesion. (Les troubles du système pileux des membres.) M. Villaret.
 59 Pain From Injury of Nerve Plexus Spreads to Other Side. (Les irradiations symétriques dans les lésions traumatiques des plexus nerveux.) A. Hesnard.
 60 Moving Pictures as Aid in Teaching Obstetrical Operations. (De l'emploi du cinéma dans les démonstrations opératoires d'obstétrique.) V. Wallich.

May 22, No. 29, pp. 225-232

- 61 Diagnosis of Complete Interruption of Popliteal or Sciatic Nerve. (Le diagnostic de l'interruption complète des gros troncs nerveux des membres. II.) Pr. and Mme. Dejerine and J. Mouzon.
 62 *Palpitations From High Blood Pressure. (Les palpitations par hypertension artérielle aux armées.) C. Lian.

May 25, No. 30, pp. 233-240

- 63 Jointed Wooden Legs. (Les pilons articulés. Leurs transformations — leurs principes.) Ducroquet.
 64 *Favorable Action of Hypertonic Solutions Plus Liquid Paraffin for Dressing Infected Wounds. (Action favorable des solutions hypertoniques et de l'huile minérale dans le traitement des plaies infectées.) A. Goubaroff (Moscow).

57. **Glycuronic Acid in the Urine.**—Roger remarks that now that we have simple and sufficiently exact methods for estimation of the glycuronic acid in the urine, it behooves us to ascertain its clinical significance. He discusses its chemical composition, describes the technic for its deter-

mination, and reports the results of research on glycuronuria in health and disease, especially with disease of the liver. Glycuronic acid neutralizes the toxic action of a number of substances. The active toxic element combines with the glucose or its derivative, and is thus rendered comparatively harmless. As the liver stores up glucose, it seems natural to assume that this neutralizing occurs in the liver, and the amount of glycuronic acid in the urine is thus a gage of the functional capacity of the liver. When the reserve of glycogen is low, the glycuronuria declines. A test dose of camphor, salol or naphthol will elicit a negative reaction if the liver is insufficient. The glucose in the liver is not merely evidence of the functioning of the liver. It aids in the formation of compounds of slight or no toxicity, compounded from elements otherwise toxic plus the glucose in the liver. The glycuronuria thus affords insight into what is going on in the liver, as he shows by the findings in twenty-nine cases of cirrhosis of the liver.

62. "Palpitations" with High Blood Pressure.—Lian warns that soldiers may present palpitations which are liable to be mistaken for a harmless nervous manifestation when in reality an abnormally high blood pressure is responsible for them. Nothing but the sphygmomanometer will reveal the true state of affairs.

64. Hypertonic Solution and Paraffin for Dressing Wounds.—Goubaroff clears out the wound as usual and flushes it with an isotonic salt solution or Dakin's fluid. Then he rinses it out thoroughly with an 8 or 10 per cent. solution of salt, leaving a little in the wound, which is then fitted with large rubber drains and filled up with gauze impregnated with liquid paraffin. The oil prevents the gauze from sticking, while the hypertonic solution induces a copious discharge. He relates that the wounds healed under this treatment better than with any other technic, unless possibly under exposure to direct sunlight.

Progrès Médical, Paris

May 20, XXXII, No. 10, pp. 73-80

- 65 Radium in Treatment of War Wounds. (Radiumthérapie des blessures de guerre.) Barcat.
- 66 Apparatus for Extension of Fractured Phalanx. P. Batigne.
- 67 Advantages of Kefir in Children's Diseases. (De quelques emplois du kephir.) A. Satre.

Revue de Chirurgie, Paris

February, XXXV, No. 2, pp. 177-336

- 68 *Treatment of Fractured Femur in War; Twenty-One Cases. (Sur le traitement des fractures de cuisse en chirurgie de guerre.) S. Pozzi and A. Peuret.
- 69 Treatment of Severe Wounds in War; 1,500 Cases. (Les grandes blessures de guerre. Etude sur 1,500 cas traités dans une ambulance chirurgicale de l'avant.) A. Chalié and R. Glénard. To be continued.
- 70 Strangulation of Small Intestine in Prolapse of Large Intestine Through Artificial Anus. (De l'étranglement de l'intestin grêle dans un prolapsus du gros intestin au niveau d'un anus contre nature.) M. Guibé. Concluded.
- 71 *Necessity for Operating Room and Work on the Firing Line. (Le poste chirurgical avancé.) J. and P. Fiolle.
- 72 Simple and Easy Extraction of Needle from Cavity of the Auricle of Boy of Nine. Prompt Recovery. R. Leriche.

68. Fracture of the Femur.—Pozzi and Peuret have had twenty-one cases of extensive fracture of the femur, including six that were permanently clinically aseptic and fourteen with suppuration. The treatment found simplest and most effectual was a combination of extension with suspension in a kind of hammock—the American apparatus, as they call it. One or more illustrations are given of each case showing the comparatively good results attained.

71. Operating in the Trenches.—Fiolle expatiates on the enormous advantage of immediate skilful surgical repair, and urges that bomb-proof operating rooms be dug out connecting with the system of trenches. He says that no special heroism is required to operate in a bomb-proof shelter on the firing line. In many systems of trenches an advanced surgical post of this kind would be very useful, but in others, where the wounded cannot be transported by day, it is absolutely indispensable and there should be an ample supply of surgeons.

Correspondenz-Blatt für Schweizer Aerzte, Basel

May 13, XLVI, No. 20, pp. 609-640

- 73 *Disturbances in Ossification in Regions Where Goiter Is Endemic. (Ueber des Ossifikationsstörungen beim endemischen Kretinismus und Kropf.) C. Wegelin.

May 20, No. 21, pp. 641-672

- 74 *The Psychic Action of Bromids Utilized in Treatment of Melancholia. (Ueber psychische Wirkungen des Broms.) A. Ulrich.
- 75 Packing Specimens to Send to Pathologic Institutes. (Wie sollen Präparate an das Pathologische Institut eingesandt werden?) O. Busse.

73. Defective Ossification with Endemic Goiter.—Wegelin says that at Bern the children are born with a more or less prominent goiter, almost without exception. His study of cadavers of children stillborn or dying soon after birth has shown that abnormal ossification processes are common. One manifestation of this is the lack of any center of ossification in the lower epiphysis of the femur at birth. He tabulates the findings in 70 of these infant cadavers, including 39 from 50 to 56 cm. in length and 31 only 45 or 49 cm. long. In 23.1 per cent. in the first group the center of ossification here was missing as also in 61.3 per cent. in the other group. All but 6 of the children had a pronounced goiter. The thyroid weighed 10 gm. in a number; 20 gm. in two, and in one 39 gm. Among the 6 newly born with normal thyroids, the center of ossification was missing in only one, and this was a prematurely born infant. He thinks there can be no doubt that the abnormal ossification processes are due to abnormal thyroid functioning. Other data are cited to confirm this view, among them the necropsy findings in a man of 47 whose growth had been abruptly and permanently arrested at the age of 12 by a partial thyroidectomy for goiter. The boy developed after the partial operation a condition similar to cretinism, and was left practically a dwarf. Wegelin recalls Lanz' experiments on hens fed with thyroid extract. They laid more and larger eggs than the control hens, while the reverse was obtained by thyroidectomy. The practical conclusion of Wegelin's research is the necessity of thyroid treatment for disturbances in ossification, at least in regions where goiter is endemic.

74. Psychic Action of Bromids.—Ulrich is director of the Swiss institution that cares for epileptics. He here relates experiences which confirm the antagonistic action of salt in respect to bromids, so that we have bromin poisoning completely under our control by regulating the intake of salt. He has further established that the bromid modifies the mood to such an extent that it puts an end to melancholia, and he declares that we can banish melancholia at will by pushing bromid treatment without fear of bromin poisoning as we can annul the latter at any moment by increasing the intake of salt. Extreme caution and individual study of the case are necessary, but this systematic bromidization to the stage of cerebrospinal bromism he insists is no more dangerous than a general anesthesia. Both require that the patient should be under constant medical supervision, his state of nourishment and heart and kidney action being under constant control. The bromid must be pushed until there is actual tipsiness from it, the patient staggering in standing and walking, as if drunk, with characteristic disturbances in speech, writing and memory. This *Bromrausch* should be maintained until the melancholia has given place to the characteristic euphoria or at least until the mood has completely changed. In some cases repetition of a mild course has a better effect than a single intensive course. The bromid is pushed while all salt is withdrawn. The dosage ranges from 2 or 3 gm. to 4, 5 or 6 gm. sodium bromid. When the desired result has been attained the bromid is gradually reduced while salt is given more and more freely. Bromid acne has nothing to do with the psychic action, and had better be avoided by giving a few drops of Fowler's solution twice a day after meals. He reiterates that bromin seems to have a selective action on the excitement and depression of neurasthenics and certain epileptics, transforming them to a submanic euphoric mood. Bromin poisoning has lost all its terrors since we have learned that it is completely under our control. It is wrong to stop the bromid abruptly when an epileptic is taking it; increasing the intake of salt answers

the same purpose without danger of bringing on attacks. Even with anemic and bedridden patients we need have no fear of bromin poisoning under continuous bromid treatment, if the total intake of salt is twice that of the bromid. He knows of intelligent and hard working men in responsible positions who keep well in body and mind through years and years, taking from 2 to 4 gm. bromid daily.

Gazzetta degli Ospedali e delle Cliniche, Milan

May 11, XXXVII, No. 38, pp. 593-608

- 76 Organization of Isolation Service in the War Zone. (Sull' organizzazione dei servizi di un locale d'isolamento in Zona di Guerra.) F. Pancrazio.

May 14, No. 39, pp. 609-624

- 77 Aneurysm of the Celiac Artery Diagnosed During Life. G. Carbone.

May 18, No. 40, pp. 625-640

- 78 Annular Opacity of the Crystalline. (Opacità anulare del cristallino. anello contusivo del Vossius). D. Bruno.

Policlinico, Rome

May 7, XXIII, No. 19, pp. 581-612

- 79 Baccelli Memorial Number. (L'apoteosi di G. Baccelli in Campidoglio April 30, 1916.) See THE JOURNAL, June 3, 1916, p. 1789.

May 14, No. 20, pp. 613-644

- 80 Specific Agglutinins and Bacteriolysins in Serum After Vaccination Against Cholera. (Sulle agglutinine e sulle batteriolisine specifiche nel siero di sangue dei vaccinati contro il colera.) L. Sestini and R. Marantonio.

- 81 *Temporary Dislocation of the Bone in Treatment of Severe Infection. (Le dislocazioni ossee temporanee nella cura delle più gravi infezioni settiche delle fratture e delle articolazioni.) G. Lerda.

May, Surgical Section No. 5, pp. 129-160

- 82 *Experimental Renal Sporotrichosis. G. Bolognesi.
83 Influence of Traumas and Operations on the Manifestations of Malaria. I. Di Pace. To be continued.
84 Ligation of Coronary Arteries and Veins Alone or Together. (Legatura separata e simultanea delle arterie e delle vene coronarie del cuore. Studio sperimentale e clinico.) L. Dominici. To be continued.

81. **Temporary Dislocation of the Bone in Treatment of Severe Infection.**—Lerda refers to bone and joint lesions in which it is impossible to drain all the recesses and the condition is going rapidly from bad to worse. In a number of such cases, as a last resort, he dislocated the head of the bone in the joint or the stump of the fracture and forced it up out of the wound. This opened up all the recesses and permitted appropriate treatment, with prompt recovery in many previously hopeless cases of gas gangrene, etc. He gives a number of illustrations of typical cases showing the temporary luxation of the bone. In only one of his cases was the method applied to the arm. When a condition has been reached that will permit reduction, the restitution is complete.

82. **Experimental Sporotrichosis.**—Bolognesi has made a special study of experimental sporothrix lesions in bones and joints, and he here relates similar research with the sporothrix inoculated directly in the rabbit kidney. The microscopic findings in the kidneys when the ten rabbits were finally killed are reproduced. The resulting progressive infectious granulomas were practically alike in all. In one case a focus developed also in the ureter. The sporothrix used was an agar culture, and the control animals were inoculated with sterile agar.

Brazil-Medico, Rio de Janeiro

April 22, XXX, No. 17, pp. 129-136

- 85 *Semeiology of Pain in the Abdomen in Women. (Semiologia da dor abdominal direita na mulher.) R. Vaz.

- 86 Classification of Nematoid Worms. (Nematoides prejudiciais ao homem. Sua classificação.) A. A. da Matta.

April 29, No. 18, pp. 137-144

- 87 Black Pityriasis—Melasma—With Central Depigmentation. (Pityriasis nigra centro-albicans.) P. Valladares.

85. **Abdominal Pain in Women.**—Vaz describes instances of intense abdominal pain of puzzling origin, analyzing the possible factors involved. He emphasizes the multiple causes that may be at work, and that much reliance as to the diagnosis cannot be placed on tender points unless they are verified beyond mistake and located with precision. A localized

muscular spasm is instructive but with general rigidity and toxemia and with obesity, differential diagnosis is almost impossible. In one case pain throughout one ovarian region persisted unmodified by treatment for the assumed ovarian lesion, and roentgenoscopy revealed a stone in the ureter near this point. Unsuspected movable kidney and chronic duodenal ulcer are liable to give misleading clinical pictures. One patient had suffered from the latter for over twenty years before the lesion was recognized. Abdominal pain caused by unsuspected thoracic disease is comparatively common. Richard has reported six cases of pneumonia simulating appendicitis at first. He adds that the records of a London hospital (Middlesex) for 1910 and 1911 show that six out of 100 pneumonia patients were sent first to the surgical ward for supposed appendicitis, as also one patient with pleurisy, one with endocarditis and four with pericarditis, and that laparotomy was done in four of the cases before the true condition was recognized.

Semana Medica, Buenos Aires

April 6, XXIII, No. 14, pp. 379-406

- 88 Subcutaneous Symphysiotomy; Three Cases. E. Zarate.

- 89 Examination of the Patient's Previous History. (Anamnesia.) D. Speroni.

- 90 Case of Dengue at Buenos Aires. F. A. Deluca.

- 91 Milne's Prophylactic Treatment of Scarlet Fever; Six Cases. (Consideraciones sobre el metodo de Milne.) G. B. Cavazzutti.

- 92 Professional Secrecy. (Del secreto medico.) A. Stucchi.

Siglo Medico, Madrid

May 6, LXIII, No. 19, pp. 289-304

- 93 Present Status of Knowledge of Sleeping Sickness. (La enfermedad del sueño—trpanosomiasis humana.) G. Pittaluga. To be continued.

May 13, No. 20, pp. 305-320

- 94 Removal of Bladder for Cancer. (Tratamiento operatorio de los tumores malignos de vejiga.) S. Pascual.

- 95 Sleeping Sickness. G. Pittaluga. Continued.

May 20, No. 21, pp. 321-336

- 96 *Modification of Y Gastro-Enterostomy—T Gastro-Enterostomy. (Una modificación al procedimiento de gastroenterostomia en Y de Roux: gastroenterostomia en T.) J. Goyanes.

- 97 Sleeping Sickness. G. Pittaluga. Continued.

96. **T Gastro-Enterostomy.**—Goyanes sutures the proximal stump of the jejunum to the stomach at its lowest point and then sutures the distal stump at the lowest point of the loop thus formed by the proximal stump. The chief advantage he claims for this technic is that the segment of intestine between the stomach and the lower suture is in reversed physiologic position. The peristaltic waves run upward toward the stomach, and thus tend to check overhasty evacuation of its contents. This technic therefore provides a kind of neosphincter. Two illustrations show the points of difference between this T gastro-enterostomy and Roux' Y gastro-enterostomy of which it is a modification.

Russkiy Vrach, Petrograd

XV, No. 12, pp. 265-288

- 98 Gunshot Wounds of Blood Vessels. A. P. Krimoff.

- 99 *Further Observations on Thoracotomy for Foreign Bodies in the Thorax. V. M. Mintz.

- 100 Case of Stone Formation in the Bladder After a Gunshot Wound. R. S. Krim.

- 101 Reaction of Living Tissue to Irritation and Its Practical Import. (Znachenie reaktsie zhivoi tkani na razdrazhenie v prakticheskom otnoshenii.) L. I. Omorokoff.

- 102 Apparatus for Sterilization of Dressings, etc., with Steam Under Pressure. V. N. Pilko.

- 103 Treatment of Compound Fractures of Femur. (K liecheniu oslozhnennikh perelomov bedrenoi kosti.) N. A. Ilinsky.

- 104 *Ether-Oil Rectal Anesthesia in Surgery. (K voprosu ob obshtshei anestezii . . . pri pomoshchi eterno-maslianih klizm.) A. K. Evropin; (Idem.) O. A. Revditsova and Y. B. Dombrovskaja; (Idem.) G. A. Garnak.

- 105 Cane Sugar in Ringer-Locke's Fluid versus Grape Sugar. I. G. Kutateladze.

No. 13, pp. 289-312

- 106 Certain Surgical Problems Rendered Urgent by the War. I. E. Hagen-Torn.

- 107 Is It Necessary to Ligate the Vein When the Circulation in the Homonymous Artery is Obstructed? N. A. Bogoraz.

- 108 A Simple Apparatus for Tapping Pleural Effusions. N. A. Ilinsky.

109 *The Alkaline-Hemoglobin Agar of Esch in the Diagnosis of Cholera. K. N. Shapsheff.

110 *Cholera-Like Vibriones. E. U. Gen.

99. **Operative Removal of Foreign Bodies in the Chest.**—Mintz reports four more cases of successful operations on the lungs and pleura for removal of bullets and other foreign bodies (a broken needle in one case). He found these operations simple and free from danger. The bullets were usually found 5 cm. below the surface and they were always surrounded by an infected space. The depth of 5 cm. Mintz considers safe to reach with the knife without danger of injuring the large vessels. Whether it is safe to go deeper than 5 cm., further observations will show.

104. **Ether-Oil Mixture for General Anesthesia.**—Evropin used ether-oil anesthesia in urgent operations for resection of limbs (eight cases) or for purulent appendicitis, hernia and cellulitis. The patients usually were in a grave condition, with a weak pulse and nearly unconscious from loss of blood. Two hours before the operation an ordinary enema is given, after which the body weight was determined, and 0.01 gm. (one-sixth grain) morphin given. Then he injected into the rectum a mixture of equal parts of ether and olive oil, in the proportion of 1 gm. of each to each pound of body weight. A patient weighing 160 pounds received thus 160 gm. of ether and as much of oil. About four minutes after the enema the smell of ether became perceptible in the patient's breath. This was followed six minutes later by slight excitement, but without nausea or vomiting, and by anesthesia of the lower limbs. The respiration became deeper and more regular, and the pulse stronger. Complete sleep usually set in about thirty or thirty-five minutes after the rectal injection. After the operation what was left of the ether-oil in the rectum was removed by means of an ordinary enema with plain water. No post-anesthetic complications were ever noticed, such as headache, weakness, etc. Evropin found this method of general anesthesia simple, safe and of great value in the military environment when there was not sufficient help to be obtained.

Revidtsova and Dombrovskaja used the ether-oil anesthesia in forty cases, in four of which the desired anesthesia could not be obtained, and inhalation of ether (20 or 25 c.c.) had to be resorted to. They used 90 or 100 gm. of ether, mixed with the double amount of oil. They point out the advantages of this method as mentioned in the previous abstract, but they also call attention to the fact that the dose cannot be individualized as in the inhalation method. With the latter, the anesthesia can be stopped at any moment, which is not the case with the rectal method, though they did not meet with any unfavorable complications in their forty cases.

Garnak uses a bottle supplied with two glass tubes. The shorter tube is connected with a rubber tube which in its turn is connected with a thin catheter. The anesthesia starts with the turning of the bottle, from which the ether enters the rectum. Lowering of the bottle causes the ether to leave the rectum. Thus it escapes from the rectum in case the narcosis seems to be too deep. With this technic it is also possible to avoid excessive distention of the intestines with the ether fumes, as they freely escape through the glass tube into the bottle. The latter is kept at the proper height to regulate the inflow and outflow in turn. Garnak used this method mostly for operations on the face and had no complications. The only disagreeable feature was the prolonged sleep; the patients slept for four hours. He also made two experiments on dogs with plain ether and with Gwathmey's mixture. With ether alone the mucous membranes were found extremely hyperemic, with a tendency to hemorrhages. With the ether-oil mixture the hyperemia was comparatively slight.

109. **Bacteriologic Diagnosis of Cholera.**—Shapsheff warmly recommends Esch's agar for the diagnosis of cholera, especially when haste in the diagnosis is required. He found that Esch's medium enables one to find cholera colonies even in those cases in which with ordinary alkaline agar they cannot be detected. The diagnosis of cholera can be thus made within twelve hours. In addition, the results are more accurate.

110. **Vibriones Resembling Those of Cholera.**—Gen found that the reaction of agglutination is the only sure sign for differentiating the cholera vibrio from others merely resembling it.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

May 6, I, No. 19, pp. 1589-1660

111 *Scraps of Mucous Lining of Stomach in Stomach Content. Exfoliating Gastritis. (Over slijmvliesstukjes in maaginhoud.) E. C. van Leersum.

112 Influence of Coarse Bread on Gastric Secretion. (Invloed op de maagafscheiding door het bruinbrood.) G. Prins.

113 *Importance of Roentgenography in Revealing Sinusitis, Especially Disease in the Frontal Sinus. (Over het nut der röntgen-diagnostiek bij aandoeningen van de voorhoofdsholten.) A. de Kleyen and H. W. Stenvers.

May 13, No. 20, pp. 1693-1772

114 *Customs in Regard to Sickness of the Inhabitants of the Dutch East Indies and Their Ethnologic Significance. (Gebruiken bij ziekten der inlanders van onzen Oost en hun ethnologische beteekenis.) J. P. K. de Zwaan.

115 *Simple Operative Treatment of Senile Entropion. (De entropion-operatie van Carron du Villards.) W. Koster.

116 Deafness and Heredity. (Doofheid en erfelijkheid.) P. J. Waardenburg.

117 Plastic Deformity of Skull Causing Clinical Picture Like That from Hypophysis Tumor. (Een geval van basilaire impressie.) H. W. Stenvers.

111. **Exfoliating Gastritis.**—Van Leersum makes a practice of examining the stomach content and wash water for scraps of mucosa and has found in the last two years eighty-eight such scraps, obtained from forty-three patients; nine from one patient. The scraps are characteristic of exfoliating gastritis only when they are found repeatedly. The pain with this affection may be considerable but is usually less than with gastric ulcer; other symptoms may suggest gastric catarrh. A special feature of exfoliating gastritis is that there may be intervals of weeks or months during which the stomach may be apparently normal. The other objective findings are merely tenderness in the epigastrium and some loss of flesh. Gastroscopy showed the mucosa of a somewhat different color from normal in the one case in which van Leersum applied it, but he saw no erosions. After a test breakfast he found in a number of cases examined that the acid content was never above 2.5:1,000 and usually ranged between 0.5 and 1. He never found achylia. The stomach content is more fluid than with mucous gastritis, but when poured it threads.

Various experiments and experiences have demonstrated that the mucosa heals remarkably quickly after the scraps have been thrown off. Serious hemorrhage has never been known with it, and there is no other stomach affection which responds so readily and so completely to treatment. This includes sparing the stomach all irritation from insufficiently chewed and overhot food and from spices, etc. This protects the vulnerable mucosa against injury, and it is strengthened directly by treating with an astringent. Nothing is so excellent for this purpose, he reiterates, as silver nitrate. He has the patient take, three or four times a day, before meals, 15 c.c. of a solution of 0.5 gm. silver nitrate in 300 c.c. distilled water. A couple of bottles of this solution generally carry the patient through, but usually three or four bottles are needed as the subsidence of symptoms does not mean that the cure is complete. The course can be repeated later if symptoms return, but the patient must be warned that this treatment should not be repeated without medical control. The nails and gums show the first signs of silver poisoning. He has noticed this even after as small a total intake as 2 or 3 gm. Discoloration of the skin occurred in one patient with a gastric ulcer who had used 6.7 gm. of the silver nitrate in the course of three years.

Van Leersum says that all the food should be mashed soft, in purée form, unless we can convince the patient of the superior advantages of doing the soft mashing with his teeth. The habit of taking tea, coffee and soup too hot is responsible for many cases of rebellious chronic gingivitis and pharyngitis and chronic gastritis. When practicable and convenient, instead of the above method of giving the silver nitrate, he rinses out the stomach with half a pint or more of a 1:4,000 solution of silver nitrate, gradually doubling the strength.

This can be repeated daily for two weeks when done with great care to rinse out all the drug afterward and leave none in the stomach.

113. Frontal Sinusitis Revealed by Roentgenoscopy.—De Kleyn and Stenvers report two cases in which severe headaches were finally explained by roentgenoscopy which revealed suppuration in a frontal sinus. Rhinologists had been unable to discover anything wrong on examination of the nose, the sinusitis running an entirely latent course except for the headaches.

114. Customs in Regard to Sickness in the East Indies.—This long article describes the various habits and customs of the natives in the Dutch East Indies in regard to pregnancy, parturition and sickness. De Zwaan seeks to explain the rice-strewing and similar customs on an ethnologic basis.

115. Operative Treatment of Entropion.—Koster cuts three perpendicular oval pieces out of the lower lid and sutures the lips of each gap together, thus correcting the entropion. If the patient refuses the knife, the same result can be obtained by taking up and suturing three folds in the lid.

Hospitalstidende, Copenhagen

May 17, LIX, No. 20, pp. 465-488

- 118 The So-Called Secondary Lichenoid Kerion of Celsius; Six Cases. (Om de saakaldte sekundære likenoide Trikofytider.) M. B. Pedersen.

Hygiea, Stockholm

LXXVIII, No. 3, pp. 161-224

- 119 *The School and Infectious Diseases. H. von Matern.

119. The School and Infectious Diseases.—Von Matern discusses with much detail, including the results of personal experience, the length of the contagious stage and other problems of the control of acute infectious diseases. He emphasizes in particular the necessity for intelligent and loyal cooperation between the school and the home, with concrete instances of what should and should not be done, and gives a tentative set of rules for the school and the family.

Norsk Magazin for Lægevidenskaben, Christiania

May, LXXVII, No. 5, pp. 589-716

- 120 *Passage of Tubercle Bacilli into the Blood with Bone and Joint Tuberculosis. (Om tuberkelbacillens overgang i blodet ved ben-og ledtuberkulose.) N. Paus.
121 *Research on Absorption from and Excretion in Effusions. (Om resorption og utskillelse i patologiske væskeansamlinger, særlig plevrækkssudater.) O. Scheel.
122 Recovery from Otogenous Suppurative Meningitis; Two Cases. F. Leegaard.
123 Transposition of Viscera. (Medfødt abnormt leie av tarmkanalen. Retropositio coli.) J. Borchgrevink.

120. Tubercle Bacilli in the Blood with Bone and Joint Tuberculosis.—Paus presents evidence which confirms anew that the bearer of a tuberculous focus is liable any day to have it spread by passage of the bacilli into the blood and setting up of new foci. His research confirms the clinical importance for tuberculosis in adult life of bone and gland tuberculous lesions in children. Tuberculosis can lie latent through years and decades, but a focus once established always bears in itself the possibility of further spread of the disease when circumstances rouse it to flare up anew. Paus' article is based on repeated examination of the blood from 50 patients with bone or joint tuberculosis. Inoculation of animals he regards as the most reliable means for testing the blood, but only 6 gave a positive result. Tubercle bacilli were never found but on one occasion in these 6 cases; the blood was sterile at all other times. The positive findings were generally early in the disease and in the more acute types. Only one of the 6 positive patients was well nourished; the others were debilitated. The positive findings were about equally divided between the febrile and afebrile cases. In 9 cases the blood was examined during or soon after tuberculin treatment but no tubercle bacilli were found. In 4 of the 6 positive cases there were signs of renal tuberculosis along with the bone tuberculous processes. This combination is more than casual coincidence. In his last 15 operative cases of kidney tuberculosis, there was a history of bone processes in 3. Multiple foci were common, especially in the skin, various bones or joints, tendon sheaths,

bronchial or other glands, intestines and meninges, and air passages. The discovery of tubercle bacilli in the blood has no appreciable import for diagnosis, prognosis or treatment except in so far as it reaffirms the necessity for regarding tuberculosis as always more than a mere local affection. Extermination of each focus, however, reduces the danger by just that much.

121. Absorption from and Elimination in Pathologic Accumulations of Fluid.—Scheel injected methylene blue or indigocarmine into the tissues or into the effusion and recorded the rate and time of the elimination of the stain in the effusion or other fluid and in the urine. The results show that this may prove a means for estimating the prognosis. In acute, transient pleurisy, for instance, the stain is promptly eliminated in the urine, and the pleural effusion soon shows no further traces of the stain, even when it had been injected directly into the pleural effusion. The pleural effusion clears itself of the stain more promptly when conditions are approaching the stage of clinical absorption of the pathologic accumulation. When there is a tendency to fibrous transformation, or the effusion is becoming organized, the stain lingers longest in the pleural cavity. He tabulates the findings in forty patients with various effusions, ascites, etc. Two weeks he found was the limit for absorption of the stain in the effusions with a favorable prognosis. He further investigated the behavior of the stain in the blood.

Ugeskrift for Læger, Copenhagen

April 27, LXXVIII, No. 17, pp. 633-696

- 124 Vestibular Nystagmus. C. Peschardt.
125 Artificial Carbonated Baths. (Kulsyrebad.) A. Faber and S. Marcussen.

May 4, No. 18, pp. 697-744

- 126 Chronic Habitual Constipation. (Bidrag til den kroniske habituelle Obstipations Klinik og Røntgenologie. I.) T. E. H. Thaysen. Commenced in No. 17.

May 11, No. 19, pp. 745-784

- 127 Pituitary Extract in Intravenous Treatment of Obstetric Hemorrhage. (Anvendelsen af Pituitrin som intravenøs Injektion, spec. ved Blødning i Fødselens forskellige Tidsrum.) A. Tofte.
128 *Research on Occult Bleeding. (Undersøgelser over okkult Blødning.) J. P. Gregersen. Commenced in No. 18.

128. Occult Blood in the Stools.—Gregersen tabulates the findings as 147 patients supposedly free from ulceration in the digestive tract were examined. The subjects were the inmates of the medical ward, examined without discrimination. The ages ranged from a few months to 87 years. The diet in twenty-eight cases had included meat within a few days and the findings were constantly positive in this group. In the 1,310 specimens from 147 patients who had had no meat within four or five days, the findings were constantly negative in all but eighteen. Even in this group the reaction was negative in most of the tests. The diet must not contain meat, but milk, butter, eggs, fruit, bread, potatoes, tea, coffee and cocoa and also well cooked fish do not modify the response. As the various patients had been taking different drugs, the constantly negative reaction confirms that certain drugs do not affect the response to the test; namely, bismuth, iron, arsenic, mercury, barium sulphate, salicylic acid, tannalbin, antipyrin, hexamethylenamin, camphor, senna and castor oil. None of these drugs or their derivatives seemed to modify in the least the response to the test. His comparative study of the various technics for determination of occult blood in the feces confirmed the superiority of the benzidin test. It is far simpler and quicker, while it is fifty times more sensitive than the Weber or other technics. This test applied to scraps of feces taken as far apart in the stool as possible gave always the same findings, confirming the regular blending of the feces throughout. Ingestion of four doses of 0.3 gm. blood, each, was followed by a positive response to the benzidin test without fail. The benzidin solution must be made fresh each time, dissolving 1 per cent. pulverized benzidin in equal parts glacial acetic acid and hydrogen dioxid. Ten or 20 drops are then dropped on the thin layer of feces on an object glass. In less than a minute a green, bluish-green or blue tint appears in case of positive findings, and the tabulated data confirm the clinical importance of a positive response.

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STANDARDS FOR DETERMINING THE SUITABILITY OF PATIENTS FOR ADMISSION TO A FREE DISPENSARY

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It is the purpose of this paper to discuss the results of a study of outpatient clinics, and it deals in particular with the standards adopted by the Washington University Dispensary for judging the financial suitability of applicants for admission.

THE PROBLEM

In December, 1914, three distinct outpatient clinics connected with the Washington University Medical School or its affiliated hospitals were merged into one dispensary, moved to a new location in a distant part of the city and the old clinics closed. Although a comprehensive system of records and administration was prepared in advance, a number of conditions arose requiring study and adjustment. Among the more complex of these was the question of the suitability of patients for admission. The old clinics were located in the poorer portion of the city and in part in what is now the negro segregation district, while the new clinic is in the residential district. A large number of the applicants for admission were old clinic patients who made the long trip to the new location, but it soon became apparent that a new clientele was coming from all parts of the city, greater in number than that of the three old clinics combined. For some time the question of the suitability of patients for admission was handled entirely by the social service department, but it soon developed that the functions of this department were being subverted to those of a detective bureau. At their request a committee was appointed to establish standards for the admission of patients to the dispensary. This committee consisted of Miss Julia Stimson, head social service worker, and Dr. G. Canby Robinson and myself from the dispensary committee of the medical school.

Our first work was to get into communication with a number of the larger clinics in the country to obtain their standards of admission. We inquired as to the grouping and classification of patients, what was considered financial suitability, what investigation of patients was made, and the attitude of outside physicians toward the clinic. The following abstracts are from some of the replies:

Philadelphia.—The doctors here have almost no interest in the matter. We practically are never asked to investigate cases. Patients are grouped into (1) refused (those able to

afford a physician and who have not been to an outside physician previously); (2) consultation cases (those seen once for diagnosis and referred outside for treatment), and (3) regular cases. We reckon a family of five with \$70 a month can pay a doctor for ordinary ailments. All investigations are made through the social service department, as otherwise there would be as many bases for decision as there were doctors.

Baltimore.—I do not see how it would be practicable to adopt a table of income, which would be the basis on which one would determine that a patient is financially unsuitable for treatment in the dispensary. Most of the patients admitted to the hospital wards are first examined in the dispensary. In this clinic there are no "standards," nor is there any attempt at financial investigation.

Cleveland.—Cases are grouped as to whether suitable for all conditions (A) or for special work, etc. This clinic would admit a working man with a family of five children in "A" (all conditions) if daily wage is \$1.75 (\$49 per month) or less, or into "C" (needs great or special) if he received from \$2 to \$2.25 per day (from \$56 to \$63 per month). The figure based on economic and sociological studies should be the ruling figure in all communities, but it is not and will not be until the old question of dispensary abuse and opposition to dispensaries by local physicians is done away with.

Boston.—We have not reduced our policy to writing. In practice our working standard has been that an income of approximately \$1,000 a year seemed to us necessary before a family of four or five persons should be expected to pay for medical service. . . . The patient is then interrogated by our admitting physician, who makes up his mind the best he can, but without any definite financial standard, whether the patient can pay or not. In my opinion this financial investigation, so-called, is worthless.

These are representative of the replies received. They make certain things clear. First, there are no definite or established standards in use on which to judge of the suitability of dispensary applicants. Secondly, there is no attempt by the majority of clinics to classify patients except by disease. Third, the question of financial suitability and investigation, while admittedly an important factor, has been worked out largely in a haphazard way, and all figures used are purely arbitrary. These figures vary all the way from \$50 to \$100 a month for a normal family, and obviously both cannot be correct as there is not a 100 per cent. difference in the cost of living between any two of our cities. The committee thus found that the methods and standards of other clinics were of questionable value, and a study of the entire question was undertaken.

TYPES OF CLINICS AND THEIR DEVELOPMENT

In order fully to grasp the subject of the medical dispensary, or clinic, it is essential to have a clear conception of its origin, growth and development, as its present day problems are to a large extent the result of changing social, economic and medical conditions.

There are two more or less distinct purposes for which dispensaries have been developed: (1) as a means of collecting material for the teaching of clinical medicine, and (2) as a means of furnishing free treatment to the indigent poor who for social or economic reasons are unable to pay for the services of a physician. As a rule, these clinics are connected with hospitals, but a few are independent or municipal.

The first group, teaching clinics, are rapidly diminishing in number, hand in hand with the decrease in the number of medical schools. Some, like the Washington University Dispensary, are maintained by schools and are independent of hospitals, while others are clinics of the second type with which the medical school has some form of connection. To a very large extent these clinics are charity clinics, and hence what is said below applies to them. Theoretically, there is the possibility of these clinics attracting persons not absolutely worthy objects of charity because of the prominence of the institution or of certain members of the staff. As a matter of fact, experience has shown that the objection to being used as material for teaching actually drives away a great many patients who are worthy of free treatment. This has become so marked a feature in some teaching clinics that there has been insufficient material for the purposes of instruction. The necessity of material for the instruction of medical students is so obvious that there can be no question as to the right or propriety of any legitimate medical school conducting a dispensary, provided it has a fixed rule that any patient refusing to act as material for purposes of instruction is refused admission. Should a teaching clinic lack material for purposes of instruction, it might with propriety lower its standards for admission, as it is not a purely philanthropic institution and the end in view justifies the purposes for which this is done. It is hardly consistent for a physician who has enjoyed the benefits of a thorough medical education (the average cost of instruction for the four years being around \$3,000 and the tuition charges from \$600 to \$800) to object to a clinic connected with a medical school on the ground that the clinic lessens the financial returns from private practice.

By far the larger proportion of outpatient clinics have been developed with the idea in view of caring for individuals who are unable to pay for competent medical advice and treatment. It is not my purpose to discuss the various causes or aspects of poverty except to call to mind that ill health, in itself, is one of the most common causes of improvidence, and hence of inability to pay for the medical attention necessary in order that the patient may be restored to health. To a very large extent the development of poverty in this country has gone hand in hand with the gradual change from a rural to an urban population and the massing together of people in the cities. In the rural districts or small cities the poor form a relatively small percentage and are not segregated. Under these circumstances the question of medical service for the poor has been settled by having each individual physician assume a certain share of the free work in the community without allowing this to become an overwhelming burden. As the cities have grown with the drift of the population to industrial centers, the relative number of dependents has increased, and, what is more important, they have collected in certain quarters or districts. The physicians in these districts would be overwhelmed by charity work if they had to assume the entire burden. If many of these sick poor were

forced to pay for medical treatment they would in turn be forced to a condition of living which would in itself tend to aggravate the physical condition. Recent "health surveys" have shown that even in cities with free clinics a large percentage of the sick are without the services of a physician. This is the underlying factor in the development of medical dispensaries, that is, they are an attempt to meet the results of economic conditions.

The system is in itself inherently wrong, for often persons are forced by it to accept private charity for what in reality is a condition for which society as a whole is to a large extent responsible and which should be a burden of the state. It should not be necessary for a few individuals and the medical profession as a whole to have to bear the burden of these economic conditions. In the older cities and countries of Europe it is recognized that the state must care for those persons who are ill and improvident, and various types of industrial, health and unemployment insurance have been devised. In America there are state and municipal hospitals, but there is no general system of caring for ambulatory patients with minor or chronic forms of illness which do not require hospital care, and which permit the patient in many instances to work for a part of the time.

In the older cities where there has been extensive poverty for many years, the free medical clinic supported by private charity has been developed to meet these conditions and has been accepted as necessary by the medical profession, although many objections were urged against this in earlier days. In the younger American cities, where the results of our economic and social system are just beginning to make themselves felt, the "free clinic" is again becoming the object of attack by members of the medical profession. A large part of the opposition to such clinics is due to the failure of physicians to grasp the evolving economic conditions underlying the necessity for some efficient form of medical service for the poor and unfortunate of the community. In January of the present year a bill was introduced into several of the state legislatures through the efforts of the Social Insurance Committee of the National Association for Labor Legislation which specifies compulsory health insurance for all families with earnings less than \$100 a month. Within the next few years a bill with similar purposes will undoubtedly pass many of our state legislatures, and it will materially affect the practice of medicine and change the character of the present free clinics or dispensaries.

Until some such form of insurance is established, the free clinic is apparently the only solution of the problem which, briefly stated, is to furnish an efficient type of service at the lowest possible cost to those persons who are deserving of free treatment. Although it has no official standing, it has a duty and certain obligations to society at large, to the sick person and to the medical profession. In any discussion these points must be considered and kept in mind, as when the dispensary as at present conducted is viewed from any one aspect alone, a very much distorted conception of the whole is obtained.

THE COST OF LIVING AND ITS RELATION TO FREE MEDICAL TREATMENT

It is apparent to any one giving the matter a few moments' thought that from a financial standpoint there is a line of division between patients entitled

to free treatment and those from whom payment for the physician's services can be rightly expected. This line, or zone as it might better be termed, is to a certain extent a variable one, depending on the conditions present in each individual case, and in a broad way on the relation between the income and cost of treatment. But there is a certain minimum figure or income below which there can be no question as to the financial suitability of an applicant for free treatment.

In its broad aspect this figure should be one which allows of a decent standard of living and includes adequate food, clothing and shelter, for without these three things health will suffer and the race will undergo physical degeneration. Moreover, these are things which society owes to the individual and which are necessary from a moral and ethical standpoint. This necessary income is dependent solely on the cost of living and must be decided on this basis.

There are two methods of obtaining family budgets. One is to figure out theoretically the least a family of a given size can live on and determine the cost of the various items. This method, though frequently used, is inaccurate, and the figure represents not what it actually costs to live, but what the person making the estimate thinks should be allowed. The second method does away with theory and ascertains the cost of living by tabulating the actual budgets or amounts spent by families of different sizes. It is only in this way that figures of any value can be obtained, and only studies in which this method has been used have been utilized in this report.

In many respects the most valuable study in this line was made by Chapin¹ nine years ago. Although in many respects his actual figures are no longer of much value because of the subsequent increase in the cost of living, the method used has served as a model for subsequent investigations, the results of which we have utilized. Chapin's figures are based on the so-called "normal family" of five persons; a working man, a woman at home, and three children under 15 years of age (not producing incomes), and were obtained by compiling the actual figures of a large number of families in regard to the income, and the detailed expenditures for food, clothing, lodging, heat and fuel, insurance, health and sundries. His conclusions were that from \$600 to \$700 a year income is wholly inadequate to maintain a proper standard of living; with an income between \$700 and \$800 a family can barely support itself, provided it is subject to no extraordinary expenditures by reason of sickness, death or other untoward circumstances; \$825 is sufficient for the average family of five to maintain a fairly proper standard of living in New York City.

In the group of from \$700 to \$800, the average expenditure was \$735.98, which was divided as indicated in Table 1. This sum is \$90 less than the figure of \$825 which Chapin considered necessary to maintain a decent standard of living for a normal family. It will be noticed that there is no provision for savings or recreation. The division of the clothing item shows how seemingly inadequate the amounts are: total, \$98.79 a year; divided into: man, \$33; woman, \$23; two children, \$30 (\$15 each); one child, \$12.

The point of Chapin's work is this: Normal families were just able to eke out a mere living on an income of between \$700 and \$800 a year provided no emergency such as ill health arose.

These figures are for 1907, and since that time the cost of living has increased some 16 per cent. according to United States government reports. Within the last year two reports have been issued which we have been able to use and which give more accurate data. One was a very extensive report of the New York State Factory Investigation Commission,² in which Chapin's methods were utilized. The other was the report of the New York City Board of Estimates,³

TABLE 1.—DISTRIBUTION OF EXPENDITURES ON INCOME BETWEEN \$700 AND \$800

Items	Amount	Percentage of Total
Food	\$335.82	43.6
Rent	161.36	21.9
Clothing	98.79	13.4
Light and fuel.....	36.94	5.0
Insurance	18.24	4.5
Health	14.02	1.9
Carfare	10.53	1.5
Sundries	60.28	8.2

which studied the cost of living for unskilled laborers. Both reports deal with the cost of living for a normal family in New York City. The total figures are \$840.18 and \$876.43, respectively. In Table 2 the two budgets are itemized, and in a third column they are averaged.

The average of the two figures is in all probability approximately correct, and will be used as a basis for our purposes. This sum, \$858.30, is the actual cost of living for the average normal workingman's family in New York, and is the minimum figure at which a decent and efficient standard of living can be maintained. It includes a figure of \$21 a year for health, physicians' and dentists' services and medicine for five persons, and makes no provisions for savings, as the insurance is only burial insurance. Since for our purposes we are trying to obtain a figure below which free medical treatment is unquestionably justifiable, it is necessary to deduct the item for health. As we have no data for subdividing this item, we have deducted the entire sum, \$21, making a total of \$837.30.

At once the question is raised, Can these figures be used for St. Louis? Is not St. Louis a much less expensive city to live in? If there is any material difference it would be in two of the items, namely, those for food and housing. This point is a very difficult one on which to obtain exact data. In 1909, however, a commission of the British board of trade inves-

TABLE 2.—COST OF LIVING FOR A NORMAL FAMILY IN NEW YORK

Items	Board of Estimate	N. Y. S. Factory Commission	Average
Food	\$380.00	\$325.00	\$352.50
Rent	168.00	200.00	184.00
Clothing	104.00	140.00	122.00
Fuel and light.....	42.00	20.00	31.00
Carfare	30.30	31.20	30.75
Insurance	22.88	35.60	29.24
Health	20.00	22.00	21.00
Sundries	73.00	102.63	87.81
Totals	\$840.18	\$876.43	\$858.30

tigated the budgets of over 90,000 families in twenty-eight cities in America. In their comparative studies, the cost for housing and food in New York City was placed at 100 units, and this served as a base line. On this basis the cost of housing in St. Louis was 101, and of food 97. In Table 3 the comparative cost of these items for some of the larger American cities

2. Fourth Report of the Factory Investigating Commission, New York, 1915, iv, 1461.

3. Report of the New York City Board of Estimates on the Cost of Living for Unskilled Laborers, New York, 1915.

1. Chapin: Standards of Living Among Workingmen's Families in New York City, New York, 1907.

is given. A combination of these two,⁴ food three units and rent one unit, gives: New York, 100; St. Louis, 98.

Therefore we have the right to assume that the figures for New York are approximately (within 2 per cent.) correct for St. Louis.

As the result of some investigations of my own, however, I am convinced that the figure for housing in St. Louis is high. In certain sections of the city, homes of the type which these figures represent are cheaper

TABLE 3.—COMPARATIVE COST OF HOUSING AND FOODS

Housing*			Foods†		
Rank	City	Units	Rank	City	Units
1	St. Louis	101	4	Boston	105
2	New York	100	14	New York	100
8	Boston	82	16	Cleveland	99
10	Philadelphia	79	19	St. Louis	97
17	Chicago	71	22	Philadelphia	96
20	Cleveland	64	25	Chicago	94

* Report, p. 516.

† Report, p. 531.

than in New York. I have therefore deducted 20 per cent. from the cost of housing, and in this way have reached a basic figure of \$800. A yearly income for a normal family of five below this figure entitles them to free treatment for any kind of illness and on all occasions.

The average working or laboring man has but little knowledge of his annual income or earnings, and always refers to his earnings by a weekly or monthly wage. If every one were working constantly, week in and week out, it would be a simple matter to divide this figure by fifty-two or by twelve to obtain the weekly or monthly wage needed to make up this sum. But the figure of \$800 is based on the cost of living and not on the wage, and hence it is necessary to consider the question of unemployment. Accurate figures for the extent of unemployment are exceedingly difficult to obtain as they fluctuate with trade, season and weather. As one third of the unemployment is attributable to ill health or sickness, we are, from the very nature of our study, dealing with a group of persons in whom unemployment is bound to be high. The best summary of all the available data is that of Nearing,⁵ who devotes a chapter to this subject, and who concludes that 20 per cent. of a workingman's time, averaging all industries, and skilled and unskilled labor, is spent in unemployment.

Consequently, unless there is a steady employment, to obtain an annual income of \$800, the weekly or monthly wage rate must be 20 per cent. higher than a weekly or monthly rate exactly totaling this sum. In this way (by adding 20 per cent.) we have figured the weekly wage rate sufficient for the bare cost of living for a normal family throughout the year, without provision for health or savings, to be \$80 a month or \$18.50 a week.

This figure applies to the total income of a normal family in which there is but one wage earner. As the children grow older and begin to earn, the additional wages must be added to that of the man; but it must be remembered that the family expense or cost of living increases at the same time for the clothes, carfare, etc., of the additional wage earner.

From this basic figure it is possible to construct a table of the cost of living for families of different sizes, except for the person living alone. The items

undergoing a change in proportion to the size of the family are those of food, rent and clothing, the others remaining more constant. The method used is to add or subtract the proportionate cost for a person of a certain age.

Food is estimated in units based on 10 units for an adult male, and 8 for an adult female (Atwater). The children are reckoned on the basis of 7 units for Child A, from 10 to 15 years; 5 units for Child B, from 5 to 10 years, and 3 units for Child C, under 5 years. Thus a total of 33 units for the normal family is reached. This makes each food unit approximately equal to \$11 a year.

The cost of clothing, using \$122 as the amount required in a year, is apportioned as follows: man, \$45; woman, \$32; Child A, \$17; Child B, \$15; Child C, \$13.⁶

If a three room house costs on an average \$147 a year, the cost of two rooms is approximately \$108 and of four rooms \$173 per year. Counting one and one half persons to a room, a recognized standard, we find that a family of two or three requires at least two rooms; four or five, three rooms, and six or seven, four rooms.

From these factors we can obtain the cost of living for families of sizes other than the normal, and the weekly or monthly wage rate necessary to obtain this sum. The factors used for food and clothing are given in Table 4. Two rooms cost approximately \$108, or \$9 per month; three rooms, \$144, or \$12 per month, and four rooms, \$180, or \$15 per month.

As for our purposes a fairly close figure is all that is needed, and as we have a factor of 20 per cent. unemployment which allows for considerable minor fluctuations, we can group the figures of Table 5 into few classes, which is essential for practical purposes (Table 6).

In the matter of persons living alone (boarding) other factors must be considered, and the cost of living cannot be obtained from the figures of a normal family, nor can the same figure be made to apply to the two sexes. A great deal of material has been gathered on the question of the working woman in reference to

TABLE 4.—FACTORS AND EXPENDITURES FOR FOOD AND CLOTHING

Persons	Factors Used	Amount per Year
Adult man	{ Clothing.. 45 } { Food..... 110 }	\$155
Adult woman	{ Clothing.. 32 } { Food..... 88 }	120
Child A (10-15 years)	{ Clothing.. 17 } { Food..... 78 }	95
Child B (5-10 years)	{ Clothing.. 15 } { Food..... 55 }	70
Child C (under 5 years)	{ Clothing.. 13 } { Food..... 32 }	45

minimum wage legislation, but comparatively little on the expense of a man living independently. It is impossible to consider much of the material in detail, but in making up our estimate the reports of the Oregon, Massachusetts and New York studies have been made use of, and such reports as Bulletin 167 of the United States Bureau of Labor. A good report² is that of the New York State Factory Commission for 1915. Certain factors in this report are of interest in our study.

4. Bull. 93, Bureau of Labor, Dept. of Commerce, 1911, p. 536.

5. Nearing: Wages in the United States, New York, The Macmillan Company, 1911.

6. Any one wishing to see what these sums will buy is referred to the New York State Report of the Factory Investigating Commission, p. 1661 et. seq.

First let us consider the cost of living for women at work. About two thirds of the women at work live at home, and in the majority of these homes (four fifths) there is a man at work for wages. So far as we are concerned, we must include the wages added by these additional workers to the total family income. But at the same time there is an increase in the cost of living, as the clothing, food and sundries cost more for the employed woman than for the housewife, in addition to extra carfare. It is obvious that a clerk cannot dress on \$33 a year and keep her position. An approximately correct figure can be obtained if \$2 a week or \$9 a month is added to the cost of living for each "A" child in our tables. This comes fairly near the increased cost for an employed woman or girl in the family. Against this increased cost, however, the additional weekly wage must be added to the income, as we must consider the family income as a whole without paying any attention to its proportional distribution. It is an economic fact that there is a tendency for the earnings of the head of the family to decrease as the children grow up and begin to add to the family income.

For the working woman living independently the factor of board at a profit rather than at cost enters in to increase the cost of living. In addition there is an increase for clothes and laundry which adds considerable to the cost of living. The minimum budget for a working woman in order that she may maintain herself at a standard of decency in New York is given in Table 7.

Inquiries made through the Young Women's Christian Association show that \$4 a week for room and board is a minimum standard for St. Louis, and the other items remain the same. This would require a steady income of \$8.65 a week with no allowance for health. Adding our 20 per cent. for unemployment (seasonal, industry and health) we find that an income of \$10 a week is necessary for a working woman living independently and without family aid to fall back on

TABLE 5.—EXPENDITURES AND NECESSARY INCOMES OF FAMILIES OF DIFFERENT SIZES

Size of Family	Actual Cost of Living a Year	Weekly Wage Required	Monthly Wage Required
Man and woman.....	\$ 554.00	\$12.75	\$55.50
Man, woman and Child C.....	599.00	13.85	60.00
Man, woman and Child B.....	624.00	14.40	62.25
Man, woman and Child A.....	649.00	15.00	65.00
Man, woman and Children B, C.....	705.00	16.30	70.50
Man, woman and Children A, B.....	755.00	17.50	75.00
Man, woman and Children B, C, C... or Man, woman and Children A, B, C (normal family).....	750.00		
Man, woman and Children A, B, B..	800.00	18.50	80.00
Man, woman and Children A, B, B..	825.00	19.25	83.00
Man, woman and Children A, A, B..	850.00	19.60	85.00
Man, woman and Children A, B, C, C	881.00	20.15	88.00
Man, woman and Children A, B, B, C	906.00	20.50	90.50
Man, woman and Children A, A, B, C	931.00	21.40	93.00
Man, woman and Children A, A, B, B	985.00	22.70	98.50
Man, woman and Children A, A, B, B, C	1,010.00	23.70	101.00

in case of illness. As a matter of fact, a large percentage of women living independently do have help to fall back on in case of necessity (as ill health) and hence should be regarded with the family income group.

For a man living alone the increased cost is about 10 per cent. additional, or \$11 a week. In both cases where there is steady employment the cost of living should not include the 20 per cent. increase. From this brief statement based on studies of minimum wage reports, and the cost of living, we can place our figures as follows:

1. Men or women living independently but with family aid to fall back on in case of necessity (ill health) are to be included with the family group.
2. Men, living independently, at labor in which there is a steady employment, are entitled to free treatment with a weekly wage rate below \$9.50 a week.
3. Women under similar conditions are entitled to free treatment at a weekly wage rate below \$8.75 a week.
4. Men, living independently, at work in an industry with much unemployment, are entitled to free treatment when the weekly wage rate is below \$11.

TABLE 6.—NECESSARY INCOMES OF FAMILIES OF DIFFERENT SIZES

Size of Family	With Average Unemployment Weekly	Monthly	With Steady Monthly Income
Man and woman.....	\$12-\$13	\$55-\$60	\$45-\$50
Man, woman and child.....	14- 15	60- 65	50- 55
Man, woman and two children..	16- 17	70- 75	60- 65
Man, woman and three children..	18- 19	75- 85	65- 70
Man, woman and four children..	20- 22	85- 95	72- 77
Man, woman and five children..	23- 25	100	85

Women under similar conditions are entitled to free treatment if the weekly wage rate is below \$10.

With the basic principle involved in this group there can be no argument. There may perhaps be some ground to question the accuracy of the figures arrived at in our study. In fact, they have been criticized as being too high by some workers to whom they have been submitted and too low by others. They represent, however, so far as I know, the only attempt to work out such a figure on what might be termed a scientific basis. I recognize their shortcomings and limitations.

THE INCOME AND NEEDS OF THE PATIENT IN
RELATION TO THE COST OF TREATMENT

Although, theoretically at least, it is possible to set apart one group entitled to free treatment because of an income below a certain fixed figure, it by no means holds that patients with an income above this figure are able to pay for medical services. A great many variables, chiefly the amount of income above the basic line, the nature of the illness, and the cost of efficient treatment, must be considered here. Thus a group of patients with an income slightly above the line of division is able to pay for treatment for a minor illness or injury but would be forced deeply into debt if the illness was long drawn out or of such a nature that the services of a number of skilled specialists were required. A concrete example will serve to illustrate the general question involved: A man with a wife and child has been earning about \$80 a month when employed, and has been going to a neighboring physician for years. His income has been just enough to live on efficiently, but not enough to provide for savings. He develops failing vision, and a proper diagnosis requires the services of an ophthalmologist, laryngologist, a neurologist and perhaps an internist or brain surgeon. It is obvious that he cannot pay the average specialist's fees for these examinations and continue to pay his private physician at the same time without lowering the standards of living for his family below the line of efficiency and decency.

We are dealing here with a phase of medicine which is coming more to the front every day and with increasing complexity. With the rapid development of the medical sciences and of delicate laboratory aids in diagnosis and treatment, it is becoming more and more impossible for a physician to cover effectively all fields of medicine, and the resulting specialization in

itself leads to each field becoming more highly specialized. This complexity of modern medicine with its resulting increased cost is an urgent and pressing problem and must be considered.

In attempting to grapple with this problem from the standpoint of the free dispensary, the committee sent out a letter to seventy-seven specialists in four different lines of work in St. Louis, in order to try to find out just what efficient treatment costs in certain conditions. The idea back of the letter was that it might be possible to work out some sort of sliding scale whereby persons with a certain income above the base line would be suitable for free treatment for certain conditions, but not for others, depending entirely on the cost of the medical services required. This we were unable to do in even a rough sort of way. We reached the conclusion that each case must be individualized and settled on its own merits by trained social workers, or, in brief, in the way in which we have been working in the past.

A third group which we were able to set apart is to a certain extent closely allied. It consists of those persons who are "temporarily embarrassed" financially, and whom a helping hand may start on an upgrade which will keep them permanently above the poverty line, while to force them still further into debt would probably end in their becoming permanent dependents,

TABLE 7.—MINIMUM BUDGET FOR A WORKING WOMAN *

Items	Expenditure
Clothing	\$ 88.00
Laundry	20.80
Room and board.....	208.00 (\$4 a week)
Lunches	46.80
Carfare	31.20
Insurance	20.00
Amusement and recreation.....	26.00
Health and incidentals.....	26.00
Total	\$466.80

* New York State Factory Investigating Commission.
Deduct \$16 for health, and we have a balance of \$450.80

a situation well known to social workers. Although each of these cases must be individualized as in the second group, the group seems to be a distinct one.

A fourth group is one composed of patients sent to the dispensary by a physician with a letter stating that a consultation is desired and that the patient is unable to pay a consultant's fees. These patients are often of distinct value to a teaching clinic, and they represent obscure and unusual conditions.

DISPENSARY ABUSE

I have intentionally reserved until last what, from a logical standpoint perhaps, should have come first, that is, the question of the need for standards and the need for such a study as this. In brief, it is the question of "dispensary abuse." This term is usually used to mean the treatment in a clinic of persons who are able to pay for the services of a private physician. Discussions of this subject are usually prefaced by the citation of an individual case which is magnified into the assumption that the majority of cases coming to the clinic are in the same category. As it is never denied or even assumed by those in charge of a dispensary that a certain proportion treated have imposed on the dispensary, this citation of individual cases is without point.

As a matter of fact, "abuse" as it is seen in a dispensary is a much bigger problem. It includes negligence on the part of physicians, overcharging and petty graft, all of which come to light in studying the his-

tories of a large dispensary. However, as this paper deals with the question of financial suitability, our discussion is limited to the form of "abuse" in the sense in which the term is usually used.

The question must be studied in regard to: what constitutes abuse, the extent of such abuse and the methods of elimination.

By our method of study it is difficult to define what constitutes financial ability to pay for medical services. Primarily, it is a question of income in relation to the cost of living. But we must also take into consideration the type of illness and the cost of treatment. We can fix a line, as we have done, an income below which entitles the patient to free treatment, but above these figures each case becomes a law unto itself. Thus a family of a certain size with an income of \$90 a month would be unsuitable for free treatment, but a family of the same size with debts the result of long standing illness might be a very worthy object of charity. We are unable to grasp the logic back of the idea that a case treated free in a physician's office is unsuitable for free treatment in a dispensary, as has been urged, on the ground that the patient may at some time be able to pay for the service. The complexity of modern medicine with the highly specialized departments and intricate methods of laboratory diagnosis have added a more and more complicating factor to the question of whether or not a patient can afford to pay for medical services. Realizing, then, that it is a difficult factor to determine just what constitutes abuse and that above a certain income line every case must be individualized, we can take up the question of how much abuse actually exists.

In 1910, an investigation was made in New York⁷ which showed that 672, or 90 per cent., of 745 patients treated were worthy of free treatment, and New York has always been pointed out as a city in which the multiplicity of clinics has fostered this type of abuse. A recent similar investigation covering 1,881 patients applying for admission at the Boston Dispensary showed that only 2 per cent. were able to pay for the services of a private physician.⁸ A recent investigation at the Presbyterian Hospital in Philadelphia showed that "abuse" was a very minor factor (2 per cent.).⁹

Some time ago the Washington University Dispensary investigated from a financial standpoint 932 consecutive new patients applying at the desk for admission. Ten per cent. of these were financially unsuitable for free treatment. But of this 10 per cent., 80 per cent. were the type of case which would as a routine be refused admission at the desk or referred to the social service department for further investigation. Thus but two patients in every hundred applying who were not deserving of free treatment would have been treated. This is certainly a small percentage of imposition, and much less, I imagine, than the percentage of the average physician's patients who are "bad pay." The cost and time involved thoroughly to investigate every applicant in order to eliminate this 2 per cent. is not worth the effort or expense. It would be comparable with a physician making a careful financial investigation of each patient in order to eliminate 2 per cent. who were bad pay.

Home investigation, for financial reasons, gives practically no information that cannot be gained on

7. Report of Committee on Dispensary Abuse of the County Medical Society of New York, New York State Jour. Med., 1913, xiii, 48.

8. Davis: Dispensary Abuse, Med. Rec., New York, Sept. 12, 1914.

9. Jones and Hostetter: Mod. Hosp., 1914, v, 321.

questioning by a competent and experienced investigator. Certain people will lie about their financial condition just as certain others will lie about their taxes or income returns. Experience has shown that in our clinic only 2 per cent. cannot be accepted at their face value, and, as stated, we do not believe that these 2 per cent. are particularly desirable patients for a private practice. It would require the services of a large number of full time workers to make any attempt at more than occasional home investigation, and it has been reckoned that such calls would cost, on an average, from 30 cents to 50 cents for each patient, or from \$6,000 to \$10,000 a year for our clinic. It must be recognized that a medical clinic is fundamentally a relief charity rather than a corrective one. As a matter of fact, the Washington University clinic spends nearly \$100 a month in the matter of investigation to avoid this so-called dispensary abuse, which is a sum, I venture to say, larger than is spent in any other clinic in the United States for the same purpose. We recognize that abuse to a certain extent does creep in, and the committee discussed the question with many physicians with the hope of obtaining some sensible and practical suggestions of methods of elimination. So far the criticism has been purely destructive in character.

At times the dispensary workers feel that the statements made by applicants are untrue. Recognizing that people will often balk at putting in writing what they have stated orally, a simple printed form to be signed stating that the applicant is unable to pay for medical services is desirable, under such circumstances.

It may not be out of place to discuss here the question of patients applying for treatment to the dispensary and not asking or expecting free treatment. Most of these have become dissatisfied with their physician and state frankly that they have lost confidence in him. Many tell stories of gross negligence and incompetence, even malpractice, on the part of the physician. Although most of these stories may be discounted as exaggeration on the part of the patient, it is nevertheless true that many have been "abused" by their physician. These persons do not ask free treatment; they ask only to be referred to a competent physician in whom they can have confidence. The dispensary has a definite moral obligation to the individual and to the community in these cases, and the dispensary admitting office refers them to members of its staff who are also practicing. In these cases the patient and physician do not come into touch with one another at the dispensary, and the patient is referred to the physician without his knowledge. No honest criticism can be directed against this method. The practice of physicians working in a dispensary referring patients to their private offices under the guise of more time required for proper treatment, etc., is an entirely different proposition, and is mentioned only to be condemned.

SUMMARY

Inquiry has shown that a definite standard of financial suitability for admission to free dispensaries has not been based on a study of the economic principles involved. There are two more or less distinct purposes for which dispensaries have been established, namely, for purposes of medical education and as a means of furnishing free treatment to the indigent poor. Each type of dispensary serves a purpose valuable in itself to both the medical profession and the public. Although it is natural to consider whether the

same standard of admission is suitable for each type of dispensary, no such difference has been used in working out the standard described in this paper. A basic income has been worked out for various types of families and individuals, below which patients should receive free medical services, and a classified scale is described for extending this standard for specified purposes.

The problem of dispensary abuse is in reality not so big as it is generally considered. Investigation shows that the actual percentage of abuse, where an effort is made to eliminate it, is small, and that but 2 per cent. of the patients being treated at the Washington University Dispensary are financially unsuitable for treatment. The various means so far suggested to eliminate this 2 per cent. are impractical.

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A CRITICAL ANALYSIS OF OUTPATIENT WORK FROM THE POINT OF VIEW OF EFFICIENCY*

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SAN FRANCISCO

This statistical study of a number of records of the medical department of an outpatient clinic has been made in the hope that a consideration of the end-results of the various examinations and diagnostic procedures might make for greater efficiency in outpatient work. Such a clinic as the one in which these records were made is coming to do a larger and larger part of the medical work of the community and is, morally at least, responsible to the community for the speed and effectiveness with which it does the work. Time is an item of the greatest importance to these patients, particularly because its loss entails a much larger decrease in income to them than to those of a higher social status. For this reason the time element has been considered along with the other factors in estimating efficiency.

Three hundred and forty-eight records form the basis of this report. Cards were headed with the following questions, the records examined with these points in mind, the case number noted on the card, and the tables and conclusions made later.

1. Age.
2. Sex.
3. Number of visits necessary for diagnosis.
4. Visits after diagnosis.
5. Visits insufficient for diagnosis.
6. Diagnosis made.
7. Roentgen-ray examinations.
8. Von Pirquet tests.
9. Laboratory tests (sputum, stool, blood, kidney function, test-meal, Wassermann).
10. Referred to the hospital.
11. Referred to other departments of the outpatient department.
12. Benefited.
13. Returning after three months.

1. *Age.*—The curve plotted in the accompanying chart shows that the second and third decades present a larger percentage of attendance than any of the others. The curve reaches its summit at the third decade, with 23 per cent. of the whole number of patients, and then sinks steadily to the eighth.

* From the University of California Medical School.

Table 1 shows the frequency of the more common diseases in the different decades. Disease of the circulatory system and nephritis increase steadily in frequency with the age up to the seventh decade. Tuberculosis is pretty evenly distributed throughout the whole series. Syphilis plays a proportionately greater part as a diagnosis between the ages of 30 and 50 than at other ages, and the same can be said of ulcer.

TABLE 1.—FREQUENCY OF DISEASES BY DECADES

	Decade							
	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90
Number of cases.....	22	78	81	66	54	36	8	3
Percentages:								
Heart.....	..	7	9	13	25	41	37	33
Tuberculosis of lung....	9	11	9	12	11	8	12	
Syphilis.....	..	2	8	9	5	2		
Arthritis.....	13	3	8	12	9	13	25	
Nephritis.....	..	2	6	4	9	11	25	
Ulcer of stomach and duodenum.....	..	3	6	7	3	2		
Prostatitis and urethritis.....	..	3	4	1	3			
Thyroid.....	4	6	2	6	7			
Appendicitis.....	..	2	1	3	3	5		
Diabetes.....	..	..	..	..	11	11		
Carcinoma.....	..	..	..	3	3	2		
Pernicious anemia.....	..	..	..	..	3	2		
Cholecystitis.....	4	2	1	4				
Visits insufficient for diagnosis.....	27	17	9	9	5			

All the cases of diabetes and pernicious anemia are found in the sixth and seventh decades. A rather remarkable fact demonstrated is that the younger patients are much less liable than the older ones to return a sufficient number of times to permit of a diagnosis being made.

2. Sex. — There were 192, or 55 per cent., of male, and 156, or 45 per cent., of female patients.

3. Number of Visits Necessary for Diagnosis. —An outpatient department is in the position of having to do a large amount of work speedily, but above all accurately. Because of reasons already mentioned, time is an important consideration to these patients, and, so far as possible, the aim should be to come to some definite conclusion as to the cause of the patient's symptoms with the minimum number of visits. If the cases are grouped according to the number of visits necessary for diagnosis, the results given in Table 2 are obtained.

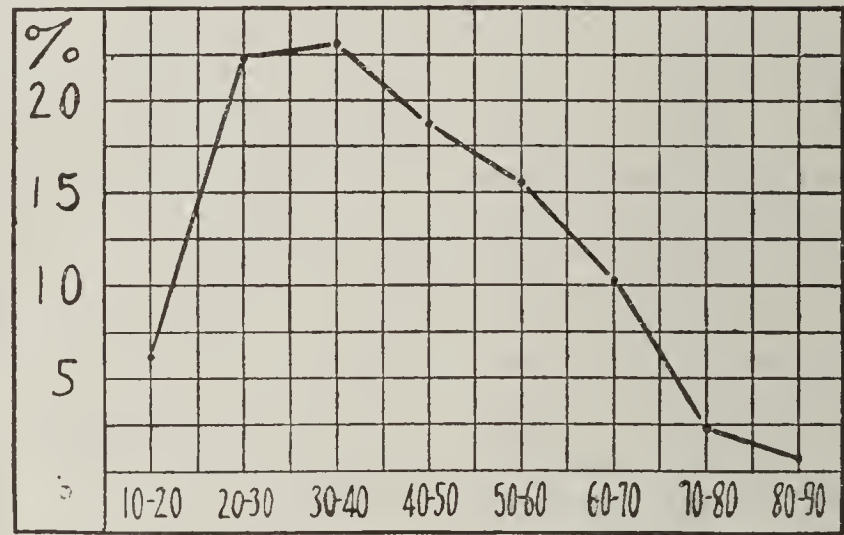
The number of visits required proportionately by each of the more frequent diseases is given in Table 3. Eighty-four per cent. of the cases of tuberculosis of the lungs were diagnosed in three visits, a fairly good result considering the difficulty of determining whether a lesion in the lung is or has been tuberculous and whether it is or is not active. That so large a number should have had to come more than twice is due to the repeating of sputum examinations which proved negative on the first search for tubercle bacilli. The advisability of thus repeating the sputum examination is questionable, and the examiner would probably do better to rely on his history and physical findings, hav-

ing only one sputum examination to aid his clinical judgment. Disease of the heart or vessels was generally easily determined, the question here being just what part the kidneys played in the clinical picture. In many of these cases the phenolsulphonephthalein test was performed, this necessitating an extra visit. As will be shown later, this test is of doubtful benefit in the type of cases seen oftenest in the outpatient departments, and the extra visit which it requires might well be saved by its omission. Thyroid dystrophy, diabetes, appendicitis, syphilis and bronchitis were practically all diagnosed in two visits. Nephritis required usually two or three. Eliminating the phenolsulphonephthalein test here, too, would reduce the number of visits made by these patients by 40 per cent. Ulcer cases in which test meals and roentgenograms were taken as a routine required three or four visits, and this number does not seem too high when the amount of work necessary is considered. It seems possible, then, to reach in two visits a conclusion as to the cause of the patient's symptoms, in the commoner diseases, excluding, of course, ulcer.

4. Visits After Diagnosis. —Of the whole number, 133, or 38 per cent., returned after a diagnosis had been made. It is not possible to determine from the records just what percentage lived outside of this city,

but the impression is left that a definite number come from the country to the clinics merely for diagnosis and form a part of the 62 per cent. who never return. Another part is formed by those who are reassured when informed of the triviality of their complaint. Others fail to return after they have established the nature of their ailment because we can give them practically no assurance of any considerable benefit that will result. Much of the patient's attitude toward his disease

is reflected from that of his physician. If the latter is hopeful of improvement, the patient will be correspondingly so. The introduction of the principle of focal infection has marked a great advance in therapy in that improvement may be looked for in cases which heretofore have been treated only symp-



Percentage of attendance by decades: the ordinates represent the percentage of patients, the abscissas the decades. The second and third decades show a larger percentage of patients than any of the others.

TABLE 2.—NUMBER OF VISITS NECESSARY FOR DIAGNOSIS

Visit at Which Diagnosis Was Made	Number	Percentage of the Whole
First.....	95	27
Second.....	82	24
Third.....	45	12
Fourth.....	20	5
Fifth or later.....	13	3

tomatically. Many patients who are instructed to return from time to time but fail to do so could be brought back to the clinic by a follow-up system.

5. Visits Insufficient for Diagnosis. — Forty-one patients, or 11 per cent. of the whole number, did not make a sufficient number of visits to justify making

a diagnosis. This means a large loss of time and efficiency, part of which could be avoided. A certain portion of the responsibility for this falls on the physician either because he is unable to form a judgment as to the cause of the complaint or because he does not impress the patient with his ability to do so. A larger share, however, must rest with patients who, after taking whatever time is necessary for a preliminary examination, fail to return for completion of the work. Many of these people could be eliminated by the institution of an examining department to which the patient would be referred immediately after registration. Here a brief survey could be made without writing elaborate records, and, if the complaint did not merit further attention, the patient could be dismissed at once. This would sift out the greater part of the class who do not return a sufficient number of times for diagnosis, and at least assure that the more important cases received the proper time and attention.

6. *Diagnosis Made.*—A diagnosis was not found on sixty-eight, or 19 per cent. of the cards. Subtracting the number of patients who did not come sufficiently often to establish a diagnosis, there remain twenty-seven cases, or 7 per cent. of the whole number, in which a definite opinion could not be reached.

7. *Roentgen-Ray Examinations.*—Roentgenograms were made for eighty-four, or 24 per cent., of the patients. They play by far the largest part in the diagnosis of gastro-intestinal conditions, but large numbers have been taken to show joint lesions and in search for alveolar abscesses. In fifty-six cases, or 66 per cent., of those who had roentgenograms, the plates or screen examinations showed a pathologic process. The remaining plates were negative except so far as they helped to rule out certain conditions.

8. *Von Pirquet Tests.*—Tuberculin skin tests were done quite frequently in the first half of the series, and then almost completely abandoned. Altogether the test was performed on twenty-six patients, or 7 per cent. of the whole number. Table 4 shows the results.

In three cases the results are not recorded or the patients failed to return for a reading of the test. It

TABLE 3.—PROPORTIONATE NUMBER OF VISITS REQUIRED

Disease	No.	Number of Visits for Diagnosis				
		1 per Cent.	2 per Cent.	3 per Cent.	4 per Cent.	4+ per Cent.
Tuberculosis of lungs.....	41	34	29	21	7	7
Circulatory system.....	50	50	34	12	4	
Arthritis.....	29	55	34	10		
Thyroid.....	13	61	38			
Diabetes.....	9	77	22			
Appendicitis.....	6	100				
Syphilis.....	16	31	68			
Bronchitis.....	7	57	42			
Nephritis.....	20	10	40	40		10
Ulcer.....	14	..	21	42	28	7

would seem that the von Pirquet test as done in this small series of cases was of no value except when negative.

9. *Laboratory Tests.*—(a) Sputum examinations were made for thirty-six patients, or 10 per cent. of the whole series. In some cases the examination was repeated two or three times. Tubercle bacilli were found only five times, influenza bacilli once. Thus there were about 83 per cent. of negative examinations, and in three cases the specimens were from patients with very evidently active tuberculosis. The diagnosis of active tuberculosis was made in twelve cases with-

out sputum examinations, sometimes because there was no expectoration, and sometimes because it was considered desirable to place the patient in the tuberculosis clinic at the earliest possible moment. Generally it would seem best to make only one examination of the sputum.

(b) Stool examinations were made for forty-eight patients, or 13 per cent. of the whole. Pathogenic amebas were found three times, *Taenia uncinaria* and *Trichomonas* each once. Occult blood was found in

TABLE 4.—RESULTS OF VON PIRQUET TESTS

Von Pirquet Test	Final Diagnosis		
	Process Active	Process Arrested	No Tuber- culosis
Slight.....	1	2	4
Moderate.....	4	0	3
Marked.....	1	2	2
Negative.....	0	0	4

ten cases. Five of these were ulcer, three were carcinoma, in one the diagnosis was doubtful, and in another the test showed the merest trace. The presence of occult blood in the stools while the patient was on a meat-free diet seems to have had great significance in this small series of cases.

(c) Blood examinations were made in thirty-two, or 9 per cent. of the total number. Among the patients on whom complete blood counts were made there were three cases of pernicious anemia, one case of chlorosis, one case of hemolytic icterus, and five cases of secondary anemia due, respectively, to uncinariasis, chronic tonsillitis, carcinoma of the pancreas, menorrhagia and Hodgkin's disease. Plasmodia were found twice. In all, about 31 per cent. of the blood examinations were negative in spite of the fact that the counts were made by the examining physician himself.

(d) The phenolsulphonephthalein test for kidney function was done twenty-six times, or in 7 per cent. of the cases. The time required by it can be ill afforded unless it gives definite and decisive information. It was used rather frequently during the first half of the series, and then given up almost entirely because it was felt that the results did not justify the expenditure of time. Although there were fourteen cases with a blood pressure of 160 or higher, and eleven of these had albumin in the urine, there was only one patient with hypertension who had a phenolsulphonephthalein excretion of under 50 per cent. in two hours. We must suppose that some of these cases had a certain amount of kidney damage, but the phenolsulphonephthalein test does not enable us to distinguish the mild nephritides from the simple hypertensions, at least not as demonstrated in this small series.

(e) Test meals were given in fifty-five cases, or in 15 per cent. of the whole number of patients. Except for ten cases in which the fractional method was used, the Ewald meal was employed as a routine and the stomach emptied in three quarters of an hour. On a number of the histories the data obtained are absent in part so that there remain but twenty-two cases in which the full results were satisfactorily recorded. Ten of these had a content of 100 c.c. or over, and among the ten there were six cases of ulcer, one case of pyloric stenosis, probably from an old ulcer, one case of perigastric adhesions, and one case with frequent blood in the stools and much nausea but a negative Roentgen-ray examination. Seventy per cent. of

the patients in the series with an abnormally high content were ulcer cases, 60 per cent. complained of vomiting, and 30 per cent. showed a residue in six hours by the Roentgen-ray examination. Twelve patients had a content of less than 100 c.c. Twenty-five per cent. of these were ulcer cases, 25 per cent. complained of vomiting, and none showed a six-hour residue by the Roentgen-ray examination. Of those that vomited, two were not stomach cases. Thus a stomach content of 100 c.c. or more in these patients was frequently accompanied by ulcer and by a history of vomiting, and the Roentgen ray often confirmed the delay in the passage of the stomach content to the duodenum. On the other hand, a content of less than 100 c.c. was infrequently accompanied by ulcer, and when there was a history of vomiting it was more often due to gallbladder or perigastric disease. The fractional method did not give results that justified the large expenditure of time.

(f) The Wassermann test was made on 169 patients, or 48 per cent. of the whole number. Syphilis was diagnosticated in twenty-one, or 6 per cent. of the cases, six times when the test was negative. Among the fifteen who had a positive Wassermann test, eleven, or 73 per cent., showed signs that suggested syphilis at once, and four, or 26 per cent., though they did not show these signs, gave a history of a genital sore which would have led to a Wassermann test. These figures suggest that syphilis is discoverable in the history or in the physical examination in the vast majority of cases. Eighty-seven per cent. of the patients whose blood was tested had a negative report and did not present enough evidence to diagnosticate syphilis, though a certain number gave a history of a soft sore or had an enlarged spleen or fundus changes. The conclusion is evident that the complement fixation test was used in a great many cases for insufficient cause.

10. Twenty-nine, or 8 per cent., of the patients in this series were referred to the hospital for investigation or treatment. Twenty-two, or 74 per cent. of those admitted, were given an admission diagnosis which was corroborated or not made more definite in the hospital. The efficiency of the outpatient department, then, as regards cases which could be more fully investigated was roughly 75 per cent.

11. One hundred and ten, or 31 per cent., of the patients were referred to other departments of the outpatient department for examination and advice. A few of these cases were frankly not medical, but most of the number had been properly sent to the medical department for examination. Sending these patients for consultation is a very time consuming procedure, for it usually means that the patient is obliged to spend another morning to get the opinion of the department to which he is referred, and still another to report to the medical department again. This can be avoided by equipping the medical department so that the ordinary pelvic, prostatic, ophthalmoscopic and orthopedic examinations may be made without referring the patient to another department. In the greater number of cases the opinions thus obtained are sufficient for diagnosis and the patient can later be referred to the proper department for treatment when this is necessary.

12. It is found very difficult to obtain from records any definite idea of just what benefit, if any, is experienced by the patients. An examination of the 348 records shows that 130 have had some benefit from their treatment but that the remaining 218, or

62 per cent., cannot be said to have profited from their visits to the clinic. This number, of course, is largely made up of patients who failed to return a sufficient number of times for diagnosis, of those who for some reason could not return, of those suffering from conditions which by their nature were not liable to improvement or even to alleviation, and finally of those who unfortunately were incorrectly diagnosed. It is possible that early and thorough treatment of gonorrhea, prolonged treatment of syphilis, proper oral hygiene, and care of necrotic teeth will prevent the development of many cases of chronic arthritis, endocarditis and nervous and circulatory disease, so that in the next ten or twenty years the number of patients benefited will increase. The fact remains that 62 per cent. of the patients in this series failed to show any improvement.

13. In order to get an idea of the hold that the clinics have on the patients, the total period of time that they visited the department was noted. It was found that only sixty-one, or 17 per cent., returned after three months, in spite of the fact that they are urged to return from time to time for advice or further treatment, and that the ones who did return after this period were usually those on whom the examining physician had more or less of a personal hold. The speed with which the case was handled was also a factor.

CONCLUSIONS

It is obvious from an examination of the preceding figures that the number of cases is too small to determine the value of the different laboratory procedures. They are merely suggestive and might form the basis of future investigation in which a larger number of cases could be considered with these points in mind. Certain facts are brought out, however, and the following conclusions seem justified:

1. Thirty-eight per cent. of the patients failed to return after diagnosis. The introduction of a follow-up system would decrease this percentage.

2. Eleven per cent. of the patients did not return a sufficient number of times to justify making a diagnosis. The institution of a department for preliminary examination of the patients is suggested in order to assign the cases to the proper departments and to eliminate those who come for trivial causes.

3. There were twenty-seven cases, or 7 per cent., of the whole number, in which it was not found possible to make a definite diagnosis.

4. Seventy-five per cent. of the patients sent to the hospital for further examination or treatment had a correct admission diagnosis.

5. Much of the time lost in referring patients to other clinics for consultation might be saved by equipping the medical department for the commoner special examinations.

6. Only 38 per cent. of the patients in this series were benefited by their visits to the clinics.

7. Eighty-three per cent. of the patients did not return to the clinics after three months.

I feel that those who have taken an interested part in outpatient work will agree that there is here the same need for careful attention to detail and effectiveness as in hospital work, but that this is rarely given. The figures show that this work, when considered from the point of view of the end-results, is disappointing, and they are given with the hope of stimulating interest in outpatient work and raising its standard.

240 Stockton Street.

IMMUNITY CONFERRED BY THE TRANSFER OF IMMUNE AND OF MIXED IMMUNE AND SENSITIZED SERUMS*

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We venture to present a few facts on an intricate subject, conscious that their full meaning and value must await the verdict of prolonged research.

In a recent investigation by two of us¹ it was found that when horse serum was dropped into the nose of a guinea-pig on alternate days, as few as four times, the animal became biologically modified in one of two opposite directions. A "toxic" injection of a large dose of serum given by the vein sixteen days after the last instillation could strongly shock or kill the guinea-pig. That is, the animal had become "sensitized" to the horse serum absorbed through the mucous membrane of the nose as if it had been given by subcutaneous injection. In certain animals, however, the toxic injection of horse serum not only did not kill, but produced scarcely noticeable symptoms of reaction.

Such a result would be attributed to incomplete absorption of the antigen were it not that a second large intravenous injection of serum, given two weeks after the first, was likewise frequently withstood.

In the work referred to it was found that the quality of the effect depended on the quantity of the serum instilled. A dosage of 0.2 c.c. of horse serum generally produced fatal anaphylaxis, while a dose of 0.04 c.c. commonly conferred tolerance.

We could explain our results only on the hypothesis that the absorption of horse serum, according to dosage, initiated in the guinea-pig two opposite reactions, one of which was manifested by the anaphylactic state and the other by a condition of primary increased tolerance for the antigen. We further found that guinea-pigs prepared by a course of nasal instillations of serum, as compared with animals prepared by massive intraperitoneal injections, responded differently to a series of intravenous injections of horse serum. Animals given the preliminary treatments by the parenteral route, as is well known, tolerate continuously increased amounts of serum in spaced intravenous injections; but if a long resting period, say upward of 100 days, intervenes, there is more or less pronounced return toward hypersensitiveness.

When, on the contrary, guinea-pigs prepared by the nasal instillation of serum are submitted to a similar course of intravenous injections, tolerance for the antigen apparently increases with the length of the resting period, at least during the lapse of 125 days.

One of the fundamental data of immunology is the presence in the blood of an animal sensitized to a foreign serum of an anaphylactic antibody. When the serum of an animal sensitized to horse serum is injected into the peritoneal cavity of a normal guinea-pig, this creature itself passively acquires hypersensitiveness to horse serum.

In the present work we undertook to solve the following apparently simple problem: Given two guinea-pigs, one of which is hypersensitive to horse serum and the other resistant to it, does the serum of the latter animal contain anything which may neutralize or modify the admitted anaphylactic effects induced by the serum of the hypersensitive animal? An affirmative result would suggest the hypothesis of an "immune body" functionally opposite in action to that concerned in anaphylactic reactions.

The meager results thus far obtained are presented now only because it has become necessary to postpone indefinitely continuation of the work. This survey has employed seventy-two animals in twelve series of experiments. The crucial purpose of each group of experiments was to obtain the blood serum of two guinea-pigs, one of which was highly resistant and the other highly sensitive to the intravenous injection of horse serum. The donor pigs were bled directly into tubes in which the serum was separated by centrifugation within half an hour. The serums from the two animals were injected at once, separately and mixed in various proportions, into the peritoneal cavities of normal guinea-pigs having an average weight of 300 gm. The mixed serums were incubated together for from fifteen to forty minutes, either at room temperature or at 37 C. (98.6 F.) before injection. After a resting period of from two to three days, these pigs received an intravenous injection of 0.25 c.c. of horse serum and, in case of survival, the injection was repeated at intervals of fourteen days or more.

Our usual method of procedure was to inject 3 c.c. of the serum from sensitive and resistant animals, respectively, into two normal guinea-pigs, and then mixtures of serums in the proportions 3 + 1, 1 + 3 and 1 + 1 into other normal animals. Our first technical difficulty was encountered in the preparation of animals with such a high blood content of anaphylactic antibody that a normal pig receiving 3 c.c. of the serum would succumb in forty-eight hours to the intravenous injection of 0.25 c.c. of horse serum. In most cases the recipient pig was only shocked with the first intravenous injection, succumbing to the second. The usual preparatory treatment of pigs designed to develop anaphylactic antibodies consisted in from three to four daily intraperitoneal injections of from 2 to 5 c.c. of horse serum, the pigs being bled from fourteen to forty-eight days later.

It is obvious that the degree of sensitization acquired by the normal pigs, as a result of the intraperitoneal injection of sensitized serum, would be manifested as an anaphylactic response to the first intravenous injection of horse serum.

Eight of the forty-six normal animals receiving the serum of treated pigs died with the first intravenous injection of horse serum. Three showed no definite reaction, one of these succumbing to the second intravenous injection. The remainder showed a varying degree of reaction.

It is further obvious that the first intravenous injection of 0.25 c.c. of horse serum would, under ordinary conditions, strongly sensitize the guinea-pigs so that they would invariably succumb to a second injection of a like amount repeated after fourteen days or longer.

Our experiments show, however, that eleven of the forty-six pigs receiving serum of the treated animals withstood the second intravenous injection, and seven withstood three or more such injections, none of these, in fact, dying under treatment. The guinea-pigs used

* Read before the Section on Practice of Medicine at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Sewall, Henry, and Powell, Cuthbert: On the Conditions and Characters of the Immunity Produced in Guinea-Pigs by Instillation of Horse Serum into the Nose, *Jour. Exper. Med.*, 1916, xxiv, No. 1.

as donors of serum may be divided into two general classes. Those of the first class had been treated by the instillation of horse serum into the nose, but did not receive thereafter the usual intravenous injection of this serum. Half of these animals were instilled with what we call "protective" doses of 0.04 c.c. of horse serum, and half with "sensitizing" doses of 0.2 c.c. of the serum. From the results of parallel experiments it was assumed that the animals instilled with the smaller dosage would have withstood an intravenous injection of 0.25 c.c. of horse serum in sixteen days, and that those instilled with the larger dosage would have succumbed to such an injection. More ample experience has shown that this sharp biologic distinction between animals according to the amount of antigen which they have received cannot always be predicated; nevertheless it is obvious that remarkable and specific properties may be acquired by the serum of guinea-pigs treated only by instillation of horse serum, without subsequent reinforcement with intravenous injection. This is shown in Table 1.

The letter L in the table signifies that the guinea-pig survived its intravenous injection with scarcely perceptible reaction; the number of + signs indicates degrees in severity of anaphylactic shock.

It will be seen in the third column that every pig was to a degree sensitized by the intraperitoneal injection of serum from the donor animals. In the fourth column we see that pigs Nos. 5 and 6, which had received mixtures of serum from donors A and B (the mixtures having stood at room temperature for about thirteen minutes) survived the second intravenous injection, and repetitions of the same at various intervals and with increasing dosage.

We defer speculation as to the meaning of these facts until the general discussion at the close of this

TABLE 1.—EXPERIMENTS WITH SERUM OF GUINEA-PIGS TREATED ONLY BY INSTILLATION OF HORSE SERUM

Donor Pigs†	Normal Pigs	Serum Intra-peritoneally, C.c.	Results of Intravenous Injection of Horse Serum*							
			0.25 C.c.				0.38 C.c.			
			First, 48 Hrs. After Intra-peritoneal	Second, 15 Days After First Intra-venous	Third, 14 Days After Second Intra-venous	Fourth, 17 Days After Third Intra-venous	Fifth, 12 Days After Fourth Intra-venous	Sixth, 59 Days After Fifth Intra-venous		
A	1	0.75	L	D						
A	2	4	L ++	D						
B	3	0.5	L +	D						
B	4	3.25	L +++	D						
A & B	5	A, 0.75 B, 2	L +	L +++	++++	L +++	L +	L +		
A & B	6	A, 2 B, 0.5	L +	L +++	L +++	L +	L	L		

* In this and the following tables, D means "dies"; L means "lives after very slight reaction"; L +++ means "very severe reaction."
† Preparation of donor pigs: A, immune; received six nasal instillations of 0.04 c.c. horse serum, alternate days; B, sensitive; like treatment with 0.2 c.c. horse serum. Both bled after 21 days.

article. Suffice it now to postulate that the recipient Guinea-Pigs 5 and 6 have acquired an active immunity. One hundred and nineteen days elapsed between the intraperitoneal injection of immune serum and the last intravenous injection of horse serum. During this time six injections of horse serum were given and, in spite of the increase in the amount of antigen, the immunity of the pigs was progressively strengthened after the third treatment.

In numerous experiments which we have performed on pigs born of immune and sensitive mothers, never

have we seen one survive the second intravenous injection of horse serum. It might be maintained, of course, that our Pigs 5 and 6 acquired their active immunity from the small residue of horse serum remaining free in the circulation of the donors A and B, but, as will be seen shortly, such an explanation is scarcely tenable. Nevertheless, this interpretation of the results is perhaps supported by the data conveyed in Table 2.

In this experiment both donor pigs were highly immunized against horse serum. After six nasal instil-

TABLE 2.—EXPERIMENTS WITH SERUM OF GUINEA-PIGS HIGHLY IMMUNIZED AGAINST HORSE SERUM

Donor Pigs*	Normal Pigs	Serum Intra-peritoneally, C.c.	Results of Intravenous Injections of 0.25 C.c. Horse Serum			
			First, 47 Hours After Intra-peritoneal	Second, 19 Days After First Intra-venous	Third, 16 Days After Second Intra-venous	Fourth, 45 Days After Third Intra-venous
A	1	3	L	L	L +	L ++
B	2	3	D			
A & B	3	A, 1 B, 1	L	L ++	L +++	L ++

* Donor pigs treated by a course of nasal instillations and later by intravenous injections of horse serum. A was bled 19 days after last intravenous of 0.75 c.c. horse serum. B was bled 17 days after intravenous of 0.88 c.c. horse serum.

lations of 0.04 c.c. of horse serum, each withstood, with scarcely perceptible reaction, the intravenous injection of 0.38 c.c. of horse serum after sixteen days. Sixteen days later a similar injection was borne with moderate reaction. Sixty-seven days later A reacted moderately to an intravenous injection of horse serum increased to 0.75 c.c., and in sixty-nine days B responded in the same way to an intravenous injection of 0.88 c.c. of horse serum. These pigs were bled at the same time, A nineteen days after receiving 0.75 c.c. of horse serum, and B seventeen days after receiving 0.88 c.c. of the serum. It is seen that the normal recipient of B's serum died with the first intravenous injection, while the other two recipients were immunized. The mixed serums of A and B were incubated at 37 C. for twelve minutes.

It is worth while noting that the immunity conferred on normal guinea-pigs by this method usually develops more slowly and less perfectly than in animals immunized after a course of nasal instillations of horse serum.¹

Our experiments substantiate the opinion that the effect of serum transferred by intraperitoneal injection to a normal animal depends not only on its composition but also on the quantity injected and, when mixtures of the serum are used, on the relative amounts of "immune" and "sensitive" serum employed.

Our experiments are far too limited in number to establish the quantitative relations of the variables in this supremely practical problem. Nevertheless, certain conclusions seem to be indicated, thus: mixtures of immune and sensitive serums appear to be more potent to confer immunity on the normal guinea-pig than immune serum alone, and those mixtures which contain the smaller proportion of immune serum are apparently most effective in this direction.

Mixtures of the serum of two hypersensitive donors, on the other hand, appear to be quantitatively more potent to induce the anaphylactic state in normal pigs than either serum alone.

In Table 3 the results of three series of experiments are condensed. In the first, the immune Pig A, after a course of nasal instillations with horse serum, had received at long intervals five intravenous injections of horse serum, the last, amounting to 0.75 c.c., being given 116 days before the pig was bled. The animal was a female, and offspring born to it late in the treatment were completely refractory to subcutaneous injection of 0.1 c.c. of horse serum, while offspring of a sensitive mother succumbed to such an injection. Pig B was bled twenty-five days after its course of intraperitoneal injections; its serum, no doubt, would have been richer in anaphylactic antibodies had a longer

TABLE 3.—RESULTS OF THREE SERIES OF EXPERIMENTS

Donor Pigs*	Normal Pigs	Mixed Serum Intra-peritoneally, C.e.	Results of Intravenous Injections of 0.25 C.c. Horse Serum				
			First, 62 Hours After Intra-peritoneal	Second, 14 Days After First Intra-venous	Third, 13 Days After Second Intra-venous	Fourth, 14 Days After Third Intra-venous	Fifth, 33 Days After Fourth Intra-venous
A & B	1	A, 2.5 B, 1.5	L +	D			
A & B	2	A, 1.5 B, 2.5	L ++	L +++	L +++	L +	L
		Separate and Mixed Serums	First, 37 Hours After Intra-peritoneal	Second, 15 Days After First Intra-venous	Third, 13 Days After Second Intra-venous	Fourth, 36 Days After Third Intra-venous	
C	1	3	L	L ++	L +	L	
D	2	3	D				
C & D	3	C, 3	L +	D			
C & D	4	D, 1 C, 1 D, 3	L ++	D			
		Separate and Mixed Serums	First, 37 Hours After Intra-peritoneal	Second, 14 Days After First Intra-venous	Third, 42 Days After Second Intra-venous		
E	1	5	L +	L +++	D		
F	2	2	L ++	D			
E & F	3	E, 2	L +	L ++	D		
E & F	4	E, 2 E, 1 F, 2	L +	L ++	L +++		

* Preparation of donor pigs: A, immune pig; 6 nasal instillations, 0.2 e.e. horse serum followed by 5 intravenous injections in +5 months; last intravenous of 0.75 e.e. horse serum given 116 days before bleeding. B, sensitized pig; 4 intraperitoneal injections of from 2 to 5 e.e. horse serum daily; bled 25 days after last intraperitoneal. C, immune pig; nasal instillations of 0.2 e.e. horse serum followed by 3 intravenous injections of horse serum in 51 days; last intravenous of 0.5 e.e. horse serum given 103 days before bleeding. D, sensitized pig; prepared like B, but bled 41 days after last intraperitoneal. E, immune pig; prepared by 12 daily instillations of 0.02 e.e. horse serum followed by 2 intravenous injections of horse serum within 3 weeks; last intravenous of 0.38 e.e. horse serum 107 days before bleeding. F, sensitized pig; three intraperitoneal injections of horse serum, from 1 to 4 e.e., daily; bled 7 days after last intraperitoneal.

interval elapsed. It is noticed that a stronger protection is afforded by the serum mixture containing the smaller amount of "immune" serum A. The same result is noted in Pig 4 of the third experiment. In the second experiment 3 c.c. of the serum of the sensitive Pig D contained enough anaphylactic antibodies to make the normal Pig 2 fatally sensitive to an intravenous injection of horse serum. Although the serum of the immune Pig C was rich enough in protective substance to protect Pig 1 against a series of intravenous injections of horse serum, it could only partly inhibit the fatal effect of the serum of D when mixed with it.

After it had been determined that immune serum and mixtures of immune and sensitized serum inoculated into normal guinea-pigs could protect them

against anaphylactic death following intravenous injection of the antigen, it was obviously desirable to determine whether animals already hypersensitive to horse serum could be desensitized by similar treatment. A considerable number of experiments were performed in which guinea-pigs, sensitized to horse serum by subcutaneous injection, were given intraperitoneal injections of from 3 to 5 c.c. or more of serum and its mixtures, which probably would have protected normal animals against anaphylaxis. Each recipient pig was treated by an intravenous injection of horse serum in from three to seven days after the intraperitoneal injection, and each promptly died. We conclude that *prophylaxis* and *cure* of sensitization are practically independent problems. A useful discussion of the essential differences between prophylactic and therapeutic vaccination has been given by Theobald Smith.²

COMMENTS

The present work must be considered in the light of facts announced in the previous article,¹ of which it is a continuation.

We are strengthened in the opinion expressed a year ago³ that two different reaction bodies are formed in a normal animal when a foreign protein is introduced into its circulation. One of these is the anaphylactic antibody familiar to literature. The other is a protective antibody which averts the changes which result in anaphylactic shock. These antibodies probably always exist together in the circulation but, according to circumstances, in very different proportion. In the donor pigs which we have termed "sensitive" the anaphylactic antibody greatly predominates, while in the "immune" pigs the protective antibody is more or less pure. It is characteristic of the metabolism set up by the repeated absorption of very small quantities of horse serum by the nose that it results in the preponderant formation of the protective antibody. In an important research by Gurd,⁴ conclusions are expressed which agree, in parts, exactly with our own:

The experiments . . . are interpreted by the author as proving the presence, in the circulating blood of immune animals, of bodies which are potent to induce the hypersensitive state when introduced into normal animals and also of bodies which if injected in sufficient quantities are able to render normal animals immune.

We have shown that our "immune" serum, that presumably surcharged with protective antibodies, is alone capable of protecting normal guinea-pigs against a series of inoculations of horse serum, and that mixtures of "immune" and anaphylactic serums appear to be still more potent in this direction.

Considerable evidence has been developed, both from laboratory and clinical fields, which supports the view that a disease-producing organism or substance when combined with certain contents of immune serum has a peculiarly vaccinating or even curative effect.⁵ Theobald Smith⁶ seven years ago suggested the employment of mixtures of toxin-antitoxin in the prophylaxis of diphtheria. The more recent use of "sensitized" vaccines is evidently founded on the same principle.

2. Smith, Theobald: Boston Med. and Surg. Jour., 1910, clxiii, 275.
3. Sewall, Henry and Powell, Cuthbert: Studies on the Relations of the Hypersusceptibility and Insusceptibility Induced in Guinea-Pigs by the Instillation of Horse Serum into the Nose, Arch. Int. Med., October, 1915, p. 605.
4. Gurd, F. B.: Jour. Med. Research, 1914, xxxi, 205.
5. Wood, F. C., in Forehheimer's Therapeutics of Internal Diseases, 1914, i, 125.
6. Smith, Theobald: Jour. Exper. Med., 1909, xi, 241.

A rich experience has been accumulated by students of hog cholera.⁷ Prophylaxis against this disease may be secured by the subcutaneous inoculation of normal animals with "hyperimmune" serum, that is, serum from immune hogs that have withstood inoculation with actively infected blood. This treatment is not curative of the disease, and its protective power disappears after a few weeks. Prophylaxis by the "simultaneous" method is much more effective. According to this plan, a considerable quantity of hyperimmune serum is injected under the skin on one side of the animal, and a small amount of virulent blood is injected on the other side. The protection conferred is said to last throughout life, and hogs actually sick with the disease are cured in a considerable proportion of cases. Duval and Couret⁸ have recently reported highly successful vaccination with "desiccated, sensitized hog cholera virus." They incubate the diseased tissues with hyperimmune serum, then dry and reduce them to a powder which is found effective for prophylaxis in exceedingly small amounts.

We venture to offer the following explanation of the facts presented: The protective antibodies of our immune pigs when injected into normal animals combine with cells and initiate in them the tendency to produce similar antibodies under appropriate stimulation. Such stimulation is found in the antigen contained in horse serum. The result of such injection is a response of the body cells by which they produce such excess of protective over anaphylactic antibodies that repeated injections of horse serum are withstood. The evidence is that the effect of the protective antibody in directing the tissue metabolism is greatly enhanced by the presence in certain proportion of anaphylactic antibodies as found in the mixed serums. This is seen in Table 1. The rôle, then, of these reaction bodies injected into the normal animal is to modify cellular irritability in a manner to lead to the speedy and preponderant formation of "protective" antibodies under the stimulus of the antigen, and thus initiate the course of active immunity. The final status of the irritability of a living cell is determined, not only by the kind and amount of stimulating material invading it, but also by the metabolic predisposition of the cell at the moment of contact.

SUMMARY AND CONCLUSION

Our work was undertaken with the design of discovering whether the blood serum of guinea-pigs rendered immune to considerable intravenous injections of horse serum by a preceding course of nasal instillation of the serum has a different biologic effect from the serum of highly sensitive animals, when injected intraperitoneally into normal guinea-pigs. We have found that the serum of animals which we call immune can confer on normal guinea-pigs a resistance against a long succession of intravenous injections of the same antigen. It is also probable that mixtures of immune and sensitive serums in certain proportions give still greater protective effects. Notwithstanding the numerical inadequacy of these experiments, we believe that, taken in connection with the broader research,¹ they justify the following tentative conclusion: A foreign protein injected into a normal animal sets up reactive processes leading to the formation, in this

field, of two antibodies having opposite characters; one tends to induce, and the other to avert, the establishment of the anaphylactic state.

Serum containing an excess of the anaphylactic antibody, when transferred to normal animals, renders them, as is well known, passively anaphylactic. Serum containing a sufficient excess of the "protective" antibody, when transferred to normal animals, initiates in them the phenomena of active immunity. Mixtures of the two types of serum seem still more effective in conferring immunity.

The metabolism of the body cells is specifically modified by combination with these antibodies in such a way as to give rise to hypersensitization on the one hand or to active immunity on the other.

If our interpretation of these results is correct, it is evident that new definitions must be given for "immune" serums.

ABSTRACT OF DISCUSSION

DR. F. G. NOVY, Ann Arbor, Mich.: Dr. Sewall in his results on the treatment of anaphylactic shock has described a protective action. It seems to me immunity begins with the shock itself. As to the nature of anaphylaxis: We have been accustomed to look on the chemical changes in the body as the most important feature. I am certain that it will be found that these changes are purely physical from beginning to end and that there is no chemistry connected with it.

DR. S. J. MELTZER, New York City: Dr. Sewall is possibly the first one to test the effect of serum not by its action in anaphylactic shock but by its action when it did not kill and later when it protected. He discovered that when subminimal doses were used it was protective. But all such findings must be confirmed before they can be accepted as facts. It is very important to use the serum in small doses by his method. Nobody will object to the use of serum to protect them from infections or against possible anaphylactic shock. It has been found that guinea-pigs may be made either hypersensitive or insensitive to the action of horse serum following the placing of it in the nose and not in the stomach. It might be a good plan to give it by the stomach if the stomach is not full.

DR. HENRY SEWALL, Denver: As to taking the serum by way of the mouth, in a few cases in which I have tried it the results have been negative. The mucous membrane of the mouth absorbs any foreign protein slowly. Again, if it is introduced into the stomach by means of a tube certain errors enter into it and one may lacerate the epithelium.

The Printing Press.—I am the printing press, born of mother earth. My heart is of steel, my limbs are of iron, and my fingers of brass. I sing the songs of the world, the oratorios of history, the symphonies of all time. I am the voice of today, the herald of tomorrow. I weave into the warp of the past the woof of the future. I tell alike the stories of peace and war. I make the human heart beat with passion or tenderness. I stir the pulse of nations, and make brave men do brave deeds, and soldiers die. I inspire the midnight toiler, weary at his loom, to lift his head again and gaze with fearlessness, into the vast beyond, seeking the consolation of a hope eternal. When I speak a myriad of people listen to my voice. The Anglo-Saxon, the Celt, the Hun, the Slav, the Hindu, all comprehend me. I am the tireless clarion of the news. I cry your joys and your sorrows every hour. I fill the dullard's mind with thoughts uplifting. I am light, knowledge, and power. I epitomize the conquests of mind over matter. I am the recorder of all things mankind has achieved. My offspring comes to you in the candle's glow, amid the dim lights of poverty, the splendor of riches; at sunrise, at high noon, and in the waning evening. I am the laughter and tears of the world and I shall never die until all things return to the immutable dust. I am the printing press.—R. H. Davis.

7. Dorset, M.; McBryde, C. N., and Niles, W. B.: Bull. 102, Bur. An. Ind., U. S. Dept. Agric., 1908. Dorset, M.: Farmers' Bull. 379, U. S. Dept. Agric., 1909.

8. Duval, C. W., and Couret, M. J.: Read before the Association of American Physicians, May 11, 1916.

SIMPLE TIC MECHANISM*

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While the earlier considerations of tic and allied disorders by descriptive neurologists are pictorial rather than interpretative and reportorial rather than explanatory, the French school of neurology (Brisaud, Meige and Feindl) made a valuable contribution toward the better understanding of the mechanism of the disease when it defined tics as "physiologic-acts, originally purposeful but which have become acts apparently purposeless and meaningless." It also emphasized the fact that the mental imperfection of the tiquer is characterized by a mental infantilism, for, like most other psychoneurotics, they have the minds of children in regard to their emotional reactions.

Thus, although the French investigators more sharply defined and limited our conceptions of tic, recognized them as psychoneurotic manifestations and detailed their manifold types, they failed to explain why the purpose, subsequently lost, originally took the particular form of expression exhibited in the individual tic, why it varied in each case, and more especially, why the purpose originally expressed by the tic had been lost to the patient's consciousness.

When the Vienna school began the study of neurotic disorders in a psychoanalytic way, the mystery of the tic mechanism naturally attracted much attention, and the general view of the freudian school has thus been summed up by Ernest Jones:¹

Early in life an exaggerated divorce occurs between the instincts of love and hate, and the conflict between the two dominates the most important reactions of the person. The fundamental state of doubt—an incapacity for decision—results. The patient oscillates between not being able to act (when he wants to) and being obliged to act (as he does not want to). The tic symptom symbolizes the conflict of opposing forces.

L. Pierce Clark² has further amplified the understanding of tic mechanism with the analysis of three stubborn cases, in which the malady was interpreted to be an autopleasurable act of sex significance (sex being used in the extremely broad sense with which it is invested by the freudian school). Clark in his reports is inclined to emphasize the auto-erotic gratification unconsciously afforded the tiquer by this act rather than to trace the primary conflict through which the tic developed. The aspect of the tic as a defense reaction is regarded by him as of secondary importance.

If, as Oppenheim³ states, tics occur most often between the seventh and fifteenth years, and if, as the French school asserts, the tiquer has the emotional attitude of the child, and if, as psychoanalysts maintain, the tic of the adult ultimately rests on an unadjusted mental conflict originating early in childhood, it would seem that tics developing in childhood would be more satisfactory to study with a view to determining their original purpose, inasmuch as the purposes of childhood are simpler, more direct and more transparent than those of later years, when primary intentions have

become almost unrecognizably altered by the innumerable cross impulses of age.

The simple cases of habit spasm which I am reporting show the tic to be essentially a defense reaction elaborated by the censor against a primarily autopleasurable act. It constitutes, when regarded as an entity, a compromise, just as most other neurotic symptoms are compromises, to retain and at the same time abandon an act which originally yielded satisfaction but which has become intolerable because it cannot be brought to harmonize with the individual's idea of adult or adolescent propriety.

REPORTS OF CASES

CASE 1.—Abe C., aged 10, American born of Russian Jewish parentage, came to my clinic at the Mount Sinai Dispensary suffering from an unusual tic. At irregular intervals he would flex his left forearm on his slightly abducted and elevated upper arm in a jerky movement and then extend it. During the motion the four fingers of his left hand remained tightly clenched, but the thumb of this hand was held rigidly abducted. It was also noted that the thumb was reddened and slightly swollen.

The mother related the following illuminating history: When the child was 1 year old and still suckling at the breast, he contracted diphtheria for which he was sent to the Willard Parker Hospital for Contagious Diseases, where he became infected with the entire category of children's diseases, necessitating a total hospital residence of something over a year.

Following the baby's removal from home, breast feeding was supplanted by the bottle and spoon, but the child evidently found an acceptable substitute for the nipple of which he had been deprived, for when he returned home it was observed that he sucked his thumb incessantly. As the number of children in the family was large and as the baby seemed content and docile when allowed to indulge in his thumb sucking solace, the mother, satisfied in view of her numberless daily household burdens to let well enough alone, made no determined effort to correct the habit.

The censorship of thumb-sucking as being infantile came from another and usually unconsidered source, the child's own playmates. The abnormality was so obvious to them that before long they seized on it as a taunt, and whenever he appeared among them, they greeted him with the cutting nickname, "Abie, the sucker."

While not usually so considered, reprimands from our peers are often more effective than those from our superiors, and in Abie's case, at least, there was an attempt to rectify the habit which had drawn so much odious comment on him. Thus, when the desire arose to regale himself with his favorite pastime, the censorship immediately originated a counter thought to oppose such an action.

The result of this was that the patient started the movement of approximating his extended thumb with a view to inserting it into his mouth, but immediately before it reached its goal, he began to withdraw it, with the peculiar tic resulting. In his tic he thus attains the psychic equivalent of putting his finger into his mouth and at the same time abstains from doing so.

The habit spasm has led to a secondary spinal scoliosis, for the patient had acquired the posture of a mild torticollis through keeping his head tilted slightly downward and to the left, where his mouth would be in position to receive the finger were it not prevented by the counter thought from reaching its destination. The child is neurotic and fretful, but the mother states—and this was verified at the clinic—that both the irritability and the tic cease when he is permitted to isolate himself and insert his thumb in his mouth.

The purposes of children, in contradistinction to those of later years, are transient, unstable, readily diverted and easily displaced. If a 2-year old reaches for cake, the guardian resorts to some such expedient as dangling another object before its eye, and the purpose of obtaining cake is temporarily displaced by a desire to grasp the new object.

* Presented before the New York Neurological Society, April 4, 1916.

1. Jones, Ernest, in White and Jelliffe: *Treatment of Mental and Nervous Disease*, i, 409.

2. Clark, L. Pierce: *Mental Torticollis as a Psycho-Neurosis*, Med. Rec., New York, Feb. 28, 1914.

3. Oppenheim: *Nervenkrankheiten*, Ed. 5, ii, 1448.

So, too, the tics of childhood, representing purposes as they do (that is, compromise defense reactions of the simplest types) are transitory. Like many other ailments, unless the physician acts quickly enough, children's tics may have a disconcerting way of vanishing without the aid of recognized therapeutic measures.

This patient's tic, although studied, was certainly not cured by me. Little Abie's father has relieved the habit spasm by substituting another source of pleasure which is to a large measure replacing his own auto-erotic pleasure. His method, simple enough, consisted in the weekly administration of 10 cents if the child refrains. While superficially the therapeutic effect is striking, naturally the underlying neurotic constitution of the child has not been improved, and it would not surprise me in the least to learn that Abie invests his 10 cents in long sucking stick candy.

CASE 2.—A woman, aged 34, under analysis for a depressive hallucinosis, was remarked to dig her left forefinger repeatedly into the hollow of her cheek. She explained that she often unconsciously did this when under stress and always before going to sleep at night. During the course of the analysis its significance became clear.

As a little girl she constantly sucked her left index finger and continued to up to the age of 8, when her father undertook to break her of the habit by employing the usual punishments, corporeal and psychic. When about 12 years old, she was stricken with a severe febrile disease, which was accompanied by distressing unrest and insomnia. When the family physician complained of the inefficacy of his drugs in controlling her excitement, her father suggested that he knew what would quiet her more quickly than any medicine—namely, permission to suck her finger. The physician did not disdain to accept the hint, which worked miraculously well.

After her convalescence, naturally the habit persisted, and again the father undertook its correction, this time by moral reasoning. During the day she successfully combated the practice, but when alone at night an intense desire possessed her to revert to the infantile means of pacification. Her compromise resulted in putting her finger to the outside of her cheek instead of inside her mouth, and pressing the finger against the cheek instead of the cheek against the finger. Thus she protected herself against violating her father's admonitions and at the same time retained the equivalent of her autopleasurable sensation, in slightly altered form. She unconsciously reverts to this ticlike habit at the present time only to induce sleep or when under some particular strain.⁴

CASE 3.—American, aged 29, under analysis for a claustrophobia, exhibited a tic which consisted in turning the head with a sudden jerk to the right. The patient explained that whenever he found himself in a mental dilemma, the tic arose as a symbolic act to "shake it off."

The autopleasurable origin of the residual movement could be traced to the common practice of children in the country of rolling down hill, the friction and motion of which is undoubtedly a source of gratification. In the case of the patient, even at the age of 8, it was accompanied by a mild sexual erotism when he finally reached the prone position at the end of the rolling, especially when girls mingled with the boys.

The pleasure afforded by hill rolling was supplanted at a somewhat later period (from 8 to 10 years) by the practice of standing in the road and whirling oneself rapidly about until the primary exhilarating giddiness gave way to exhaustion and one fell to the ground. During this form of amusement, one of his companions, the school dunce, discovered that if the neck were craned upward and the head tossed violently in the opposite direction to the whirling before beginning the act, the effect would be more violent and more rapidly induced. Tossing the head thereafter became a regular preliminary to the whirling.

Naturally with advancing years the auto-erotic hill rolling and its successor, body whirling, were discontinued by the

children, but the patient, whose psychosexual development remained stationary from the age of puberty, lapsed into another form of auto-erotism, masturbation, with which he struggled incessantly until his neurosis (a compromise affair) developed. His masturbation and sexual maladjustment constituted his urgent difficulty for fifteen years and perhaps, as the patient says, the turning of the head may be a symbolic movement of shaking off his trouble. Possibly there may be some such significance, but it is unquestionable that in attempting to free himself of one auto-erotic habit (masturbation) he unconsciously resumed the remnant of another and earlier one.

In view of Dr. Clark's investigations of habit movements in imbeciles, it is interesting to note that the school dunce, who originated the head turning movement, has since assumed his logical position of the village half-wit, and has retained the habit to such a pathologic extent that he is identified with it.

COMMENT

The mechanisms in these cases are so simple that they may seem superficial. Infantile acts, however, purposes and counter-purposes, are all such. The tics all disappeared, not because of their analysis, but because more vexing problems harassing the patients were solved and the necessity for such supplementary compromise defense reactions no longer existed. The cases are reported, then, to illustrate the theory that these tics originally represented purposes, that the purpose had been suppressed, and how the apparently senseless movement, when resumed, constituted a defense compromise which afforded relief to the patient.

249 West Seventy-Fourth Street.

THE FATIGUE OF ACCOMMODATION

AS REGISTERED BY THE ERGOGRAPH*.

LUCIEN HOWE, M.D.

BUFFALO

At the session of the American Medical Association in 1912, I had the honor of presenting a paper which dealt especially with the measurement of fatigue of convergence and of divergence as registered by the ergograph. In another paper in 1913, at the meeting of the American Ophthalmological Society, a classification was given of the varieties of fatigue of convergence.

In this third paper I show that by a similar method the ciliary muscle can also be made to write its story of fatigue. The principle involved has now been worked out sufficiently to venture a description of the method, but the subject has proved to be so vast and apparently so important clinically, that the fatigue of accommodation which accompanies forms of ametropia or of heterophoria must be reserved for future consideration.

It will add to clearness to give first a simple illustration of what is meant by the fatigue of accommodation, after that to describe the apparatus for measuring this fatigue, and finally to show some tracings made by the ciliary muscle, explaining what they mean.

First, to illustrate the principle: If a person who is still young enough to exert some accommodation closes one eye and looks with the other at a printed page, he can approach the page at once to a point where the

4. The analysis of other features of Case 2 was reported in the *Journal of Abnormal Psychology*, February, 1912, and of Case 3, in the *New York Medical Record*, July 5, 1915.

* Read before the Section on Ophthalmology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

letters are just visible. But in a few seconds the effort at accommodation is followed by discomfort and blurring; that is to say, it is impossible to keep up extreme tension of the ciliary muscle; and in order to see the letters at all, it is necessary to push the book back to about its original position.

If the experiment is made repeatedly, at each succeeding trial the letters cannot be seen quite as near to the eye as before; in other words, a certain amount of "fatigue" has developed, and this fatigue increases until no further effort of accommodation is possible.

The problem of measuring this fatigue, therefore, resolves itself into three factors:

1. We must obtain test letters or other objects for fixation; which we know demand a definite power of accommodation to make them visible at a definite distance.

2. A simple apparatus must be constructed which will measure exactly at any time the distance of the letters from the eye.

3. Every movement of the letters toward the eye, or away from it, and the time occupied in making that movement, must be accurately recorded. Let us consider these desiderata in detail.

The letters are obtained by selecting some of the standard types or numbers which we use clinically, and reducing the size by accurate photographic methods, so that they are equally good tests of vision when viewed at a very near point. An idea of these letters is given by Figure 1. As ink blurs even the larger letters, they cannot be shown on a printed page; therefore those used in these tests have been photographed, although this is not an easy process.

The second desideratum is some arrangement for measuring accurately the distance of the test types, at any time, from the eye. This presents some difficulties when exactness is demanded, but they are overcome best by

modifying an instrument which I constructed originally to measure relative accommodation, which is, of course, the amount of accommodation which can be exerted or relaxed with relation to a given degree of convergence. A description of that "optometer" was in my first volume on the muscles, and is shown in Figure 2.

It consists essentially of a properly supported horizontal rod AA' , which is graduated in fractions of a meter, measured from the eye. At the proximal end of the horizontal bar there is a cross piece DD , with slots for supporting the lens L or L' , as such a lens is necessary in certain cases to correct any existing ametropia.

In order to adapt this instrument to the measurement of fatigue of accommodation, it was only necessary to shorten the horizontal bar and attach to the

distal end a small wheel, whose use will be described presently. This modification supplies our second desideratum.

The third desideratum is some arrangement for recording accurately each motion which the test letters make in approaching the eye, or receding from it, and the time occupied by such motion.

Similar records are made in every physiologic laboratory on a drum revolved by clockwork. When it was used originally to record blood pressure it was called a kymograph, but when Mosso used it to record the fatigue of a muscle he called it an ergograph.

When prisms with bases out were adapted to this instrument, it became a convergence ergograph; or if the prisms were turned with their bases toward the nose it became a divergence ergograph, and so on; these have been described.

In order to make this instrument into an accommodation ergograph we must attach near the base of the revolving drum a vertical tube which encloses a brass rod. To the lower end of this vertical rod a spring is made fast to assist in drawing the rod down promptly whenever it has been raised and then quickly released. From the upper end of the vertical rod an arm extends out toward the revolving drum. This arm terminates in a point which will make white tracings on blackened paper, or to which can be attached a pen with ink, if white glazed paper is on the drum. The vertical rod also

has attached to its upper extremity a violin string which passes over a groove in the wheel at the end of the horizontal bar already described. The proximal end of the violin string is attached to the support of the test types (Fig. 3).

When the revolving cylinder is thus connected with the graduated horizontal bar which holds the test types, we may call the instrument an "accommodation ergograph."

This ergograph was submitted for inspection to Prof. Frederic S. Lee of Columbia University, College of Physicians and Surgeons, who suggested some of its modifications, and to whom acknowledgment should be made for his exhaustive and important work on the entire subject of fatigue.

Let us next consider how this apparatus is used. The patient selected for examination should be young enough to have a certain amount of accommodation. The measurements are satisfactory in proportion to the intelligence of the individual, and also in proportion to the degree in which the refraction of the eye approaches emmetropia. The subject is comfortably seated with his eyes just above the level of the horizontal bar of the instrument, the face almost touching the extended horizontal plate. If he is emmetropic, no glass is necessary. If he is ametropic, of course the



Fig. 1.—Series of characters for testing the accommodation at small fractions of a meter. The letters actually used are photographed, and much more distinct than those shown in the illustration.

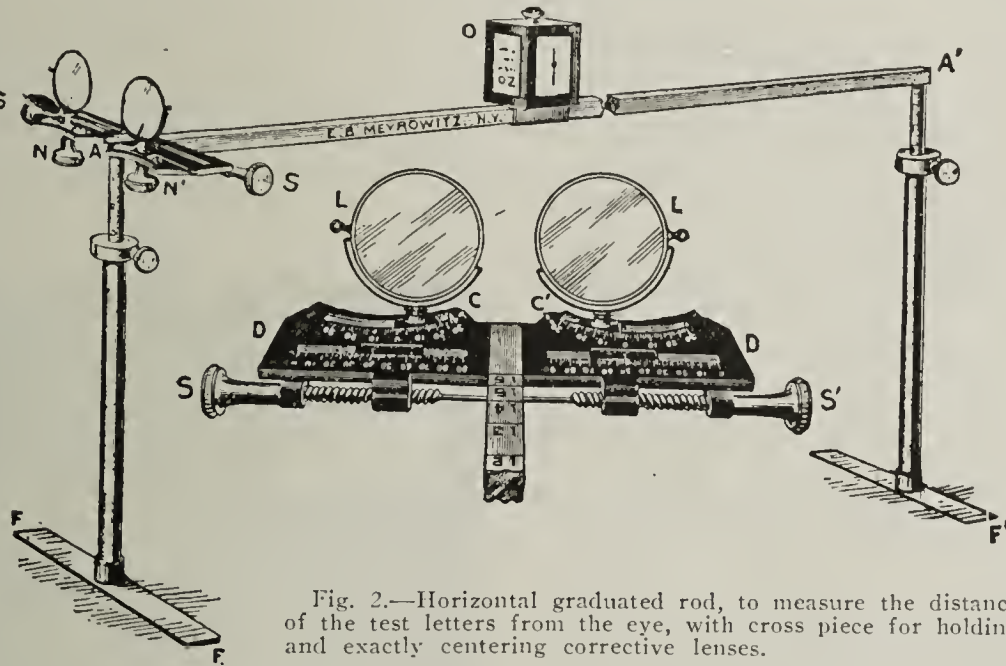


Fig. 2.—Horizontal graduated rod, to measure the distance of the test letters from the eye, with cross piece for holding and exactly centering corrective lenses.

ametropia must be corrected by a proper glass placed in the lens holder *C* or *C'*, and corresponding allowance made for the influence which the glass has on the accommodation. An opaque disk is placed before the other eye.

The degree of accommodation taken as the starting point for the measurement of the fatigue must, of course, be in proportion to the age of the individual.

If the subject is an emmetrope of about 12 or 15 years, the test types can be brought to 20 cm. He then

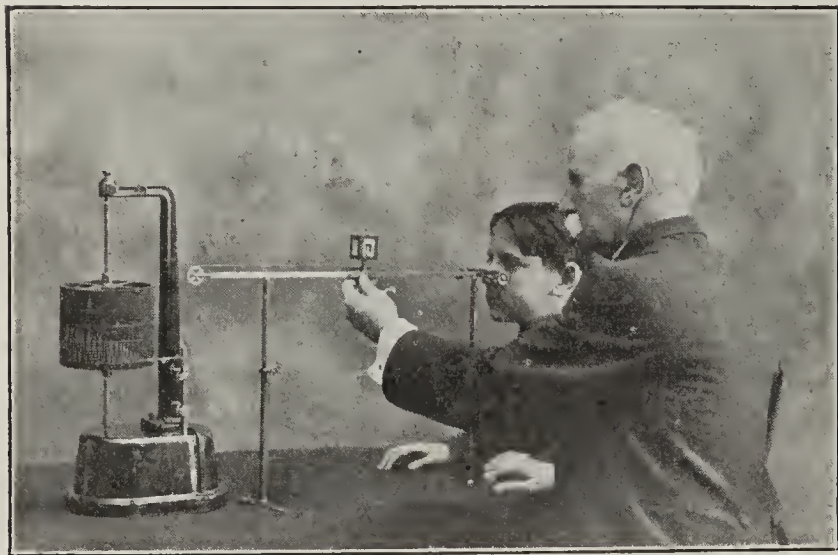


Fig. 3.—Combination of test types, measuring bar and revolving drum which together form the accommodation ergograph.

reads the letters corresponding to that distance, and evidently begins by exerting 5 diopters of accommodation.

If the subject is much older, it is advisable to place the type first about 33 cm. from the eye, and direct him to read the letters corresponding to that distance. Evidently he begins by exerting only 3 diopters of accommodation.

A suitable correction with lenses or selection of type having been made, the subject fixes his attention with one eye on the letters or figures selected as the starting point of the effort of accommodation. As long as he can see that letter he says every few seconds "Yes, yes, yes." Meanwhile the letters are slowly but steadily pushed nearer to him. This approaching of the test letters draws on the violin string which runs over the wheel, and thus lifts the pen which rests on the revolving drum.

As this is done, the subject, under normal conditions, should be able to distinguish smaller and still smaller letters: that is to say, if he begins by reading at 25 cm., the line which corresponds to 4 diopters of accommodation, then when the letters are only 20 cm. from the eye he should be able to read the type corresponding to 5 diopters of accommodation, and so on.

The real fact is that when these small letters are approached to a point where they require a great effort of accommodation for even a few seconds, the ciliary muscle is no longer able to sustain this extreme contraction and suddenly relaxes; the letters blur, the subject sees little or nothing distinctly, and promptly says "No."

The letters are then immediately pushed back to the point of beginning. As they recede, the pen which rests on the revolving drum falls to its first position and there has been recorded on the drum one wave representing one effort of accommodation.

When the test letters are thus pushed away from the eye the ciliary muscle regains its strength. But imme-

diately the experiment begins again. The subject is told to look intently at the line with which he began the first time, and at short intervals to say the word "Yes" as long as the letters are visible. Again the frame with these letters slowly approaches the eye of the subject, drawing the pen upward on the revolving drum as it does so. Suddenly the letters blur, the subject says "No," the letters are again quickly pushed backward, and a second wave or record is made on the revolving drum.

By continuing these tests we find that the muscle of accommodation, like other muscles of the body, becomes less and less capable of exertion, or technically speaking, "it runs down." This is shown on the revolving drum by the series of waves, which grow gradually less and less in their excursions. Indeed, an intelligent patient can measure his or her own fatigue of accommodation, thus eliminating the personal equation of the examiner (Fig. 4). The curved or irregular line which passes from the top of one such excursion to another, uniting all the apexes, has been called the "fatigue curve." In this case, of course, it would be the fatigue curve of accommodation.

The term "fatigue curve" is confusing unless a word of explanation is added. When it was first discovered that the successive contractions of a muscle could be recorded on a revolving drum, the muscle of a frog was ordinarily used in the experiment, and the contractions in the muscle were produced by a current of electricity broken at regular intervals. Under such circumstances the successive contractions were recorded in excursions of the pen which were relatively rapid and regular, and when a line was drawn through the apexes of the excursions, thus registered, it was usually found to be a curve, sometimes convex, sometimes concave to the base line.

A similar fatigue curve can be drawn through the apexes of the registered excursions of the pen when,

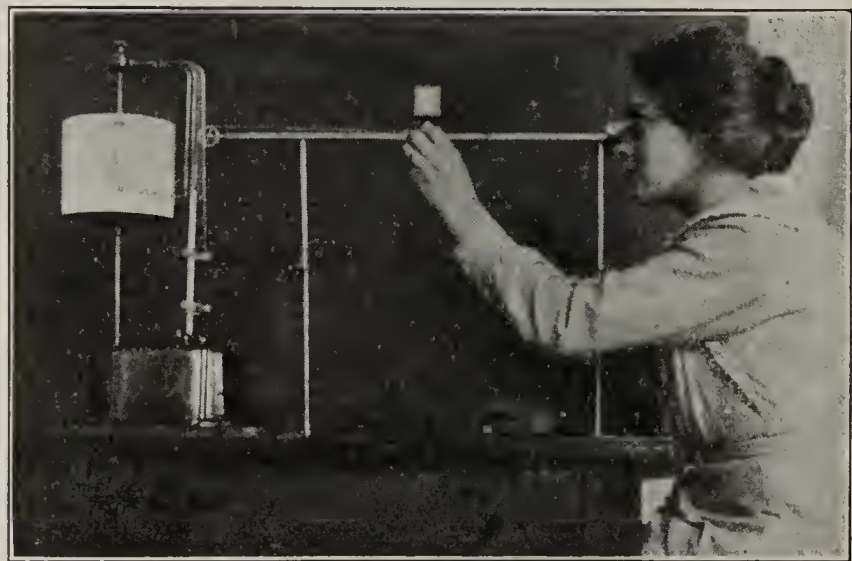


Fig. 4.—Accommodation ergograph. Measurement made by patient, thus eliminating any possible error on the part of an examiner.

with a glovelike attachment on the finger, the contractions of the muscles in the hand are registered. They grow less and less, until further contraction is impossible. But in this case the line connecting the apexes of the excursions is more or less broken.

Now, when we attempt to register on the revolving drum the successive contractions of either the muscles of convergence or the muscles of accommodation, we find that in practice these contractions cannot be made to succeed each other rapidly, or with regularity. The resulting line connecting the apexes of the excursions

is seldom a curve, but broken (Fig. 5) and more or less irregular. In practice it is not necessary to connect the apexes of these recorded excursions, as a glance at the record shows the rapidity with which fatigue has been developed. It is true, a question has arisen as to when we should use the word "fatigue," and when the word "exhaustion" to describe a given condition, and also as to the importance of the nervous system as a variable factor in all these measurements.

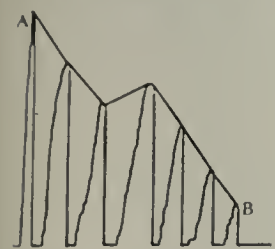


Fig. 5.—The broken line *AB* is the so-called "fatigue curve." This is simply the line which connects the apexes of the different triangular excursions drawn by the pen as it moves on the revolving drum. The fatigue of the ocular muscles is seldom so regular that it can be represented by a curve.

In spite of this, however, the practical fact is that these tracings made by the extra-ocular or intra-ocular muscles do represent, for clinical purposes, at least, their gradual loss of power after successive contractions.

Records of the fatigue of accommodation in the normal eyes are seen in Figures 6 and 7.

The so-called "practical ophthalmologist" may ask of what use these records are. Even if the fatigue of the accommodation can be measured, why should that ever be done? Because we

learn in this way whether a strong initial contraction of a muscle really means a strong muscle or the reverse. The ergograph shows us that ocular muscles,

like others in the body sometimes, contract two or three times so firmly as to appear quite normal, as measured by tests heretofore at our command, but when that effort is repeated several times in succession we find, to our surprise, that this contractile

force is not really strong. It may even be abnormally weak. Certainly, such a fact, which would change the diagnosis, and therefore a plan of treatment, ought to interest even the most practical ophthalmologist.

If the limits of a paper like this would permit, it might be interesting to refer briefly to the clinical results of these measurements of fatigue—to show, for example, how the fatigue records vary somewhat in different individuals, the reasons for these variations, and the relation of the fatigue of accommodation and of convergence to each other in emmetropia, and especially how these are influenced by forms of ametropia and heterophoria. But these points must be reserved for subsequent papers.

During the last year the mechanism of the ergograph has been so improved that it is possible to have the muscles of accommodation write their record and the muscles of convergence write theirs, also on the same drum, one record above the other. In other words, we can see at a glance the relations of these two functions to each other. These records suggest the possibility, at least, of solving some of the everyday problems which heretofore have baffled us. It is not too much to expect that this question of the tendency to fatigue or the ability to resist it, on the part of the ocular muscles, may become an important part of every complete examination of the eyes.

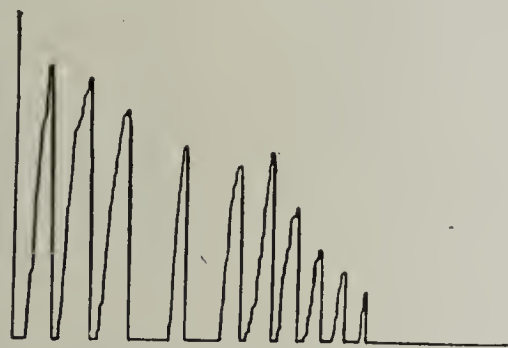


Fig. 6.—An average tracing showing the fatigue of accommodation as registered on the ergograph.

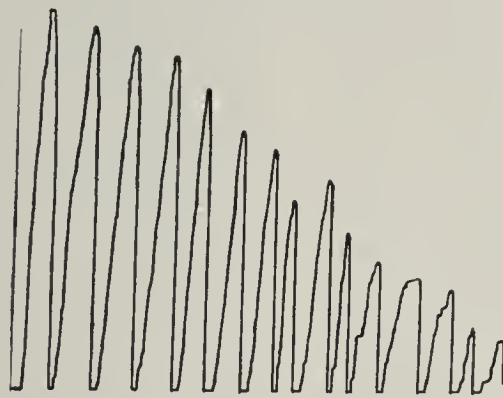


Fig. 7.—Another average tracing showing the fatigue of accommodation as registered on the ergograph.

store of neuricity as the muscle is exhaustible of its power of contractility; so that, whenever we resort to this test, we do not know whether we are dealing with a weak neuritic battery or with a muscle in the eye which has small tonicity; or whether it is the reverse, a great neuritic battery in the brain and a great muscle in the eye. Suppose we grant for a moment that it is really muscle fatigue; that is, that the muscle fiber is broken down. What results when muscle contracts? Lactic acid is set free. Following this it imbibes water from the surrounding tissue and the muscle under strong and long contractility becomes waterlogged. I am not able to tell whether it is muscle fatigue or an exhausted battery. There is another complicating feature. The tenth center never acts without exciting the third center, so that it may be the center of convergence that is being exhausted whenever this fatigue is being shown.

DR. WALTER B. LANCASTER, Boston: Dr. Howe has placed his finger on a very important problem, the problem of fatigue. But whether it concerns ophthalmology, psychology or physiology is one of the difficult problems medicine has to solve. Taking up the experiments of the Italian school, which Dr. Howe says were the basis of his investigation, I would call attention to the important fact that there are two types of curves found on testing the fatigue of the middle finger. When a sufficiently heavy weight is used and the

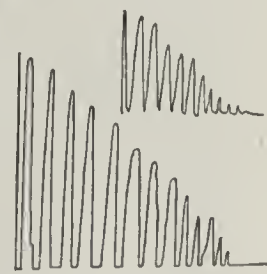


Fig. 8.—Record of fatigue of accommodation (below) and fatigue of convergence (above).

ABSTRACT OF DISCUSSION

DR. HIRAM WOODS, Baltimore: In the use of this instrument we are dependent altogether on the answers of the patient. The patient says "yes," "yes," "yes," till he interprets what he sees by a fading out of the print; then he says "no." Now Dr. Howe marks that the punctum proximum. Is that really the punctum proximum? At the meeting of the American Academy of Ophthalmology in Boston Drs. Lancaster and Williams presented a paper on "New Light on the Theory of Accommodation," etc. Among other things which Dr. Lancaster developed was this: If the patient's first point of blur is taken and the eye is kept steadily fixed on that point, a certain amount of accommodation is soon regained, and that punctum proximum can be pushed in quite a little distance. You can try that in your office at any time. Just put on the ordinary measuring rod the point where the patient stops and says the print is blurred and have him look at it steadily for a moment. He will go in 2 or 3 cm. sometimes. It is useful in avoiding the overcorrection of presbyopia. So that the first criticism is whether the test adequately measures the real punctum proximum of accommodation.

DR. G. C. SAVAGE, Nashville, Tenn.: There are two things that we must keep in mind about a muscle—muscle tonicity and muscle contractility. A ciliary muscle with full tonicity will have better contractility than one with less tonicity, under the same nerve impulse. The experiments done by Dr. Howe with this instrument are a little more complicated than at first appears on the surface. There is a center in

the brain that calls on the ciliary muscle to do its contracting. That, for want of a better name, we speak of as the tenth conjugate center. It is acting on both eyes whether one is covered or not. It is a neuritic battery. That battery may be strong or weak. It may be able to store a great quantity of neuricity or a small quantity. That battery may be exhausted as easily of its

store of neuricity as the muscle is exhaustible of its power of contractility; so that, whenever we resort to this test, we do not know whether we are dealing with a weak neuritic battery or with a muscle in the eye which has small tonicity; or whether it is the reverse, a great neuritic battery in the brain and a great muscle in the eye. Suppose we grant for a moment that it is really muscle fatigue; that is, that the muscle fiber is broken down. What results when muscle contracts? Lactic acid is set free. Following this it imbibes

water from the surrounding tissue and the muscle under strong and long contractility becomes waterlogged. I am not able to tell whether it is muscle fatigue or an exhausted battery. There is another complicating feature. The tenth center never acts without exciting the third center, so that it may be the center of convergence that is being exhausted whenever this fatigue is being shown.

DR. WALTER B. LANCASTER, Boston: Dr. Howe has placed his finger on a very important problem, the problem of fatigue. But whether it concerns ophthalmology, psychology or physiology is one of the difficult problems medicine has to solve. Taking up the experiments of the Italian school, which Dr. Howe says were the basis of his investigation, I would call attention to the important fact that there are two types of curves found on testing the fatigue of the middle finger. When a sufficiently heavy weight is used and the

finger lifts it at sufficiently short intervals we get a curve very similar to the curve given by Dr. Howe, but when a lighter weight is employed and the finger contracts less frequently, we get another type of curve. Under these conditions it may contract indefinitely, there is no falling off from fatigue because the muscle is working within its capacity. Dr. Williams and I tested the accommodation virtually in the manner described by Dr. Howe, except that our apparatus was not self-recording. Thus, moving the object toward the eye and receding, and eliminating certain sources of error, we found, even after keeping it up far longer than Dr. Howe, say 15 to 30 minutes, that there was no falling off, that is, the ciliary muscle was working within its capacity and showed no fatigue, just like the finger with the light weight. We then tried a much more severe test of the accommodation, holding the test object as near the eye as possible without blur and keeping it there continuously at the near point and if possible moving nearer, and we got a third curve. Instead of the muscle weakening and the accommodation falling off, the accommodation increased for 15 to 30 minutes. Thus we found that it is not easy to fatigue the ciliary muscle, and that is practically the testimony of experience. We know that we can read for hours, exercising considerable accommodation. It is because the work of the ciliary muscle is so excessively small when measured or estimated in foot pounds; it only has to relax the zonule. It can do this without showing any falling off from fatigue, but on the contrary an increase. Possibly in myasthenia gravis or other very exceptional condition, one might get curves like those of Dr. Howe but if certain sources of error are eliminated the curve of accommodation will show no fatigue under Dr. Howe's test.

DR. E. E. BLAAUW, Buffalo: At a more advanced age we cannot study through the nearpoint determination the contractility of the ciliary muscle, but only the plasticity of the lens. This prevent us from diagnosing paralysis of the accommodation, especially of the ciliary muscle in patients older than 60 years. As to the remarks of Dr. Savage about neuricity, etc., I would like to call attention to the investigations of Prof. J. Boeke of Leiden, who has shown that all muscles have a double innervation, one from the cerebrospinal organs and one from the sympathetic system.

DR. GEORGE H. PRICE, Nashville, Tenn.: In the case of the curve represented by Dr. Lancaster there is a constant and accelerated impulse to the muscle. There is the increased discharge of neuricity as the act is performed. Therefore, if there is continuous stimulation of the same character throughout the impulse, then, since it maintains a perfectly smooth curve, the muscle is the organ at fault when it begins to recede; the muscle grows weaker. But if the curve is not perfectly smooth from its beginning to its end, it shows a variation in the neuricity or impulse. Therefore that would indicate nervous fatigue or failure. In the case of the sustained line, if that line showed a tremulous movement, up and down, then we would have a variable amount of neuricity or nervous impulse being sent to the muscle.

DR. LUCIEN HOWE, Buffalo: As to the point brought up by Dr. Woods, it is true that the result of the first test would not be exact. We do not depend on doing the test once, but many times. The question asked by Dr. Savage is not one to be answered offhand. I know nothing about neuricity or whether it is the eighth or the tenth center, and the patient does not care. The question is, Is there fatigue? Dr. Lancaster can work with a half pound dumbbell and get that kind of a curve. Physiologists have found the degree of strength that can lift a dumbbell a certain number of times.

But it does produce fatigue, simply because the patient cannot lift it again and he knows it. I do not think there is anything very subtle or strange about that. It simply shows how far he can go and after awhile he cannot approach it at all, and we say it is run down. This work was done under the supervision of Prof. Frederic S. Lee of Columbia University, and he is an authority on the question of fatigue. I have simply dealt with accommodation in emmetropia; but now I am studying ammetropia and heterophoria, and the possibilities are enormous. After five years of work it seemed worth while to present the results.

A PRIMARY INTRADURAL TUMOR OF THE OPTIC NERVE

REMOVAL WITH PRESERVATION OF THE BALL*

E. C. ELLETT, M.D.

MEMPHIS, TENN.

History.—L. H., a negro girl, aged 15 years, came to the clinic of the University of Tennessee in November, 1915, complaining that the right eye had protruded for five years and was blind. There was no history of trauma, and the date of the beginning of the protrusion of the eye, as well as of the beginning of the failure of vision, was not definitely ascertained.

Examination.—The right eye was prominent and turned inward and upward (Fig. 1). Motion was preserved except outward. The proptosis measured 25 mm. with the exophthalmometer, as compared to 15 mm. in the left eye. The pupil was dilated and fixed and the eye was blind, but the external appearances were normal in every way. There were postneuritic atrophy of the optic nerve and some tortuosity of the veins; otherwise the eyeground was normal. It should be especially noted that there was no attenuation of the vessels. The left eye was normal in every respect. The child's general health was excellent. There was no history of tumors in the family, no abnormality of the nose or accessory sinuses, and no pulsation to be heard or felt. On palpation the finger passed easily into the orbit below and to the outer side of the ball, and a smooth movable mass, about the size of the eyeball, could be felt.



Fig. 1.—Appearance of patient before operation.

Operation and Result.—A diagnosis of tumor of the optic nerve was made, and operation under general anesthesia performed, November 17. A vertical incision was made through the conjunctiva near the limbus to the outer side of the cornea, and the external rectus muscle exposed and divided. By blunt dissection the tissues were pushed back from the tumor, which was found to be an enlargement of the optic nerve, beginning about 10 mm. back of the globe. The nerve was divided in front of the tumor and the ball displaced upward and inward. All the tissue being separated from the tumor by blunt dissection, an attempt was made to encircle it with a snare, with the idea that it lessened in size as the optic canal was approached and the wire would glide backward to the farthest possible point. As this did not seem to be taking place, the snare was removed and the tumor cut off as far back as possible with curved scissors. It was certain from the inspection of the tumor, and will be equally apparent from the illustration (Fig. 2), that not all of the tumor was removed, but that there was a prolongation into the optic canal, if not into the cranial cavity. The

* Read before the Section on Ophthalmology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

finger introduced into the space left by the tumor did not feel any mass, and the apex of the orbit was in all respects exactly similar to what exists after an ordinary enucleation, this being verified by experienced observers among those present at the operation. The hemorrhage was slight and readily controlled by pressure. The cavity was wiped out with tincture of iodine, the cut ends of the external rectus muscle united, a few sutures put in the conjunctival incision, and a pressure bandage applied. During the operation care was taken to avoid pressure on the eyeball.

The next day there was some discoloration and protrusion from bleeding into the tissues of the orbit, but the lids covered the ball and the cornea was clear. The protrusion subsided in a week, when motion was found to be limited. December 1, the exophthalmometer read 15 mm. in each eye. There was complete paralysis of the muscles supplied by the right third nerve, motion outward being preserved.

December 21, the paralysis was much better.

Jan. 16, 1916, motion and external appearance were as indicated by the illustrations (Figs. 3, 4 and 5).

The changes in the eyeground were very interesting. November 27, there was edema of the whole central region of the retina and a cherry red spot at the macula. The vessels were normal, except that an artery above the macula showed a broken blood current. November 29, the edema was more marked, extending to the nasal side of the disk. Pressure on the eye did not cause pulsation of the vessels, but readily emptied them of blood.



Fig. 3.—Appearance of patient two months after operation.

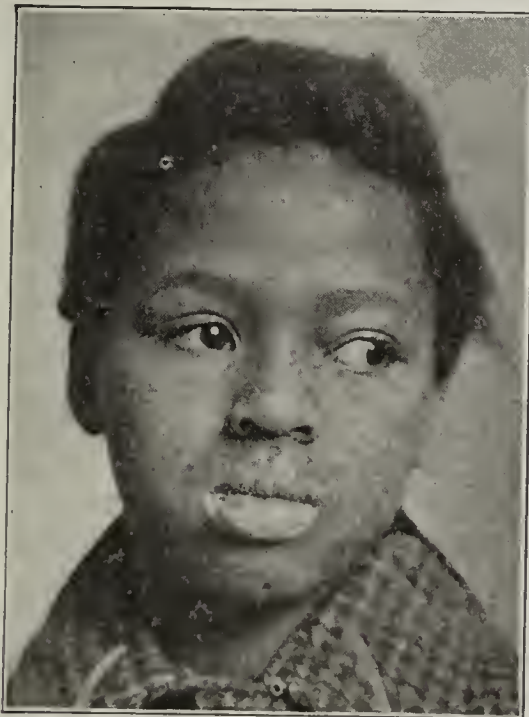


Fig. 4.—Extreme motion to left, two months after operation.



Fig. 5.—Extreme motion to right, two months after operation.

December 21, the edema was gone. In the macular region a few fine white dots and lines were seen. Near the disk, especially upward, was a deposit of black pigment dots on a pale yellowish background. The pigment was also being deposited on the disk, giving an appearance like ashes thickly sprinkled on snow.

Jan. 16, 1916, there was more pigment deposit, almost covering the disk. The vessels were slightly attenuated, especially the arteries.

The Tumor.—The gross appearance of the tumor is shown in Figure 2. It was smooth, tense and cystic to the touch, and measured 3.5 by 2.5 cm. On section, the center was found to be decidedly softer than the periphery, but it was not fluid. There were several small brownish areas, apparently due to capillary hemorrhages. The appearance of the cut surface is shown in Figure 6. Tests for mucin were negative, and did not therefore indicate a myxomatous change.

The growth was hardened in alcohol, and cross-sections made of the nerve in front of the growth, longitudinal sections through the nerve and the front part of the growth, longitudinal sections of the posterior part of the growth, and cross-sections about the center. The size of the growth made it undesirable to try to cut it in one piece longitudinally. Sections were stained with hematoxylin-eosin, Van Gieson's stain, Mallory's anilin blue, and phosphotungstic acid hematoxylin.

The whole tumor was surrounded by a dense fibrous capsule, continuous with the dural sheath of the nerve anteriorly. The subdural space could be made out, as well as the pial sheath, and none of these structures showed much departure from the normal. The longitudinal sections of the nerve and

anterior portion of the growth showed that not all of the nerve fibers passed into the tumor, but many of them ended at a point where the sheaths made a sort of hour-glass contraction (Fig. 8). Serial sections were not made, so that it cannot be said that all the nerve fibers terminated at this point; but if any persisted; it was as a mere thread. No trace



Fig. 2.—The tumor. The large end is the posterior end and shows that complete removal of the tumor was not accomplished.

of the central vessels could be found in the lumen of the hour-glass figure which the dural sheath assumed at this point, which was about 10 mm. behind the globe. It would seem, therefore, that the direct retinal circulation was interfered with before the operation was performed. Back of this hour-glass contraction the dural cavity enlarged rapidly and widely. At first the contents of the cavity were the nerve fibers, slightly altered; but soon a dense infiltration with the tumor cells took place, and the nerve fibers were quickly

replaced by the tissue of the tumor. The farther back one went the more completely did the tissue lose all resemblance to optic nerve, the only part recognizable being the sheaths and connective tissue septa, and a small bundle of tissue, resembling nerve fibers, close to the sheath at one side.

Histologic study of the various sections of different portions of the tumor showed, in the undegenerated and better stained areas, the presence of many spherical cells with well stained spherical nuclei, surrounded by very little cytoplasm. These cells, morphologically, appeared to be glia cells. They were found diffusely scattered throughout the specimen. Interlacing in various directions were fibrils, which according to differential stains (phosphotungstic acid hematoxylin) were neuroglia fibrils. This, however, could not be determined definitely, as the differential stains were not clear, owing perhaps to imperfect fixation. Many vascular channels with large lumina were present. In addition there were present areas of degeneration, and tissue elements, in a state of necrobiosis, the exact histologic structure of which it was impossible to determine.

A diagnosis was made of a moderately slow growing glioma, perhaps, better, fibroglioma (the "fibro" here referring to, or indicating, neuroglia fibrils, and not connective tissue fibrils). Owing to the presence of many vascular channels with wide lumina in the specimen, the diagnosis "telangiectatic glioma" may be more accurately applied.

For the histologic study of the specimen, I am indebted to Dr. H. T. Brooks.

COMMENT, AND REVIEW OF LITERATURE

Tumors of the optic nerve are not very common, and it was surprising to me to see three such cases in a single year. One case was reported elsewhere,¹ and in one operation was refused. Still, as Byers has well said, one turns to the literature rather than to personal experience for information on the subject. There are two papers whose scope is such that there is not much else to do but refer to them, namely, Byers' monograph and a paper by Hudson.² The latter is the more recent, and in its reports of 210 cases are probably most if not all of those which Byers collected ten years before. He refers to the study of the subject by Lehr³ in 1877, and thinks the majority of the reported cases are of the type described by Lehr and Willemer:

The tumors of this type are met with usually in quite young subjects and are of slow and painless growth. Anatomically

the new growth is found to lie within the dural sheath, and while it is usually separated from the globe by a short length of uninvolved optic nerve, in many, if not in the majority of cases, it is not limited to the orbital portion of the nerve, but extends into the cranial cavity, more or less extensively. The tumor is in most cases constituted by a sheath portion, lying between the dural and pial sheath, the latter having

usually a more or less excentric relation to the former. . . . The tissues of the intervaginal space show often an irregular hypertrophy and an irregular distribution of connective tissue, amongst which the cells peculiar to the tumor lie, while in the nerve portion the tumor tissue occupies the more or less expanded spaces between the connective tissue septa.⁴

A variety of cells enter into the formation of the tumor, four forms being described by Vossius and Salzman. In only one case,⁵ has mucin been found, though many of the reported cases showed what looked like myxomatous change.

In many tumors there is a strong disposition on the part of the tumor tissue to become organized into a more or less compact fibrillated material. . . . Between the two extreme types of tumor thus evolved, various intermediate types are met with, a fact which is probably responsible for the great variety in nomenclature attached to tumors of this class.⁶ [See Parsons.]

While leaning to the term used by Fischer of "gliomatous degeneration," Hudson would elaborate the name to "degenerative gliomatosis," implying a generalized overgrowth of neuroglia tissue, of infiltrative character, dependent on some degenerative change in the tissues of unknown etiology.⁷ Byers⁸ speaks of two varieties of tumors, which he describes thus:

In the first place one had to do with growths the basis of which was essentially an overgrowth of fibrous connective tissue elements of the nerve, but very protean in character, inasmuch as one found every phase of development from the embryonic myxomatous type to firm fibrous bands. The appearances were unquestionably influenced by conditions of stasis in the lymph and venous channels which resulted solely from the local anatomic arrangement of the parts; and altogether the changes suggested those characteristically present in cases of elephantiasis. These findings were in

agreement with those of practically every student of the subject as a whole, and can still perhaps be best described

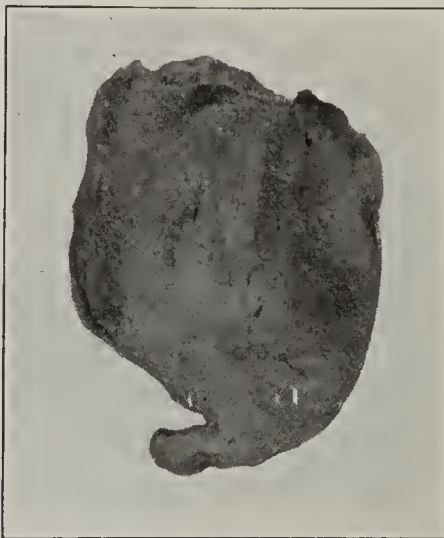


Fig. 6.—Cut surface of the tumor.



Fig. 7.—Section of nerve and tumor, $\times 24$. The upper half of the picture represents the nerve. The constriction of the sheath, at which point most of the nerve fibers end, is well shown.

1. Ellett, E. C.: Tr. Am. Acad. Ophth. and Oto-Laryng., 1915.
2. Hudson: Royal London Ophth. Hosp. Rep., 1912, xviii, 317.
3. Lehr: Handbuch der gesamten Augenheilkunde (Graefe-Saemisch), v, 910.

4. Hudson: (Footnote 2), p. 318.
5. Manfredi-Quaglino.
6. Hudson: (Footnote 2), p. 319.
7. Hudson: (Footnote 2), p. 332.
8. Byers, W. G. M.: Tumors of the Optic Nerve, THE JOURNAL A. M. A., July 4, 1914, p. 20.

by the term "fibromatosis," which I used in the title of my first contribution to the subject.

In the second group of neoplasms the changes, varying somewhat in character, were attributable to a proliferation of the local endothelial cells, and the growths were classified as endotheliomas.

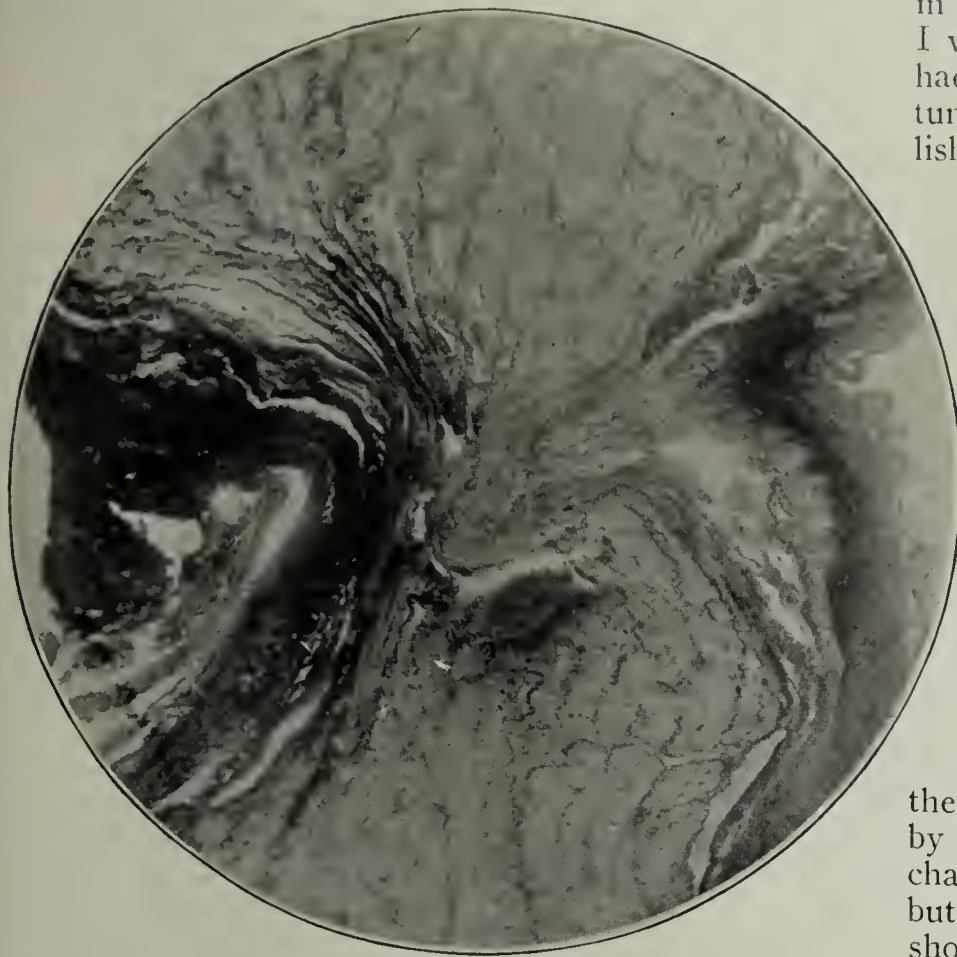


Fig. 8.—Same as Figure 7, $\times 38$. Neither nerve fibers nor vessels pass through the constriction.

Verhoeff⁹ thinks that all tumors arising within the stem of the optic nerve are gliomas.

The case here reported presents the features described as characteristic of Byers' second group, while my other case to which I have referred was distinctly of the first group. From this limited experience I would think Byers' idea of the two types is correct, although as stated elsewhere, the hyperplasia in my other cases affected only the neuroglia fibrils.

Of the cases, reports of which were collected by Hudson, 118 are examples of this process. Of these, forty-five cases were observed before the fifth year, twenty-four from the sixth to the tenth, and twenty-nine from the eleventh to the twentieth.

In no single case has a local recurrence in the orbit been recorded, while cases have been followed without recurrence for twenty-four years. . . . The intracranial condition is in the majority of cases either stationary or so slowly progressive that the patient eventually succumbs to some common ailment.²

Since the growth does not tend to invade the ball or the tissues of the orbit, its removal with preservation of the ball, without disturbing the orbital tissues, seems to be advisable. This may be done by the method of Krönlein, with temporary resection of the outer bony wall of the orbit, or by an incision to the outer or inner side of the ball, as suggested by Knapp and others, sometimes combined with canthoplasty, as advocated by Lagrange. From a limited experience I am not impressed with the advantages of the Krönlein

operation, and in the comparatively shallow orbit of a child, the operation as carried out in the case herewith reported gave an exposure which left little to be desired.

In explanation of the fact that the vascular changes in the retina after the operation were at first so slight, I would suggest that the central artery of the retina had been gradually occluded by the growth of the tumor and that a collateral circulation had been established at some time prior to the operation. The section of the nerve and some of the vessels on which the retina depended for its nutrition has been followed, first, by the signs of obstruction to the arterial circulation, and later by atrophy of the retina. The pigmentary changes are secondary to degeneration, just as we see in retinitis pigmentosa, although the effect of the traumatism to which the eye was necessarily subjected during the operation may have played some part. On several occasions I have seen very similar pigment changes follow a contusion of the eyeball.

It will be seen that the clinical features of the reported cases were very similar to those presented by the cases which I have seen, and are well described in the quotation from Hudson, given above. Particularly striking is the resemblance between this case and one reported by Arnold Knapp¹⁰ last year. The postoperative changes in the fundus were strikingly similar, but that they may assume another character is shown by a case of Treacher Collins,¹¹ in which a

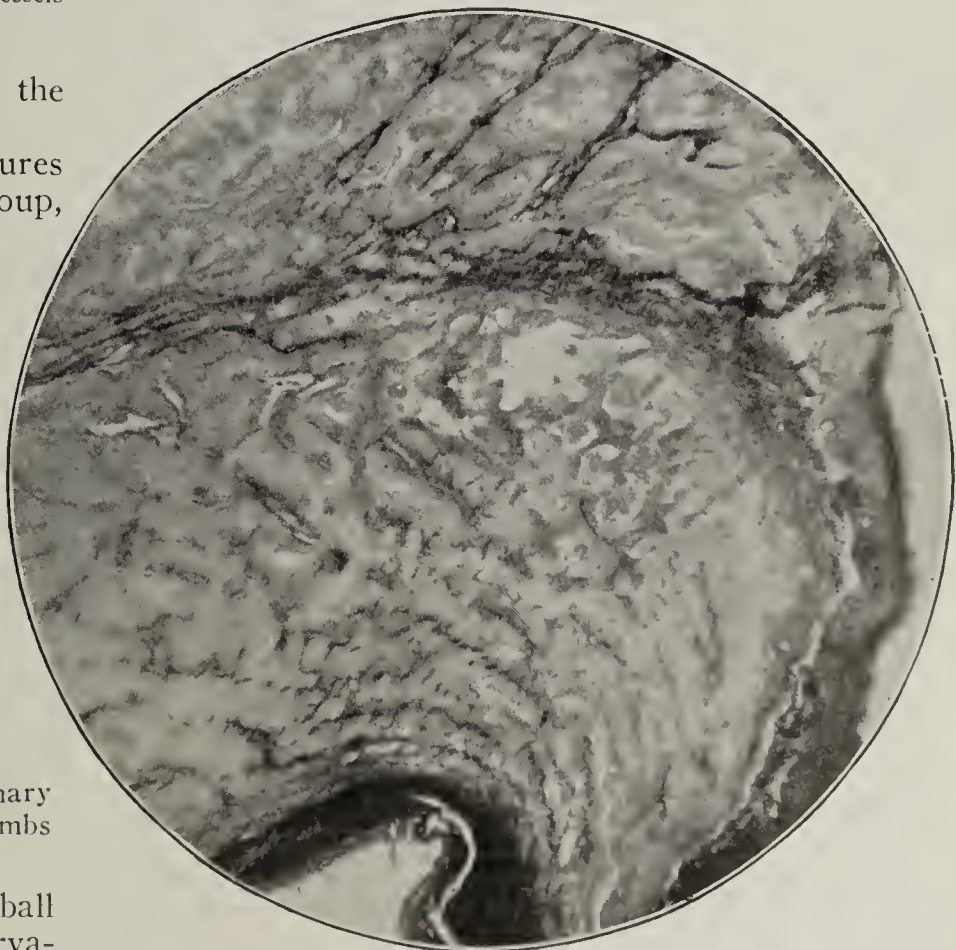


Fig. 9.—A longitudinal section through the beginning of the tumor, nearest the optic nerve, $\times 15$. The lower two thirds of the picture show nerve fibers, the upper third the connective tissue septa, with tumor cells.

large white area like dense connective tissue occupied the whole central region of the fundus. At one edge of it could be seen the optic disk, faintly outlined and

9. Personal communication to the author.

10. Knapp, Arnold: *Am. Ophth. Soc.*, 1915.

11. Collins, Treacher: *Tr. Ophth. Soc. U. Kingdom*, xxxii, 396.

more to be located by the convergence of several branching white lines¹² representing the retinal vessels.¹²

ABSTRACT OF DISCUSSION

DR. G. E. DE SCHWEINITZ, Philadelphia: When Dr. Byers presented his paper I, among others, spoke, as Dr. Ellett

of the tumor showed it to be a psammoma sarcoma, with numerous psammoma bodies. Referring to this particular patient, there was a large and rather rapid recurrence in the orbit, so that the orbit was filled with a dense mass which required evisceration, and the histology of the eviscerated portion corresponded with the histology of the primary growth. Therefore, it would seem that occasionally there is orbital recurrence. Dr. Knapp in his presentation of the case to which Dr. Ellett has referred, pointed out that although many years have elapsed the patient is not entirely safe from recurrence. In none of my cases has there been such a recurrence; one of them is of more than eight years' standing. To be quite fair, I must say that I have not removed an intradural tumor of the optic nerve and preserved the eyeball; but Dr. Knapp has done so by the Krönlein dissection on the other eye, making the incision through the conjunctiva. It would seem to be fair first to explore before resorting to the much more formidable procedure, and it would seem, in some circumstances, if not in all, that it is as satisfactory a dissection as the Krönlein.

DR. ARNOLD KNAPP, New York: I would like to repeat what Dr. de Schweinitz has just said, that we must wait for many years before regarding these cases as entirely benign. The other point I should like to bring out is the change in the retinal circulation after these tumors. The case Dr. Ellett described resembled my own and others described in the literature, in that the retinal circulation continued for some time after the optic nerve and its vessels had been divided. A patient I operated on in 1914 was seen a week ago and there is no sign of any return. The mental condition of the boy is unchanged. There was one change in this case which was very interesting to me, namely that in the macular region a very distinct chorioretinal change has developed; this possibly explains that a good

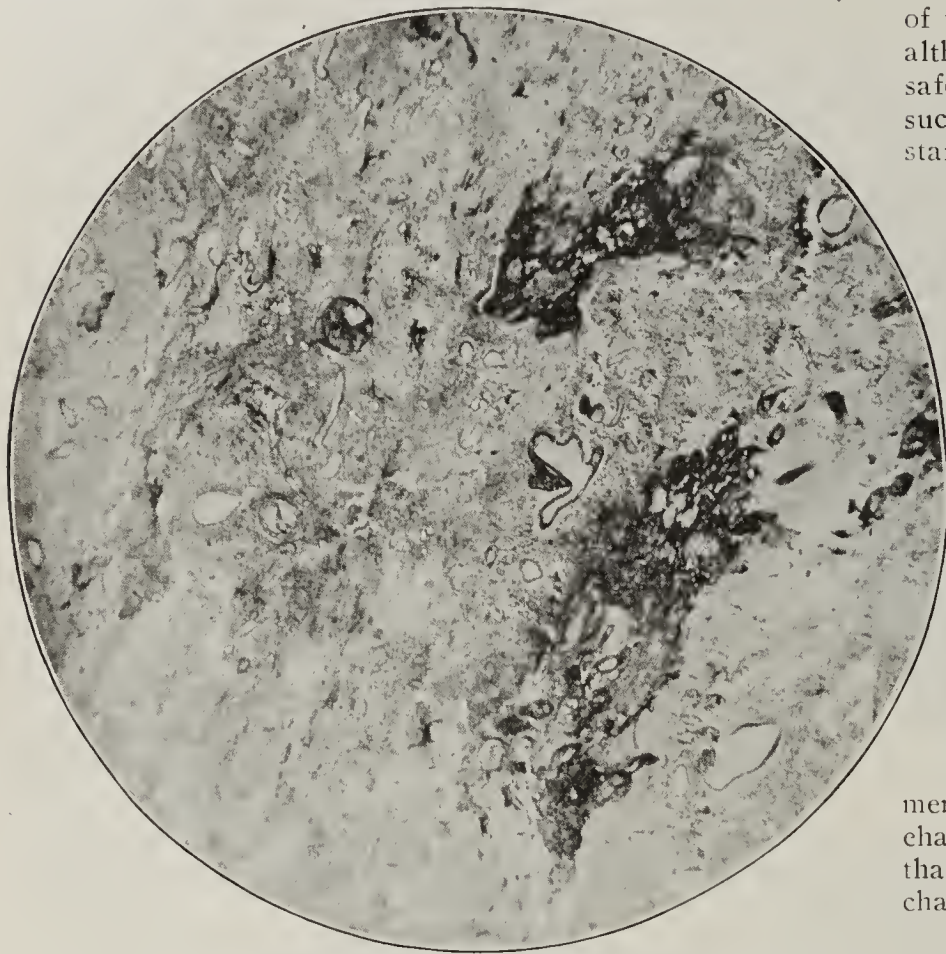


Fig. 10.—A longitudinal section through the posterior half of the tumor, $\times 15$. The arrangement of the tissue elements, the great vascularity, and the connective tissue overgrowth (dark areas) are shown.

has, of the comparative ease with which the area of operation can be reached by the method Dr. Ellett has pursued. Long ago Dr. Hermann Knapp dissected in the manner described. It has been my experience in one or two cases that this form of dissection was facilitated by a canthotomy on the outer side. In regard to whether this or a Krönlein dissection should be performed, I can only say that in a certain number of cases of orbital as well as intradural tumors it has seemed to me that the approach was as satisfactory as it could have been by means of the Krönlein dissection. I am aware that this belief is not shared by some of my colleagues. In regard to the pathology of the three tumors that I have removed, the first was almost pure fibrous tissue. The second was practically identical with the pathologic histology demonstrated by Dr. Ellett, except that there were present certain large cells which the pathologic department of the university believed to be ganglion cells. The third case was interesting because the pathologic histology

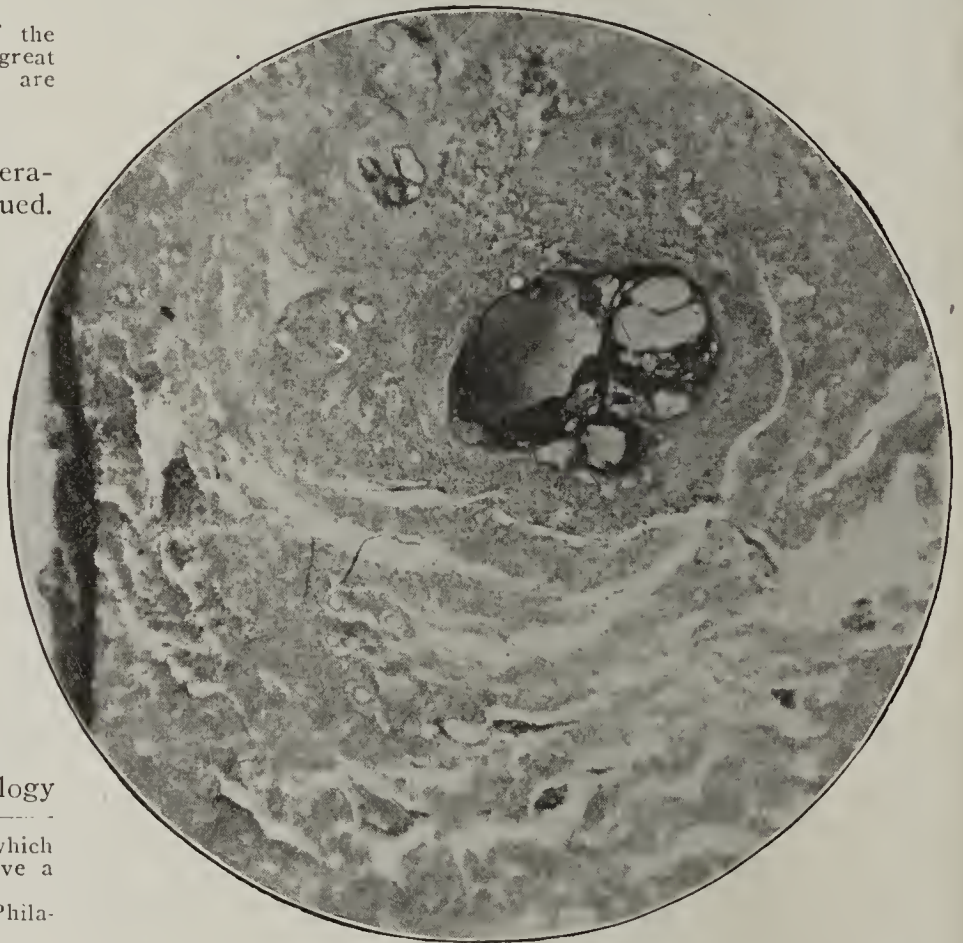


Fig. 11.—Cross-sections of tumor, $\times 15$. One very large blood channel and many smaller ones are shown. In this section the cellular elements predominate, but the magnification is too low to bring them out clearly.

12. The following are some of the contributions to the subject which have appeared since the publication of Hudson's paper, which gave a complete bibliography:

- De Schweinitz: Tr. Sec. Ophth., Coll. of Phys. and Surg., Philadelphia, Jan. 18, 1912.
- Komoto: Nippon Gankwa Gakukwai Zasshi, February, 1912.
- Schirmer: Arch. Ophth., xli, 383.
- Astvatzouroff: Weist, Ophthal., xxiv, 391 (Ann. d'ocul., Brussels, cxlviii, 399).
- Kubli: Ztschr. f. Augenh., xxviii, 393.
- Sweet: Tr. Am. Ophth. Soc., xlii, 391.
- Sattler: Arch. Ophth., xlii, 25.
- Sulzer and Rochon: Duvigneaud, Ann. d'ocul., Brussels, cxlix, 161.
- Bartotolla: Policlinico, Rome, Jan. 25, 1914.
- Eleonskaja: Ztschr. f. Augenh., xxxi, 278.
- Zitovski: Weist, Ophthal., xxx, 473 (Arch. d'ophth., xxxiv, 518).
- Smolianoff: Geneva thesis.
- DeLord and Revel: Ann. d'ocul., Brussels, cli, 466.
- Knapp: Tr. Am. Ophth. Soc., xiv, 660.
- Heed: Tr. Am. Ophth. Soc., xiv, 320.

many of the changes in the choroid and retina at the posterior pole of the eye are due to interference with the posterior ciliary blood vessels, because they are not like the slight changes we find in the macula after embolism of the central retinal artery.

CONDYLOMA ACUMINATUM OF THE
ANAL REGION IN THE
MALE *

A. RAVOGLI, M.D.

CINCINNATI

The rarity of the occurrence of condyloma acuminatum in the anal region of the male, as well as the uncertain nosologic place of these papillary acanthomas in syphilology, has prompted me to report two cases of them which recently occurred in my hospital service. Many physicians are not clear whether condyloma acuminatum is to be considered as the result of syphilitic infection, or whether it must be considered as a vegetating papillary growth independent of syphilis.

In a general way it can be stated that condyloma acuminatum is only a venereal wart, and these growths are so called because they grow around the genitals, and are preceded or associated with venereal diseases. They come on mucous membranes and on the skin moistened, macerated and irritated by abnormal purulent secretions. In ordinary cases condylomas grow as discrete excrescences. In some cases, as in mine, they become confluent and coalesce, forming large masses of cauliflower appearance. They are rarely dry, and are usually moist, according to the region they occupy. In a general way they are found together with venereal diseases. There is also a belief in the possibility that they may grow on skin or mucous membranes exposed to long irritation, to purulent discharge, independently of venereal cause.

The irritation produced by the gonorrheal secretion in a balanoposthitis or vaginitis, when cleanliness is neglected, is sufficient to inflame the skin or the mucosa, cause excoriations, and denude the papillae, which under the constant irritation grow as papillary vegetations.

Stumpke¹ and Klingmüller described vegetations developing from gonorrhea around the female genitalia and the anus. In my experience the same vegetations are found in the mucous membranes which have been the seat of irritation from chancroidal infection. In the same way, when the skin or mucous membrane has been affected with mucous patches, these have been misnamed condylomata lata, assuming, according to circumstances of locality, different degrees of growth.

The mucous patches which are nothing else than syphilitic papules, the true exponent of the secondary manifestations of syphilis, show a different appearance according to the regions of the skin of the body. The dry papule occurs on the surface of the skin, and so remains until involution, which causes desquamation of the epidermis, owing to its location.

On the contrary, when the papules are seated on the mucous membranes or on the adjoining skin, they are constantly moist with a mucopurulent discharge of

their own, or with urine or fecal matters, or with constant perspiration, and become moist papules, papula humida, mucous patches. The epidermis is consequently macerated, cast off, excoriated, the surface is covered with necrotic detritus, and the papillary layer is exposed in the center of the papule, and begins to proliferate in the form of small granulations, which give to the mucous patch the name of hypertrophic papule.

I must mention that in cases of phimosis from the accumulation of the smegma, balanitis may arise, and give origin to warts which have no specific nature.

The name condyloma acuminatum serves well to represent all those vegetations due to papillary growths, acanthoma papillare, while condyloma latum stands for syphilitic mucous patches. It may be misleading, however, and is apt to give a wrong idea as to the entity of the disease.

It would be much better to drop the name of condyloma latum as useless, and retain that of condyloma acuminatum, to designate vegetations, granulations and warts of nonspecific nature, which, being seated on the genitals, and being preceded or associated with venereal diseases, have taken the name of venereal warts.

REPORT OF CASES

CASE 1.—A man, aged 20, white, baker, of good general physical constitution, had always enjoyed good health. Two years previous to the present affection he had syphilis. He was treated with repeated injections of salvarsan until the Wassermann reaction was negative. During the early secondary manifestations, mucous patches around the anus had been the most persistent symptom. Six months later small warts began to grow at the anal rim between the mucous membrane and the skin. Other warty vegetations grew around the perianal region, and in about six months' time they had grown to a large vegetating mass, to fill up the entire intragluteal region.

When he was admitted to the venereal service, he showed the anal and perianal region filled up by a mass of papillomatous vegetations, confluent, from 1 to 1½ inches long, which was protruding out of the buttocks, of cauliflower appearance. Of the papillomatous excrescences some were sessile, attached to the base, while others were pedunculated, and attached to the others by the end-point. They were soft to the touch, and of a red cyanotic hue. Most were implanted at the edge of the anus; some were scattered on the perianal region.

The patient could no longer walk on account of the growth being tender and painful. The mass, as shown in Figure 1, had filled up the whole anal and perianal region from the coccyx to the perineum. The mass was rather soft to the touch, tender, and did not cause serious obstruction to the expulsion of the feces. An exploring finger could be introduced into the rectum without difficulty, showing that the anus was not strictured, and removing any suspicion of possible epitheliomatous nature. The Wassermann test was negative, and no symptoms of active syphilis could be found. Some secretion from the rectum was examined for gonococci, but the result was negative.

CASE 2.—A negro boy, aged 22, showed the same kind of vegetations around the anus. He had suffered syphilis for nearly two years. Has been treated intermittently with mercury, mostly by the mouth. The Wassermann reaction was strongly positive. The mass of vegetation around the anus



Fig. 1.—Condyloma acuminatum of anal region (Case 1).

* Read before the Section on Dermatology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Stumpke: Ueber gonorrhoeische Granulationen, München. med. Wehnschr., 1914, No. 28; ref., Gior. ital. d. mal. ven., 1914.

was so tender and painful as to compel him to ask for medical attention.

Treatment.—In both cases the treatment was surgical. Under general anesthesia the whole mass was firmly taken with a piece of gauze in the left hand and drawn by the opposite side. With a semicircular incision with a bistoury half of the vegetations were removed at their base, and this was repeated on the other side, the whole mass being cut off. In a moment the surface was clear. The blood was easily stopped. Other small condylomas in the perianal region were clipped off with the scissors, and touched up with solution of ferric chlorid to stop the bleeding. The mucous membrane of the rectum was sewed together with the skin. The only dressing was dry mercuric chlorid gauze. After ten days the recovery was perfect. Both patients were able to leave the hospital recovered.

Pathology.—One of the vegetations was hardened in 4 per cent. formaldehyd solution, and then in alcohol, cut in sections, and stained with hematoxylin and eosin.

The specimen under a low power shows a thick epidermis, a true acanthosis. The horny layer is thick, and is easily detached from the other layers, and the cells are not keratinized to form a strong protection. The mucous layer is thick, enlarged, made up of large epidermic cells of the prickly type. They do not show difference between the granular and the basal layer. The epidermis is adjusted on the elongated papillae, separating and covering each division of the papilla without causing any compression.

The papillae, greatly enlarged, are divided at their end into small thin sprigs. They are formed by connective tissue fibers, which are greatly increased in quantity and in size, infiltrated with small cells. Each growing papilla contains blood and lymph vessels. The capillaries which enter in the enlarged papillae have the caliber of cutaneous veins, and in some of the papillae the veins are dilated in the form of varicosities. Between the fibers forming the papillae there are lymph spaces, which are filled with fibrin granules. Leukocytes and mast cells are found in the newly formed connective tissues. The proliferating process is remarkable. It can take large proportions, by the dichotomic scission of the end of the papillae, through a chronic hyperplastic inflammatory process. The great enlargement of the blood vessels, the congestion, and the effused lymph between the tissues is the cause of the swelling of the connective tissues, and of the increase of the epidermic layers. It seems that the effusion of the lymphocytes between the connective tissue elements produces the proliferation and the increase of the growth. The papillae do not grow in one direction, but extend on all sides in the form of a fan. On account of the enlargement of the veins at the end of the growth, they take the appearance of a mushroom or of a pear. From this irregular process of side growths results the cauliflower appearance of the condylomatous mass.

COMMENT

In both cases it can be said, first, that the condyloma has had its origin on the skin and on the mucous

membrane injured by syphilis, and, secondly, that the constant presence of the normal and abnormal secretions, and lack of cleanliness have caused the proliferating acanthosis. The syphilitic base, however, is only accidental, and not necessary for the production of the condyloma. On a mucous membrane or on the delicate skin of the genitals, excoriated from the irritating secretion of the gonorrhea, or an excoriated surface left so by the presence of chancroids, papillary hypertrophy may develop with formation of condylomatous growths.

In the early period of syphilis the patient suffers with an obstinate eruption of the mucous patches of the anal region, and it is possible that the blood vessels of the area have remained affected by the syphilitic process. The stasis and the enlargement of the hemorrhoidal veins have great influence in the production of the condyloma, as they show a deep, intense red, livid or bluish color.

It is easily understood that neither salvarsan nor mercurial treatment has any action on these condylomas, as they are only local proliferations and are not produced by the syphilitic process. The mast cells, the infiltrated collagenous tissues and the dilated blood vessels are not affected by the treatment, as they are of nonsyphilitic nature, and are subject only to regressive changes.

Therefore they cannot be considered as a form of vegetating syphilid. Syphilis vegetans or framboesiformis belongs to a tertiary form of syphilis, entirely different clinically and pathologically.

Tryb² illustrated a case of the same kind of papillary growths of the upper lip, in an old syphilitic which, however, had no syphilitic base. In the same way in my cases, the condylomas, although vegetating on tissues irritated and injured by the presence of syphilitic papules, the papule has healed up, and the condylomas had nothing characteristic of the vegetating syphilitic form.

They belong to that class of condylomas which are implanted on tissues which have been the seat of syphilitic manifestations, but they are not the result of the syphilitic process. The perianal region has always a tendency to abundant perspiration, which moistens the skin and the fecal matters which from lack of care may remain, macerating the epidermis, and the exposed papillae of the derma under so constant an irritation may begin to vegetate and show up in the form of warts.

In the cases in which the acanthosis has a syphilitic base, vegetating syphilid, the growths are produced on



Fig. 2.—Section of specimen: a, horny layer partially detached; b, increased granular and basal layer; c, vegetating papillae; d, infiltrating elements between connective tissues.

2. Tryb: Ueber eine seltene Form von Acanthoma papillare aufluetischer Basis, Dermat. Wehnschr., 1913, lvii, 819.

a base hard and infiltrated, diffuse gummosus infiltration, and in this case very likely the presence of the spirochete is capable of causing vegetation. When the syphilitic infiltration has been removed through local antisiphilitic applications, the proliferations also gradually disappear.

In the case of condyloma, on the contrary, no application stops the growth of the tumors, and they grow and multiply to the point at which the patient cannot walk and is compelled to ask for medical help. The histopathologic features are also entirely different from those shown by a vegetating syphilid. In condyloma acuminatum we have seen the whole process to consist in a chronic inflammation of the papillae of the skin and of the mucous membrane, with congestion and occlusion of the blood vessels. In condyloma the process of proliferation does not undergo regressive changes as in the syphilitic tissues, but remains or continues to grow.

The epidermis in the skin or the epithelium in the mucosa excoriated by the destructive and irritating action of a chancre, or by the constant presence of the gonorrheal secretion or by the action of the syphilitic virus in mucous patches, leaves the papillae denuded, and exposed to the irritant action of the excretions and of external irritations. The irritated papillae begin to proliferate, forming acanthoma. As stated in the beginning, in the cases of long standing sinuses, we see papillary vegetations on the skin which has been exposed to the irritant action of the purulent matter.

The frequent occurrence of condyloma acuminatum on syphilitic patches was long ago pointed out by Wertheim,³ and he himself separated this kind of condyloma acuminatum from the syphilitic process.

Antisyphilitic treatment has no effect whatever on condyloma acuminatum, and its treatment rests entirely on the destruction and removal of the papillary growths. Their size, shape and quantity will determine the method of removal. In my practice I frequently use the sharp dermal curet to scrape the growth from its roots. Then I touch the bleeding wound with solution of ferric chlorid. When the condylomas are long and pedunculated, it is better to snip them off with a pair of curved scissors. In ordinary cases, local anesthesia with ethyl chlorid is enough to give a chance to scrape the condyloma. The repeated freezing of small condylomas with ethyl

chlorid has been praised as a curative method by Schein,⁴ but I prefer to rely more on the action of the sharp curet.

In the two cases reported, on account of the large size of the mass of tumors, there was nothing better to do than remove the whole mass, as advocated by Morris⁵ and Markoe,⁶ which gave in both cases the most satisfactory results.

Condyloma acuminatum is a purely benign growth and is to be entirely distinguished from condyloma latum, which is a syphilitic manifestation.

General specific treatment has no action on condyloma acuminatum, and the recovery is to be obtained only by surgical treatment.

5 Garfield Place.

ABSTRACT OF DISCUSSION

DR. PHILIP KILROY, Springfield, Mass.: I wish to mention a fact that we are apt to overlook, and that is the importance of the anal region in the diagnosis of syphilis. When I fail to find any evidence of a cutaneous nature on any other part of the body in suspected cases of syphilis, I can usually find it in the anal region. I was interested in the suggestion made by Dr. Ravogli attributing the presence of condyloma acuminatum in the anal region to uncleanness, perspiration, etc.

DR. WILLIAM A. PUSEY, Chicago: Dr. Ravogli has performed a useful function in emphasizing the fact that condyloma acuminatum in the anal region is nonsyphilitic. I would simply regard it as a vegetating dermatitis, such as may occur from low grade inflammations of various sorts. As to the treatment, I can confirm the assertion that surgical removal is the most efficient as well as the most rapid method.

DR. WILLIAM T. CORLETT, Cleveland: The severity of these cases varies somewhat in different climates. They are often ascribed to a syphilitic basis, but I do not know on what authority. I have seen several cases which were cured by simply dusting the lesions with calomel, which often gives good results, particularly in one case, a woman who objected to the odor of iodoform. I agree with Dr. Ravogli that the lesions are produced by moisture, heat and filth, causing local irritation, with secondary infection. In South America, I believe, the condition is very common in the inguinal regions.

DR. A. RAVOGLI, Cincinnati: Dr. Kilroy is correct that the cutaneous manifestations of syphilis are often found about the anus. I also agree with Dr. Pusey that in condyloma acuminatum we have to deal with a vegetating dermatitis of a low grade, a nonsyphilitic process. In my experience with these cases, calomel has not given me very good results. In the smaller condylomas a strong resorcin and salicylic acid ointment is satisfactory when patients object to iodoform.

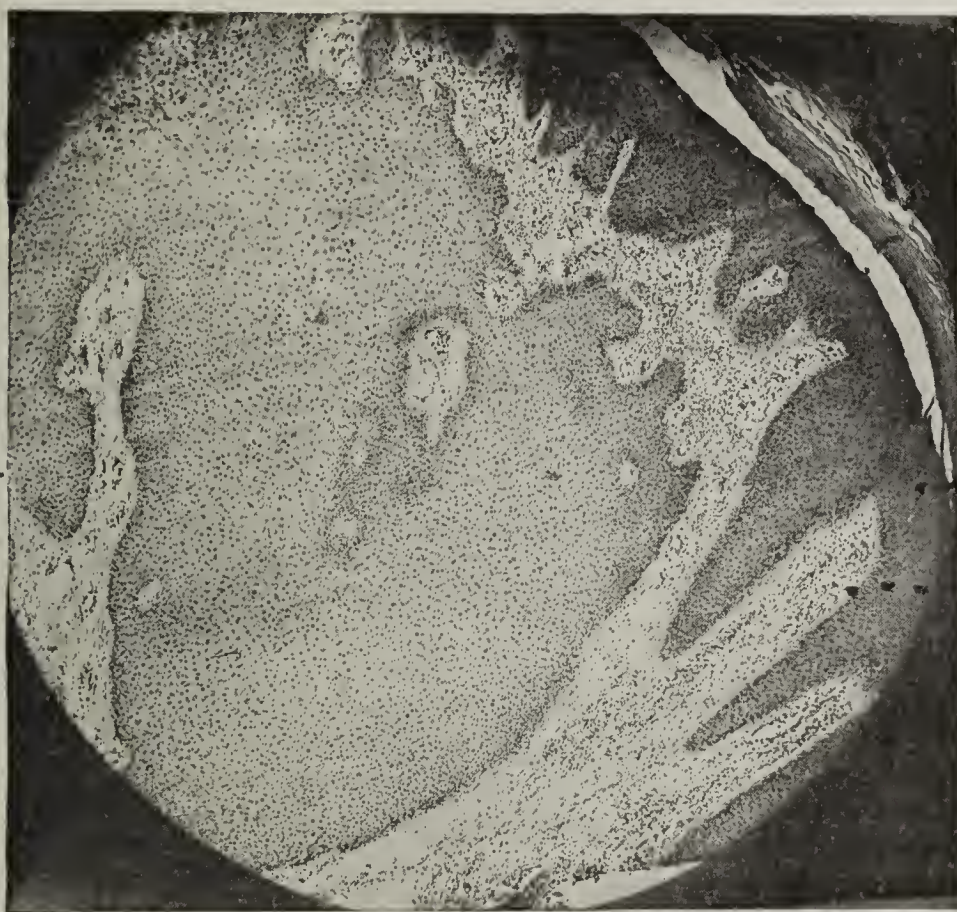


Fig. 3.—Section of specimen: *a*, horny layer partially detached; *b*, increased granular and basal layer; *c*, vegetating papillae; *d*, infiltrating elements between connective tissues.

3. Wertheim: Zur Koinzidenz von Syphilis mit spitzen Kondylomen, München. med. Wchnschr., quoted by Tryb: Dermat. Wchnschr., 1913, lvii, 826.

4. Schein: Wien. klin. Wchnschr., xviii, No. 5; quoted by Morris, C. C.: Gonorrhea in Women, Philadelphia, 1913, p. 199.

5. Morris, C. C.: Gonorrhea in Women, Philadelphia, 1913, p. 200.

6. Markoe, J. W.: Bull. Lying-In Hosp., New York, 1912, viii, 113 (quoted by Morris).

THE DESIRABILITY OF USING MIOTICS
AS ADJUVANTS TO MYDRIATICS *

HAROLD GIFFORD, M.D.

OMAHA

That homatropin may very exceptionally cause glaucoma has long been known, but a total of eleven cases of glaucoma, out of the millions in which homatropin has been used during the last thirty-five years, certainly would not indicate any great danger in its use; and although many cases have doubtless gone unrecorded, even my own exceptional experience would not indicate that it occurs in more than, approximately, one in 10,000 cases. This does not constitute any serious indictment of the use of cycloplegics and mydriatics for refraction and ophthalmoscopic work; even if there were no way of preventing the danger, we should accept it as we do the danger of quinin amblyopia or salvarsan encephalitis, in the interest of the greatest good; but, luckily, we have an almost certain preventive.

Some years ago I¹ reported the following case of glaucoma caused by the use of homatropin:

CASE 1.—A woman, aged 21, had 4 diopters of hyperopia. The eyes began to pain her from eight to ten hours after a homatropin test, but I was not called until the second day, when I found both eyes to be nearly blind from acute glaucoma, which was relieved within three hours by a solution of pilocarpin and cocain (2 grains of the former and 1 grain of the latter to the dram, 1 drop every half hour for three hours), but the first examination of the fundus, which was made two days later, showed numerous hemorrhages in the center of each retina; and although one eye regained normal vision, the other never improved beyond $\frac{2}{70}$, and showed a tendency to glaucoma which required the use of eserine (physostigmin) as long as she was under observation.

In reporting this case, I laid stress on three points: 1. If this patient had lived in some remote locality, she might easily have lost the sight of one or both eyes. 2. The retinal hemorrhages, which permanently damaged one eye in this case might *possibly* have been avoided, if I had taken more time to reduce the tension. 3. To prevent such occurrences, the use of homatropin should always be followed by eserine even in comparatively young patients.

Since then I have had four more cases of homatropin glaucoma:

CASE 2.—A woman of about 30, while in my office, being tested under homatropin, developed acute glaucoma in the left eye with marked hypertension and a sharp arterial pulse.

CASE 3.—A woman, aged 65, had a single drop of 4 per cent. homatropin in the left eye, for the examination of fine changes at the macula. As near as I could learn, she received the regular dose of eserine, but in spite of this, she developed an acute glaucoma in the left eye during the same evening. In both these cases the glaucoma yielded promptly and permanently to eserine (physostigmin).

CASE 4.—Another patient was not so fortunate. She was a woman of 44 years, who came at a time when several years of immunity had so dulled the edge of my anxiety that I had permitted the rule to give out-of-town patients eserine to use at home gradually to fall into disuse. She received a homatropin refraction test of both eyes, followed by 2 or 3 drops of eserine (1 grain to the ounce). She then went to her home about 150 miles distant, and after about a month, some friend wrote me that the sight of the

right eye had never come back. I advised her to return at once, but neither saw nor heard anything more of her for about two years, when she stopped in and I found the right eye to be entirely blind, with tension plus 2, dilated pupil, shallow chamber and excavated disk. It was quiet and had never given any pain to speak of. The left eye was normal.

Since then I have tried strictly to enforce the rule to give a vial of eserine solution to out-of-town patients and have had no further trouble of the same sort with them. This rule, however, is not entirely fool and accident proof. Some patients lose the bottle or spill its contents, and occasionally, in spite of all precautions, a patient gets away without any eserine.

This is what happened in my fifth and, it is to be hoped, my last case:

CASE 5.—A woman, aged 69, had slight lens and vitreous opacities in each eye. R. E. V. = $\frac{2}{20}$ L. E. V. = $\frac{2}{70}$. L. E. turned in a little and had been slightly amblyopic since childhood. She was given a drop of homatropin, 4 per cent., in each eye for ophthalmoscopic purposes. Through a misapprehension, when she was ready to leave, the office girl gave her eserine in the *right* eye only. That night the *left* eye became painful and she felt so bad generally that although she did not think it worth while to report to me, she stayed in bed for a week. She then returned with the right eye normal, but the left eye had marked glaucoma with V = light perception only, tonometer R. E. 20 mm. L. E. 60 mm. Eserine did no good, and the next day an iridectomy, preceded by a posterior sclerotomy, was done; but her vision improved only to fingers at 6 feet, with T. 51 mm.

We are often tempted to complain of the too anxious patient; but the too trusting kind, of which Cases 4 and 5 were such striking examples, is much more dangerous.

When I reported my first case of homatropin glaucoma, only two others had been reported, that of Sachs,² in which a man of 58 received a single drop of 1 per cent. homatropin for ophthalmoscopic purposes, and that of Shears,³ whose patient was a woman of 52, who received homatropin in one eye for a refraction test. Since then I have found reports of four more cases beside my own: Friedmann,⁴ for a refraction test, put 3 drops of a 1 per cent. solution of homatropin into each eye of a woman, aged 37. That night glaucoma developed in the left eye only, and as it failed to yield to myotics, an iridectomy was done several days later, with some improvement. This woman gave a history of going blind in the same eye three days after a similar test, three years before, but as she had recovered completely in a few days, and the eye seemed perfectly normal, Friedmann felt justified in using homatropin.

In the discussion of Friedmann's case, Strickler⁵ mentioned a similar case in a woman, aged 30; and Stevens,⁶ still another in a patient (male or female?), aged 30 years.

Edgar Stevenson⁷ gave a man, aged 24, a couple of drops of homatropin solution, 4 grains to the ounce, on account of irritation following the removal of a foreign body from the cornea. Acute glaucoma developed in the affected eye the next day.

In six of these eleven cases (Shears, Strickler, Stevens, Stevenson and two of mine), a prompt and complete cure was obtained by the use of a myotic.

* Read before the Section on Ophthalmology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Gifford, Harold: Ophth. Rec., 1900, p. 328.

2. Sachs: Centralbl. f. Augenh., 1884, p. 499.

3. Shears: Ophth. Rec., 1900, p. 150.

4. Friedmann: Ophth. Rec., 1908, p. 92.

5. Strickler: Ophth. Rec., 1908, p. 93.

6. Stevens: Ophth. Rec., 1908, p. 94.

7. Stevenson, Edgar: Ophthalmoscope, 1913, p. 73.

In one of my patients, the myotic cure was complete in one eye and incomplete in the other; in another, an iridectomy produced some improvement, but the eye was of little use. In one case (Shears) an iridectomy was necessary with perfect result. In one case (Friedmann) an iridectomy was necessary with improvement. In one case (my fourth), without treatment, total blindness in one eye resulted.

Shears, in reporting his case, recommended that when homatropin was used, eserin should be instilled "before the patient leaves the hospital." In my first report, I made the further suggestion that out-of-town patients should take eserin with them for use the next day; a rule, the importance of which is indicated by the deplorable result in my fourth case, in which it was neglected.

My present plan is this: Each homatropin patient (except young children), whether the drug has been used for refraction or for ophthalmoscopic work, beside having the eserin instilled before leaving the office, receives from 10 to 15 drops of eserin solution, 1 grain to the ounce, in a small vial with a partly attached label on which is printed the following:

Put 1 drop into eye with butt end of match or tooth pick tonight at suppertime and bedtime; after today, 1 drop three times a day until pupil of eye and sight for near things gets same as before test. If necessary to refill, have druggist put in solution of eserin sulphate, 1 grain to ounce.

A match is recommended rather than a dropper, because it is less apt to waste the solution. The importance of using the eserin the same night is indicated by the fact that in several cases the trouble has begun at that time, in one case even when physostigmin had been used in the afternoon. The reason for the indeterminate period of use is that the time required for the homatropin effect to wear off varies considerably. In a case reported by de Schweinitz,⁸ the effect lasted five days. Why my own experience with homatropin has been so unusual I cannot say. For a refraction test I generally use 1 drop of a 4 per cent. solution four times in the course of an hour. This strength is not unusual so far as I can learn; but that the intensity or, at least, the duration of the homatropin effect has something to do with the danger is indicated by the fact that while in four cases glaucoma resulted from a single application, these patients, with one exception, were over 55 years of age; while of the seven who received homatropin for a refraction test, all but two were under 40. In other words, the use of a single drop of a mydriatic solution carries very slight danger except after the age of predisposition to glaucoma has been reached. Hence, for ophthalmoscopic work, the weakest solution that will widen the pupil enough is the best. Whether for this purpose euphthalmin or cocain is as serviceable as a 0.5 per cent. solution of homatropin I doubt.

Of course there is nothing about homatropin glaucoma that is essentially different from any mydriatic glaucoma, such as has been observed a number of times after atropin and cocain; also after duboisin,⁹ scopolamin,¹⁰ euphthalmin,¹¹ epinephrin,¹² and even holocain¹³; and the fact that since the introduction of homatropin more cases of glaucoma have been reported

from it than from atropin is, aside from its freer use probably because glaucoma from atropin once having been established as a thing to be looked out for, it has not been thought worth while to report it. It follows that when any mydriatic is used for temporary effect, it should, except in early childhood, be followed by some myotic. I must admit that after using cocain for foreign bodies or in lacrimal cases I generally think it enough to instill 2 or 3 drops of eserin before the patient leaves; and, when only a little cocain is used, before a lid application, for instance, I use nothing at all to neutralize it. The mydriatic effect of holocain and epinephrin is usually so slight that it can be neglected. I generally exclude young children from attempts to neutralize mydriatics, both because the danger is probably absent and because they put up such a fight. With this exception, although the youngest patient so far reported was a woman of 21, I have not felt like drawing an age line on the prophylactic use of eserin.

It is worth noting that of the eleven cases of homatropin glaucoma, the patients were women in eight cases.

CONCLUSIONS

Glaucoma from homatropin or other mydriatics, whether used for refraction or ophthalmoscopic work, is a slight but real danger. It is almost entirely preventable, and for this purpose an eserin solution not only should be instilled immediately after the examination, but also should be given to the patient to use at home until the effect of the mydriatic is gone.

I know that eserin, in some form, is now generally used after homatropin refraction tests, but I have a decided impression that it is not used so often or so thoroughly as it should be.

Brandeis Block.

ABSTRACT OF DISCUSSION

DR. EUGENE SMITH, Detroit: I do not appreciate any particular difference between homatropin and the other mydriatics in the production of glaucoma. I have seen several cases resulting from the use of other mydriatics. The only point I can see is the frequency, perhaps, of the use of homatropin and the infrequency of the occurrence of glaucoma in that connection. Most of us are more or less conversant with the various theories of glaucoma, and the paper does not call for extensive discussion of these theories; still it is necessary to consider a proper *raison d'être*. I am inclined to think that a vasomotor disturbance plays an important part in the matter under consideration. In the few cases I have seen considerable turgescence following very shortly after the application of the mydriatic. It can readily be understood that presupposing a small circumlental space and a blocking of the filtration angle a glaucomatous condition might develop. Experience suggests some general rules which may ward off or control the condition and check it permanently. No doubt it would be well to assume a possibility of its occurrence in all hyperopic eyes and follow the suggestion of the author to use eserin in all cases after the use of a mydriatic, in young adults as well as in middle age. The first observations with regard to mydriatics producing glaucoma were made by Haskett Derby of Boston, I think in 1866 or 1868, so that America deserves the credit for calling the attention of the profession to this extremely important subject.

DR. CHARLES MAY, New York: I have used 2 per cent. of homatropin in combination with 1 per cent. cocain for the purpose of estimating errors of refraction for twenty or twenty-five years. I have invariably used eserin in 0.5 per cent. after each examination. I do not consider it entirely fair to allow a patient to leave the office after the pupils have been dilated with homatropin without using eserin,

8. De Schweinitz: Nagel-Michel's Jahreshb., 1890, p. 129.
9. Heyl: Nagel-Michel's Jahreshb., 1882, p. 412.
10. Treutler: Nagel-Michel's Jahreshb., 1905, p. 618.
11. Knapp, Ring: Nagel-Michel's Jahreshb., 1903, p. 651.
12. McCallan: Nagel-Michel's Jahreshb., 1903, p. 651.
13. Plastinin: Klin. Monatsblt. f. Augenh., June, 1914, p. 896.

subjecting them to discomfort for thirty-six or forty-eight hours when it is possible to make them comfortable in a little while with the instillation of eserine. I have performed as many of these examinations under homatropin as any man and I have never had a glaucoma result. My plan is to instil such a solution in four doses at intervals of three minutes, wait one hour, undertake the examination, and then put in 1 drop of 0.5 per cent. solution of eserine and follow that in three minutes with a second drop. I tell the patients they will have a great deal of uncomfortable twitching of the lids for a while. I have never had any unfortunate results. Perhaps the reason I have never had trouble is because I am careful of the homatropin I use, and I make all my own solutions. In some cases in which glaucoma has resulted we cannot be sure, if the oculist has not put up his own solutions, that he has not been using atropin. In the second place, if he allows a nurse to put in the drops, how does he know she has not used atropin. I never allow a nurse to put drops in a patient's eye without first showing me the bottle. I am surprised that everybody does not use eserine after homatropin, even in children. It is so easy, so successful, so universally dependable, that in an hour the patient has lost the inconveniences of homatropin, and I believe has gotten rid of all dangers.

DR. W. W. KAHN, Detroit: I am glad that Dr. Gifford was not carried away by his unfortunate experiences to discourage the use of cycloplegics for refractive purposes. There is certainly nothing against and much in favor of the use of a miotic after the use of homatropin and atropin, respectively. The principal point in connection with this question is the problem of the causation of primary glaucoma. While its symptoms and pathology are well understood, its causation is still problematical. The most probable cause of primary glaucoma is the one pointed out years ago by Dr. George M. Gould, namely chronic and unrelieved eyestrain. Eyestrain does raise the tension, not much but perceptibly, and relief of eyestrain lowers heightened tension, also not much but perceptibly. The practical point to the refractionist is to differentiate between the heightened tension of glaucoma and the heightened tension of eyestrain. In the first case a cycloplegic is naturally contraindicated while in the second case the relief of eyestrain must be effected at all hazards, which to me as to most of our colleagues is impossible without the use of a cycloplegic. That this question is not at all problematical was brought home to me a few years ago by a patient, 30 years of age, who came to my office bearing a bottle of drops labeled "physostygmim" and the diagnosis of glaucoma had been made by his oculist. His pupils were narrowed down to pinpoints. The tension was about +1 in both eyes. He had constant eyeache and headache and was unable to use his eyes for near-work longer than for one or two minutes. The fundus, as much of it as was visible through the narrow pupils, was normal. Vision was $\frac{20}{20}$ plus o. u. My attempt to refract him without a cycloplegic proved unsuccessful, due to his accommodative spasm. With the permission of the patient I instilled a 2 per cent. homatropin solution every ten minutes for one hour and a half, but even then the refraction was not a success. As the homatropin did not increase the pain or tension I ordered atropin for a day and a half. The atropin instillations relieved the patient of all symptoms of strain or pain. After a careful refraction the patient recovered entirely; the tension became normal and today he is studying medicine. In twenty years I never saw a case of glaucoma produced by a cycloplegic, but I do realize that I run the risk of provoking an outbreak of glaucoma in an eye predisposed to it, but there is the still greater danger of contributing to the causation of glaucoma by not using a cycloplegic for refractive purposes when a cycloplegic is indicated. We must adopt the routine use of a miotic after the use of a cycloplegic.

DR. JOHN GREEN, JR., St. Louis: It seems to me probable that Dr. Gifford's first patient had an established juvenile glaucoma before the instillation of homatropin. This case was reported in 1900 before the days of accurate instrumental tonometry. In eyes, the tension of which is only slightly

above the physiologic limit, finger palpation often fails to reveal the glaucomatous state. The fact that the eyes of this patient ever afterward showed a tendency to glaucoma is additional proof of the presence of the disease prior to the instillation of the drug. A chronic glaucoma was converted into an acute glaucoma. A young woman, 26 years of age, consulted me with symptoms of asthenopia—frontal headache, blurred vision in reading, etc. She had a manifest hyperopia of 2 D., with which V. equalled $\frac{1}{2}$, either eye. Before using homatropin I examined the eye grounds, and to my amazement found typical glaucomatous cups. Her fields were much contracted. Oft repeated palpation during the three weeks the patient was under observation did not convince me that the tension lay in the glaucomatous zone. (This case also occurred before the days of the tonometer.) Is there anything in the action of homatropin that distinguishes it from other cycloplegic drugs? Dr. Gifford believes that atropin glaucoma has not been reported "because glaucoma from atropin once having been established as a thing to be looked out for, it has not been thought worth while to report it." Atropin does not induce ciliary hyperemia and dissipates it if present. We are all familiar with the congestion of the conjunctiva and ciliary region which follows repeated instillations of homatropin for cycloplegic purposes. May not such congestion ensue from a single drop of a strong (4 per cent.) solution? I doubt very much if other men follow Dr. Gifford in the use of a 4 per cent. solution, 2 per cent. and 3 per cent. are the usual solutions used for cycloplegia and one grain to the ounce will suffice for mydriasis. May not the congestion of the ciliary body and root of the iris induced by homatropin be a factor in the induction of acute glaucoma in susceptible eyes?

DR. ARTHUR G. BENNETT, Buffalo: I have been in the habit of using a 2 per cent. solution of homatropin with 1 per cent. cocaine for about twenty-five years, and I have had two cases of acute glaucoma following this instillation. The first case occurred in a young woman, aged 26, who came in to have glasses fitted. I allowed the homatropin to be put in her eye without examining the fundus, so that I cannot say what the condition of the nerve was. She had a most acute attack of glaucoma in one eye, in which she had 6 diopters of myopia. The eye did not respond to the eserine and I was obliged to do an iridectomy. She made a good recovery. Three years ago a woman about 45 years of age came with the same kind of a history, of vision failing for reading, and I used my stock drops. She had an acute attack in both eyes while in the office. I used eserine and gave morphine hypodermically. The pupils did not come down in the office. I kept her there two or three hours. She had nausea, vomiting and a great deal of edema of the conjunctiva, and was very ill. I sent her to the hospital and followed as soon as possible. When I got there the pupils had contracted and she was well, a recovery with $\frac{20}{20}$ vision. The very first time I examined that fundus I would defy you to say that it is a glaucomatous nerve. The tension is normal with the tonometer. Since then I have followed out systematically the use of eserine, two grains to the ounce in every patient, and have had no further trouble.

DR. HIRAM WOODS, Baltimore: My experience with homatropin glaucoma is limited to one case, but it was quite instructive. In a man 49 years of age homatropin in 1 per cent. solution was used for mydriasis for examination. He developed a typical acute glaucoma in the office. He was blind and I took him home in a carriage and stayed with him all day, using a 2 grains to the ounce eserine solution. He recovered without permanent bad consequences. The point brought up by Dr. Green was illustrated in that man. I did not inquire into his history at first, but after having done the mischief I found that the man had had from time to time halos about an artificial light. If I had been more careful in getting the history I would have been saved trouble and he would not have suffered a dangerous glaucomatous attack. I think it is important when approaching the age of possible glaucoma to know something of the

history or to examine the field before using the mydriatic. Another point is, what are we to do if we do not use homatropin?

DR. ALBERT E. BULSON, JR., Fort Wayne, Ind.: It is quite possible that the use of a cycloplegic in refraction work is responsible for many more cases of glaucoma than is generally conceded. Doubtless every ophthalmologist of considerable experience has had at least one case, or knows of such cases in the practice of others, cases that have not been reported. I have encountered two instances in which glaucomatous symptoms followed the use of the cycloplegic, though in neither instance were there any serious after-effects, as the condition was discovered promptly and active elimination and the use of miotics brought about a subsidence of the symptoms. However, they pointed to the advisability of using a miotic more often following the use of homatropin for refraction work or to facilitate ophthalmoscopic examination. I do not believe that it is so imperative that miotics should be used in children and young adults, but in patients past 30 years of age it would seem to be a precaution to be adopted. There are, however, a certain number of cases in which atropin is indicated, but before using atropin or any other cycloplegic it is well to take into consideration the tonometer findings and the various clinical manifestations that we know have a tendency to produce glaucoma. This will include faulty elimination, high blood pressure, the shallow anterior chamber, etc. The existence of a beginning simple glaucoma should be eliminated. Another point which is worth considering is the susceptibility which some patients have to the use of eserine. I have seen a marked conjunctivitis, and dermatitis of the skin for a considerable area about both eyes, produced by one instillation of eserine. Pilocarpin, while less effective, is therefore preferable, though more than one instillation is usually required. I never have thought it necessary to give the patient a miotic for home use after having used a miotic in the office, but in view of the possible prolonged action of homatropin, the practice would seem to be a wise precaution. In this connection, however, I wish to emphasize the importance of continuing the effect of the cycloplegic for its sedative influence on strained ciliary muscles; but it is my opinion that these cases should be under careful observation during the cycloplegia.

DR. E. E. BLAAUW, Buffalo: The best prevention of homatropin glaucoma is not to use it. You do not need to use it. It is unphysiologic, in my opinion, and absolutely unnecessary.

DR. JOHN E. WEEKS, New York: I have used homatropin for at least twenty-five years and I have had no case of glaucoma in my own practice. I have, however, seen one case in my clinic and one case in consultation. I have seen one case of glaucoma induced by the use of cocaine. It is my custom to take the tension of the eyeball with the finger. I do this in all cases before I apply the mydriatic. If the tension is above normal apparently and the pupil is of moderate size, I do not use the mydriatic. But I do not hesitate to use the mydriatic in cases of known glaucoma if the pupil is small and has been made small by a myotic and I wish to get a clear view of the background of the eye. I use cocaine if I can procure suitable dilatation, but if I cannot produce suitable dilatation I do not hesitate to use homatropin. It is my practice to use a miotic in every case after a mydriatic has been employed. The miotic I use in older individuals is eserine; in younger persons, pilocarpin. In young persons if the tension of the eyeball after the use of the mydriatic is normal or below the average normal, I sometimes omit the miotic. If the pupil responds to the miotic only slowly I give them a miotic to use at home. I think if we will carefully study the tension and make it the rule to use the miotic subsequently, the danger of exciting a glaucomatous reaction is certainly small. The case that occurred in the clinic was that of a young woman 17 years of age whose family history was poor. Her mother had had glaucoma. Homatropin was employed by my assistants in determining the refraction. An acute glaucoma followed that same afternoon before the patient had left

the clinic. She was admitted to the infirmary and miotics employed, but in spite of the use of strong solutions of eserine the pupils did not become small and I was forced to do an iridectomy. Fortunately, the glaucoma was cured. This occurred about ten years ago; I saw the patient last summer, and no return of glaucoma had taken place.

DR. W. H. WILDER, Chicago: I hope this valuable article by Dr. Gifford will not be misconstrued by certain individuals who attempt to examine the refraction of the eye, because of failure to read the context. It has been extremely gratifying to learn that so few of our members report attacks of glaucoma following the use of homatropin. My experience is limited to only one case in a woman about 48 years of age, in whom the instillation of a 2 per cent. solution excited an acute attack that was promptly relieved by eserine. I am inclined to think, however, that in any case of high tension excited by homatropin, some other cause at some other time might easily bring on an attack of glaucoma against which we should be on our guard. It seems to me that because of certain anatomic peculiarities of the eye that we do not yet understand, a comparatively small number of persons under certain exciting conditions will develop glaucoma, while the vast majority, because of the absence of such anatomic peculiarities, will never have an attack no matter how they or their eyes are excited. I wish to emphasize this thought, that in view of the few cases that occur from homatropin as shown by this discussion we should combat the idea that a mydriatic is not necessary for refraction, and so defeat the purposes of certain irresponsible individuals who are endeavoring to practice this part of ophthalmology.

DR. FREDERICK FRISCH, Atlantic City, N. J.: Referring to the alarming symptoms which have been mentioned after the use of eserine solutions, I found that there was more twitching when much had run over, coming in contact with the skin of the lids. Another reason for the twitching is the rather abrupt action of watery solutions on iris and ciliary muscles. Both of these conditions can be eliminated by using the eserine in ointment form. When watery solutions are used, they should contain one-half per cent. of cocaine.

DR. JOSEPH W. CHARLES, St. Louis: Twenty-five years ago I was taught that in cases of glaucoma which could not be operated on for one reason or another, pilocarpin was the mydriatic of choice to be used at home; that there was a definite danger of iritis in certain cases in which eserine was used indiscriminately by the patient.

DR. HAROLD GIFFORD, Omaha: If you use enough eserine you can get adhesions between the iris and the lens; but in the way I have used it it is not necessary, as a rule, to use more than three or four drops, and in almost every case the effect of the homatropin is entirely gone by that night. I generally use three or four drops the first day and have no need of using it afterward, and I have seen no danger from iritis after its use. It seems to me that there are two or three points that ought to be kept in mind as the result of this discussion. First, the importance of being as careful as possible not to use homatropin in a case which is predisposed to glaucoma; but that does not insure you. There is no warrant for allowing patients to go away from the office without eserine after using homatropin. In the cases cited by Dr. Bennett and in mine, in which after they had glaucoma the eyes have been perfectly normal, with no sign of glaucoma by any test one could make, how are you going to find these signs before using homatropin? In other words, the test either by the finger or by the tonometer is not a sufficient safeguard against the possibility of homatropin glaucoma. Second, what shall we do in the way of prophylactic measures before using homatropin? Shall we use the tonometer in every case? I know well there is no use suggesting that. It might receive the official approval of this society, but nobody would do it in all cases, unless just beginning their work. But it certainly is wise if you are going to use homatropin in a patient over 40 to examine the fundus first. Test the case first carefully with the finger, and if there is the slightest question in the history or any other part of the case to suggest danger, use the tonometer.

But even if you do that you are not sure you may not have homatropin glaucoma as the result of its use. Another point that has been brought out is the desirability of using as weak a solution of homatropin as is consistent with the effect to be obtained. I have used a 4 per cent. solution. I did it on the recommendation of the first man who began to use it, and stuck to it. I am going to use a weaker solution. If a 2 per cent. solution will do the work, then we ought to use it. I notice some men use 1 per cent. I am going to try it. The weaker solution is certainly desirable. As to the strength of the eserin to be used afterward, Dr. May has used 0.5 per cent. He has used two drops only and has never seen any trouble. There are thousands who have never used anything and have never seen any trouble; but if two drops of a 0.5 per cent. solution of eserin in the office will do the same thing that a one grain to the ounce solution will do used throughout the next day, let us use it. But I do not believe it gives the same assurance of immunity that the same or a weaker solution would give if the patient took it home to use in case the effect did not pass away; especially patients going out of the city. We must help them out of this danger.

ANGINA EPIGLOTTIDEA ANTERIOR

REPORT OF A CASE CAUSED BY THE
BACILLUS INFLUENZAE

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In spite of the conflicting evidence on the question of whether angina epiglottidea anterior is a separate pathologic process, or only a part of a general involvement of the adjacent structures, it is an undeniable fact that a curious inflammation of the epiglottis in which there is remarkably little involvement of the rest of the throat does occur. Clement F. Theisen,¹ in 1900, reported three cases of this disease and was quite positive then that angina epiglottidea anterior, or as he styled it "acute infectious epiglottitis," occurs as a primary affection of the epiglottis. However, this view is disputed by Semon,² Kyle,³ and others. In 1914, Theisen⁴ reported another case of this disease and made the statement that added experience with this condition has led him to believe Semon's views, "that the various forms of acute septic inflammation of the throat and neck, hitherto considered as so many essentially different diseases, are in reality pathologically identical, that they merely represent degrees varying in virulence of one and the same process," still hold good and angina epiglottidea anterior should not be classified as a separate process.

During the past fifteen years very little has been written on this disease, so the following case, while strikingly like some of the cases reported several decades ago, may add something to the bacteriology of this condition.

CASE REPORT

Jan. 16, 1916, G. G., a physician, aged 36, developed the sensation of a foreign body in his throat. He had had no previous illness for several years. The following day he consulted me. Examination of the pharynx revealed a slight redness of the mucous membrane. The tonsils were slightly congested but not enlarged. No treatment was administered. By night, however, deglutition became quite difficult and the temperature was 103 F. The patient slept little that night on account of pain in the throat.

The next day, January 18, the symptoms gradually became worse until by night the pain was constant and almost unbearable. Deglutition was now extremely difficult and the temperature was still 103. Breathing was a little difficult while the patient was lying down.

January 19, I made a second examination. The pharynx and faucial tonsils appeared the same as at my first examination. Speech was muffled and there was a nasal twang. A laryngeal examination revealed the source of the trouble. A marked edema of the anterior surface of the epiglottis was present. The epiglottis measured about 1.5 cm. in the antero-posterior diameter, was dark red, and was boggy to the touch. On the anterior surface were two ulcers, measuring about 3 mm. in diameter, round, sharply demarcated, with a grayish exudate covering the base of each ulcer. While a complete view of the larynx could not be obtained, it appeared normal. The lingual tonsils were congested, but not enlarged.

Scarification of the epiglottis was considered as soon as the diagnosis was established, but, as the symptoms seemed to be abating, this was not done. Twice daily the ulcers were cleansed with hydrogen peroxid, and a 1 per cent. ichthyol solution was applied. The ulceration and edema of the epiglottis gradually subsided until by the twelfth day after the onset of the disease the epiglottis was practically normal.

COMMENT

Little is known of the bacteriology of angina epiglottidea anterior. Theisen realized this and attempted to identify the causative organism. He made cultures from the epiglottis in two of his cases, isolating the pneumococcus and streptococcus in one and the pneumococcus and staphylococcus in the other. On the fourth day of the disease in my case, I made cultures and smears from the ulcers. Dr. G. M. Graham, bacteriologist for the Texas State Board of Health, reported that these showed large numbers of influenza bacilli associated with a few pneumococci and staphylococci. The latter were in such small numbers that it is probable they represent the contamination which would almost necessarily result in making a culture or smear from this region. Cultures and smears were again made three days later, when the ulcers showed well marked evidence of repair. The *Bacillus influenzae* had now almost disappeared from the ulcers, leaving the pneumococcus and staphylococcus the predominating organisms.

It appears that the ulceration and edema of the anterior surface of the epiglottis was caused by the *Bacillus influenzae*. While this organism is found in the normal throat, its occurrence in large numbers in almost pure culture on an ulcer would seem to give it a pathologic rôle. It is significant, too, that this infection occurred during the presence of a rather severe epidemic of grip in the patient's community.

In the case outlined above, with the ulceration and edema and all evidence of active inflammation confined to the epiglottis, the process appeared to be primarily in the epiglottis; but my limited experience with this condition prevents me from forming any definite opinion on this point. However, that the *Bacillus influenzae* may, under certain conditions, have a selective activity for the epiglottis, and that this may be of more frequent occurrence than is generally supposed, is a possibility.

The Care of the Child.—The duty of bringing up children belongs to the mothers, and whatever we do we must not be too ready to relieve them of their responsibility; we can, however, do much to see that the rights of children are not ignored and that the mothers have the opportunity given them of learning how best to rear their children.—H. T. Ashby, *Infant Mortality*.

1. Theisen, Clement F.: Albany Med. Ann., 1900, xxi, 396.

2. Semon, Sir F.: Tr. Roy. Med. and Chir. Soc., London, lxxxviii, 189.

3. Kyle, D. Braden: A Text-Book of Diseases of the Nose and Throat, 1914, p. 652.

4. Theisen, Clement F.: Tr. Am. Laryngol. Assn., 1914, p. 243.

New Instruments and Suggestions

A MOSQUITO COLLECTING DEVICE

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Health officials, entomologists and others who may have occasion to collect mosquitoes in numbers for identification, dissection or experimental purposes will find this apparatus to have decided advantages over the means generally employed. The apparatus is the application of the principles of the fly trap to the capturing of mosquitoes.

The advantages of this means of collecting over the older methods of using test tubes, chloroform and cyanid killing tubes are: (1) rapidity in capturing; (2) absence of injury and rubbing of the specimens by having to close tube; (3) avoidance of wetting specimens with excess chloroform; (4) prevention of escape of insects when an attempt is made to catch more than one live mosquito in a tube (when live specimens are desired); (5) ability to capture mosquitoes on walls, ceilings and other places inaccessible when both hands are necessary to close the collecting tube; (6) relief from necessity for transferring single specimens from collecting tube into containers, thereby saving time; (7) elimination of necessity for carrying a large number of collecting tubes when the collection of a great number of live specimens is desired; (8) avoidance of loss of time awaiting death of mosquitoes by weakening of killing agent.

A collecting tube of any size may be used, but the one preferred and recommended is a glass (or celluloid) tube about 1 inch in diameter and 5 inches long, open at both ends, one end of which, when in use, is closed with a cork or other stopper, the other end with the specially designed or devised trap arrangement shown in the accompanying illustration. The trap end may be described thus:

A cork stopper to fit the tube, three-eighths inch thick, having a central opening half inch in diameter, large enough to accommodate the "trap" tube. The upper surface of this cork is beveled from the outer edge to the inner opening, giving it a funnel shape.

A small glass tube about three-fourths inch long, having a truncated cone shape to fit tightly in the opening of the funneled cork, the outer end half an inch in diameter and tapering for its length, with an inner opening three-eighths inch in diameter.

The small conical trap tube may be made from half inch glass tubing, or the end of an ordinary plain glass centrifuge tube, cut to measure, may be used. A cone of glass or celluloid has the advantage that the entrance of mosquitoes may be observed. The cork with the trap tube is placed in the end of the collecting tube so that the thin edge of the cork is about one-eighth inch clear of the rim of the collecting tube.

Instead of glass tubes, celluloid, such as used for windows in automobile tops, may be made into the size tubes desired and fastened by small brads or paper fasteners. Additional strength is afforded by several turns of adhesive plaster around each end. Advantages of celluloid over glass are its being nonbreakable, it is lighter and for field workers any amount may be carried in sheets and tubes made as required.

In making a catch, the trap end of the tube is placed over the resting mosquito. The insect finds that it is surrounded, and in attempting to escape selects the only way out toward the light, through the glass cone into the large collecting tube.

In experiments to determine the rapidity of capturing and the efficiency of the trap in retaining the mosquitoes, it was observed that the insects passed almost immediately through the trap end of the tube, so that the operation could be repeated as rapidly as the tube could be placed over the insects. The average time for each catch from the time of placing the tube over the mosquito was three seconds. These catches were made in New Orleans in the month of February. Probably in hot weather and with greater activity of the insects, catches would be even more rapid.

The results of tests showed that the size of the lumen of the small truncated cone (the trap) had to do more with the rapidity of capture than the escape of the insects from the tube. Five tubes having different sized cones were used, the external opening ranging from five-sixteenths inch to half an inch and the internal or smaller opening from three-sixteenths to three-eighths inch. Of eighty specimens of *Anopheles crucians* caught and retained in the five collecting tubes and placed under lantern globes closed with mosquito netting, only one escaped in twenty-four hours. This occurred

from the tube with the largest openings (three-eighths by one-half inch).

For collecting mosquitoes to be used experimentally in the laboratory, the number of specimens to be caught in the tube of the capacity given above probably should not exceed more than ten, as injury to each other may occur. However, if they are being caught rapidly and transferred to large cages or other containers, greater numbers of them may be caught in each tube.

The same principle may be applied to the large cyanid collecting tubes (2¼ by 6 inches), the only difference being the larger sized cork required for the trap apparatus. The capture is somewhat slower, as the insect has a greater degree of freedom in the larger funneled cork. The mosquitoes will not escape, however.

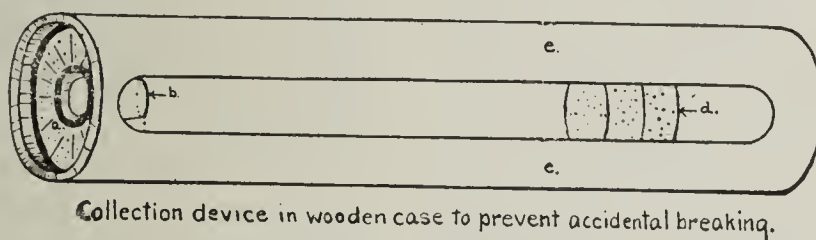
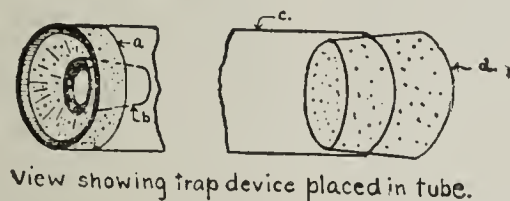
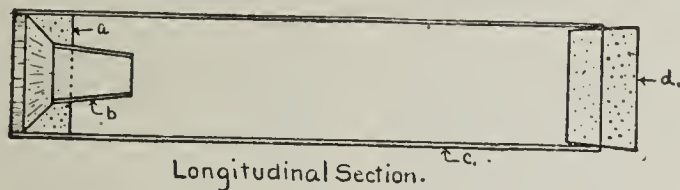
The small collecting tube described may be carried in the pocket, as mosquitoes were found not to escape even if the tube was darkened. Caution should be used in keeping mosquitoes in tubes without moisture for more than an hour or so. The necessary moisture can be supplied by placing a plug of moistened cotton in the trap.

Killing by the use of chloroform or other agent may be accomplished with this tube as with the apparatus generally used for such process.

The device described is easily made by any one, or could be put on the market by manufacturers of entomologic apparatus at a small cost.

U. S. Marine Hospital.

Protein in Diet.—The quantity of protein desirable in the dietary had best be given consideration after discussion of the dietary habits of mankind. It is sufficient for the present to realize that protein is necessary to maintain tissue in repair, to promote growth and that when taken above the requirements for these purposes it stimulates the organism to a higher level of heat production.—Lusk, *The Fundamental Basis of Nutrition*.



Device for collecting mosquitoes: a, funnel-shaped cork stopper three-eighths inch thick having central opening half an inch in diameter; b, small glass tube of truncated cone shape three-fourths inch long; diameter of large opening, half an inch; of small opening, three-eighths inch; c, glass tube 5 inches long, 1 inch diameter, open at both ends; d, cork stopper for untrapped end; e, wooden cylinder to prevent accidental breaking of tube.

Therapeutics

ACUTE ANTERIOR POLIOMYELITIS (INFANTILE PARALYSIS)

This article is reprinted at this time—with corrections and additions—because of the extensive outbreak of infantile paralysis in New York. The article appears in "The Prevention and Treatment of Infections," published by the American Medical Association, in 1915.

Acute anterior poliomyelitis is an inflammation of the anterior gray matter of the spinal cord, that portion supplied by the central arteries, the branches of the anterior median artery of the anterior longitudinal fissure. However, it may also effect both the white and gray matter of the brain, the intervertebral ganglia and the abdominal ganglia. Flexner believes that the route of infection is practically always by the nasal mucous membrane to the lymphatic channels of the olfactory lobes, the spinal fluid and then to the nerve tissues.

It was not definitely shown, until 1909, that this disease belonged to the infections and was contagious, although it had been long suspected. More or less isolated instances and some slight group attacks had occurred in America for many years, but we have had epidemics only since 1907, caused probably by importations of the germ from Europe, where it has been long endemic. In 1909, Landsteiner and Popper reported that they had caused infantile paralysis in monkeys by inoculating them with a spinal cord emulsion obtained from a child who died from this disease. Noguchi and Flexner later reported that they had been able to cultivate a causative organism of this disease. Recently, Flexner and his co-workers¹ have shown that the contagium is contained in the secretions of the nose, and that undoubtedly there are carriers of this disease. It seems to be demonstrated that the infection or poison reaches the nervous system through the lymph, but probably reaches its point of activity, namely, the spinal cord, by means of the cerebrospinal fluid. In previous experiments Flexner and Amoss² have shown that in all probability infection does not reach the individual from the bites of insects, as they were unable to infect monkeys by directly introducing the virus into the blood. This does not preclude the possibility of domestic animals like cats and dogs carrying the contagium and causing infection by way of the nostrils and lymph channels. It has not been shown that flies transmit the contagium, nor that the association with stables has increased the liability of infection, as has been suggested. It does not seem frequent that more than one person in the same household is affected, although such cases occur. However, in epidemics the majority of patients are likely to come from the same general region.

Fraser³ of New York reports his observations on ninety cases of epidemic poliomyelitis. He found that the age varied from 9 months to 14 years. The majority of cases, especially when it is sporadic, has always occurred in young children under 5 years of age. The death rate is generally low, varying from

4 to 16 per cent., but the paralyses resulting are constant and frequent.

Flexner and Lewis' splendid work on this subject is reported in various numbers of *THE JOURNAL*.⁴ They state that the infecting agent in this disease belongs to the class of minute filterable viruses which cannot be demonstrated with certainty by means of the microscope. They also showed that spinal fluid withdrawn on the third day of the infection, before the appearance of paralysis, contains the virus which will cause infections of monkeys. Flexner, Noguchi and Amoss⁵ have recently again shown that the minute micro-organism isolated from poliomyelitic tissue is probably an etiologic factor, if not the cause, of epidemic poliomyelitis. Flexner and Lewis⁶ also showed that the disease can be transmitted from monkey to monkey. They further showed that the germ or virus resists freezing, and therefore the disease is not stopped by cold weather. They also believe that one attack confers immunity.

Lucas⁷ found that monkeys after inoculation showed a lymphocytosis during the acute stages, but a marked and constant leukopenia. The blood at this time also showed an eosinophilia. This disturbance in the white blood count disappeared when the acute stage was over.

PREVENTION

It is quite probable that the so-called "distemper" which at times attacks dogs and may attack horses, is really caused by this same infection. Hence, a dog affected with distemper should be isolated, and no child should be allowed to associate with it. While it has not been shown that flies will carry this disease, in all probability they may transmit the infection by their feet. Consequently, flies should be excluded by proper screens, if possible, from any animal that suffers from distemper, and certainly should be prevented from reaching an individual sick with poliomyelitis.

As early as Feb. 12, 1910, Flexner and Lewis⁸ showed that this disease was contagious by means of the secretions of the mucous membrane of the nose especially, and also of the throat, and therefore that every patient should be isolated, and that the disease should be made reportable to the boards of health.

The nurse and the family should understand that the same care must be exercised in destroying the contagium and preventing the contamination of articles and substances by the secretions of the nose and throat of a poliomyelitis patient as is so well understood must be taken in diphtheria.

As soon as a case is reported to the board of health, the school board should be informed (as such cases are frequently in children too young to go to school) that they may send home from school the other chil-

1. Flexner, Simon, and Amoss, Harold L.: Localization of the Virus and Pathogenesis of Epidemic Poliomyelitis, *Jour. Exper. Med.*, Sept. 1, 1914, p. 249; abstr., *THE JOURNAL A. M. A.*, Sept. 26, 1914, p. 1136.

2. Flexner, S., and Amoss, H. L.: Penetration of Virus of Poliomyelitis from Blood into Cerebrospinal Fluid, *Jour. Exper. Med.*, April, 1914, p. 411; abstr., *THE JOURNAL A. M. A.*, April 25, 1914, p. 1360.

3. Fraser: *Am. Jour. Med. Sc.*, July, 1914, p. 1.

4. Flexner, Simon, and Lewis, Paul A.: The Transmission of Acute Poliomyelitis to Monkeys, *THE JOURNAL A. M. A.*, Nov. 13, 1909, p. 1639; The Nature of the Virus of Epidemic Poliomyelitis, *ibid.*, Dec. 18, 1909, p. 2095; Experimental Epidemic Poliomyelitis in Monkeys, *ibid.*, April 2, 1910, p. 1140; Experimental Poliomyelitis in Monkeys, *ibid.*, May 28, 1910, p. 1780.

5. Flexner, Simon; Noguchi, Hideyo, and Amoss, Harold L.: Concerning Survival and Virulence of the Microorganism Cultivated from Poliomyelitis Tissues, *Jour. Exper. Med.*, January, 1915, p. 91.

6. Flexner, Simon, and Lewis, Paul A.: Epidemic Poliomyelitis in Monkeys, The Activity of the Virus, *THE JOURNAL A. M. A.*, Jan. 1, 1910, p. 45.

7. Lucas: *Tr. Mass. Med. Soc.*, June, 1910; the subject is also discussed by Gay, Frederick P., and Lucas, William P.: Anterior Poliomyelitis. Methods of Diagnosis from Spinal Fluid and Blood from Monkeys and in Human Beings, *Arch. Int. Med.*, September, 1910, p. 330.

8. Flexner, Simon, and Lewis, Paul A.: Epidemic Poliomyelitis in Monkeys. A Mode of Spontaneous Infection, *THE JOURNAL A. M. A.*, Feb. 12, 1910, p. 535.

dren of the family, and if there is an epidemic, perhaps the other children of that tenement. The incubation period is said to vary, and may be as long as ten days, but to be safe from causing infection in others, such children should remain out of school for two weeks.

EARLY SYMPTOMS

During an epidemic symptoms of acute infection with fever, excessive irritability and hyperesthesia should be suspected of infection with this disease.

Although a patient who is old enough may complain of headache and pains, especially in the epidemic form of the disease, still, in this as well as in the sporadic form, the onset may be so rapid that a child well the night before may be found with high fever and even with paralysis in the morning. Pain is referred generally to the muscles of the back and legs, and later to the muscles of the arms. The temperature in serious cases may be high, but the ordinary range of rectal temperature was found by Fraser to be from 101 to 103. The pulse-rate is high, and is generally over 120. While pain may keep the little patient awake, and there may be a great amount of irritability and restlessness, drowsiness and heaviness was noted by Fraser in half of his cases, although there were often twitchings and jerkings during sleep. In two-thirds of his cases he found stiffness of the neck and back, which is so characteristic of cerebrospinal meningitis. The greatest tenderness is found generally in the extremities. Although this might last but one or two days, it sometimes persists for three or four weeks. The tendon reflexes are found generally absent.

The spinal fluid is clear, with a moderate increase of cells and of globulin. In the first week, the cells are more increased and the globulin scant or absent. Many of the cells may be polymorphonuclears. In the second and third weeks both the total number of cells and the proportion of polymorphonuclears are decreased and the other types of cells increased. In some cases, however, the fluid may appear normal.

Although, as just stated, paralysis may occur almost coincident with the illness in sporadic cases, in epidemic cases paralysis seems to develop most frequently on the third or fourth day. The acute illness lasts from one week to ten days. A large number of Fraser's cases showed some slight facial paralysis. If the respiratory muscles were affected, the prognosis was dire. There may be paralytic interference with urination, and defecation may be difficult from inability of the abdominal muscles to act.

It should be remembered that many abortive forms of this disease probably occur without any paralysis, and many times without a diagnosis, and such cases may doubtless spread infection. Koplik,⁹ in reviewing an epidemic of 1,200 cases, states that many atypical forms occur.

As to the extremities, one or both arms may be paralyzed, or one arm and one leg, or both legs, or there may be crossed arm and leg paralysis. The arm paralysis is not often complete, and the recovery is more rapid. Complete loss of response to faradism means a bad prognosis as to recovery, and atrophy will rapidly occur. If response to faradism is not completely lost, the outlook, with proper care and treatment, is good. The rapidity of recovery from

paralysis, and the number that completely recover vary with the different epidemics; but the number that completely recover is lamentably small. More scientific treatment by nerve and orthopedic experts will doubtless make this percentage of complete recoveries much greater.

TREATMENT

A. The Acute Stage.—The same care in isolation, and of the secretions of the nose and throat, to prevent possible infection of others or contamination of articles, should be carried out as has been described for the other infectious diseases. Flies and all domestic animals must positively be excluded from the sick-room. As soon as the diagnosis is positive, the disease should be reported to the board of health, whether or not it is a reportable disease in the community.

Flexner¹⁰ has shown that bedbugs may become infected with this disease. Whether or not they can transmit the disease to a human being by their bites has not been shown. Mosquitoes and lice have not yet been shown to be guilty of carrying the infection, but they, as well as bedbugs and fleas, should be eliminated.

As Flexner states that the virus is eliminated by the intestines as well as by the nose and throat, all movements of the bowels during the course of the disease, and perhaps for some little time after the acute stage is over, should be as thoroughly disinfected as they are in typhoid fever. Lucas and Osgood¹¹ found the virus in the nasal secretions of a human being four months after the acute stage of an attack of poliomyelitis. They also found the virus in the nasopharynx of persons who were in attendance on a patient ill with the disease, and in the nasopharynx of a patient who had had the disease 204 days after the acute infection. Kling,¹² however, thinks that the virus soon loses its virulence, and that quarantine need not be continued for more than two weeks. It cannot yet be decided just how long quarantine should be continued, but two weeks should be the under limit, and better, three weeks. That more of the attendants or associates of a patient sick with poliomyelitis do not contract the disease may be because they are insusceptible, or they may have become immune from some previous abortive attack.

There has not yet been produced an antiserum, although it is most sincerely hoped that Flexner and his co-workers will be able to add such a serum to the list of their splendid achievements. With our better knowledge of the action of hexamethylenamin, we cannot expect germicidal activity in the cerebrospinal fluid, which is alkaline. It has been shown that this drug has no germicidal activities, except in an acid medium, and, therefore, it is of special value only in infections of the pelvis of the kidney, ureters, bladder and urethra, and then only when the urine is acid. Hence, when the disease has started, there is no known medical method of aborting it, although mild infections may abort without paralysis.

The treatment in this stage of the disease is to relieve cerebral and spinal congestion and remove all possible toxins that may be absorbed from the intestinal canal by free but gentle catharsis. Calomel, in

10. Flexner, Simon: The Mode of Infection in Epidemic Poliomyelitis, *THE JOURNAL A. M. A.*, Oct. 12, 1912, p. 1371.

11. Lucas, William P., and Osgood, Robert B.: Transmission Experiments with the Virus of Poliomyelitis, *THE JOURNAL A. M. A.*, May 24, 1913, p. 1611.

12. Kling, Carl: The Etiology of Epidemic Poliomyelitis, *Wien. klin. Wchnschr.*, Jan. 10, 1913, p. 41.

9. Koplik, H.: An Epidemic of Acute Poliomyelitis, *Arch. Pediat.*, May, 1909, p. 321.

one sufficient dose, associated with cascara, aloin or rhubarb, as deemed advisable, is always a good method of treatment. Castor oil is another, or at times a quickly acting saline cathartic may be advisable. Subsequently the bowels should be moved as frequently as the diet and the condition of the intestines seem to require. A child that is not taking much food for the first two or three days after the first cleaning out of the intestines need not necessarily be bothered with a laxative every day during this first stage of the disease. As soon as paralysis begins, it may be difficult to cause the bowels to move, and a simple glycerin suppository or a small enema may be needed.

The child must not be allowed to forget to urinate, as some loss of normal bladder irritability may allow urine to be retained and distention of the bladder to occur. Therefore, the child should be encouraged to urinate at about four-hour intervals. Of course, if the urine cannot be passed, it must be drawn.

Generally the fever is not high. If it is high, two or three small doses of acetanilid may be administered; or sponging the body with warm water is advisable. General cold sponging or general cold applications are inadvisable, as tending to cause increased congestion of the central nervous system. The value of an ice cap as a reducer of temperature is doubtful, and it is likely to cause the child to become more restless. The value of a spinal ice bag is also doubtful, as many times these cold applications cause an increase of pain.

Pain must be stopped in a child as well as in an adult; this fact is often forgotten. The physician allows a child to suffer because he dislikes to give strong narcotics, when an adult would demand something to stop his pain. If there is high fever and a few doses of acetanilid have been given, this may prevent some of the pain, but pain is most safely combated by small doses of morphin, codein, or opium in some form. Perhaps there is no better method of giving this narcotic drug to a child than by means of the deodorized tincture of opium. The dose may be, even to a young child, one drop every hour for five hours until the child is sleeping or is quiet. If the child is very young, of course the dose should be less, and for a child 10 years of age the dose should be larger. If the brain is so affected that the child is stupid, pain is not much felt, and narcotics will not be needed. Unless the child is excessively nervous, restless, sleepless, and twitching and jerking about the bed, such cerebrospinal depressants as chloral and bromid are not indicated, as one can but feel they might tend to increase the muscle debility and paralysis that must follow the acute stage of the disease. It seems safer and more rational to give for this condition opium or one of its alkaloids in a dose sufficient to cause quiet and rest.

In this disease, as in all forms of meningitis, the bedroom should be quiet and removed as far as possible from all noise and disturbance. The child should not be unnecessarily spoken to, and there should be frequent darkening of the room in order that the patient may get all the rest possible.

During the active stage food should not be pushed. Part of the diet should be milk, and the rest of it should be cereal gruels. The diet should not be wholly milk, for in this as in all acute diseases the possibility of acidemic conditions occurring should not be forgotten, and starches should always be given in the form most acceptable to the patient. The first day or two the child will be thirsty, and should be

allowed all the water it desires. As soon as the fever diminishes or ceases, nutrition should be pushed, and the child should be encouraged to eat so that the general strength may be recovered as rapidly as possible. If at this time the tongue is coated, the digestion poor and the appetite insufficient, it may be because gastric acidity is insufficient, and a few drops (not more than five) of dilute hydrochloric acid, in water, after meals, may aid in overcoming these conditions.

B. Local Treatment.—Fixation of the painful extremities and of the back, in the most restful position, with the aid of cushions and pillows, is important during the acute stage. As there is no special inflammation in any joint or muscle, cold or ice to a painful region is not indicated. Dry warmth may cause a lessening of the pain and is often of value. If the limbs affected become cold from disturbed circulation, they should be surrounded with cotton or covered with flannel. Restriction by bandages is inadvisable.

The pathologic lesions of the disease may be studied in an article by Flexner, Clark and Amoss.¹³ Several years ago Lovett and Lucas¹⁴ studied 635 cases of infantile paralysis, and came to the conclusion that paralysis of one leg was nearly four times more frequent than paralysis of both legs, and paralysis of an arm and leg of one side was more common than was a crossed paralysis. The internal muscles of an extremity were more frequently affected than the external, and the anterior than the posterior. The most common muscle to be affected in the leg they found to be the quadriceps; the next in frequency was the tibialis anticus and anterior muscles of the lower leg. If the hamstring muscles were affected it was more often the internal than the external, and the sartorius muscle they found frequently not to be affected even when the quadriceps was. They found the internal rotators of the thigh more frequently affected than the external rotators, and the adductors more frequently than the abductors. The short toe flexors they found the least likely to be affected. In the upper extremity, the arm is more frequently affected than the forearm, and the deltoid the muscle most affected, although the biceps, triceps and scapular muscles may also be affected.

During the first stages of the paralysis great care must be taken in watching the position of the limbs, especially the legs, to prevent contractions caused by the pulling of the unaffected muscles. Massage is soon valuable, but must be very gentle. Proper massage will not only increase the nutrition of the affected muscles, but cause relaxation of spasm of the unaffected muscles. It may be necessary to devise some apparatus to keep the leg or foot from becoming deformed. For this purpose various splints, or wooden or wire troughs properly padded with cotton may be used. Gibney and Wallace¹⁵ urge that the legs should be kept straight or in slight flexion at the knees and in line with the body, while the feet should be kept at right angles with the legs.

The value of having the child, as early as possible, make slight voluntary efforts with the paralyzed muscles is excessively important. All neurologists and orthopedists now believe that one voluntary contrac-

13. Flexner, S.; Clark, P. F., and Amoss, L.: Epidemiology of Poliomyelitis, *Jour. Exper. Med.*, Feb. 1, 1914.

14. Lovett, Robert W., and Lucas, W. P.: Infantile Paralysis. A Study of 635 Cases with Especial Reference to Treatment, *THE JOURNAL A. M. A.*, Nov. 14, 1908, p. 1677.

15. Gibney, V. P., and Wallace, Charlton: The Recent Epidemic of Poliomyelitis, *THE JOURNAL A. M. A.*, Dec. 21, 1907, p. 2082.

tion of a muscle is of very much greater value than many passive activities of a muscle or contractions caused by electricity or other irritant.

Some writers believe that counterirritants applied to the spine, such as cautery treatments, are of value in hastening the stage of resolution of this disease. While they may be of value, consideration must always be given to the disturbance that it will cause the child who has suffered enough pain, and who already has difficulty in finding comfortable positions in bed.

C. Paralysis.—When the circulation is poor in an extremity, the local application of heat in any form, and perhaps by baking, is of value. As soon as it is believed that all active inflammation in the spinal cord has ceased, electricity should be begun, and Jones¹⁶ believes that electricity should not be used until from three to eight weeks from the beginning of the infection. Galvanism should then be used on the nerve trunks, gently and not too strong, while the muscles are caused to contract by faradism as long as they react to that current. If they do not react to the faradic current, the galvanic current should be used to cause contraction by making and breaking. The rapidity of the making and breaking galvanic current should not be too great, nor should any kind of muscle stimulation be continued too long at any one sitting; in fact, at first only a few contractions should be caused.

Voluntary training directed by a skilled orthopedist, and the application of any splints or apparatus that may be necessary to prevent deformities and atrophies should soon be inaugurated, as Taylor¹⁷ and many others believe that massage and electricity are very ineffective in causing recovery of muscles paralyzed by poliomyelitis. All physicians and surgeons urge that the greatest improvement is caused by plenty of rest in bed, graded exercise, warm baths, good food and fresh air. In other words, the better the nutrition the greater the improvement in the paralyzed muscles. Muscles may even recover after a year or more of paralysis when treated by a skilled orthopedist. It should be emphasized that rough, harsh massage and misdirected use of electricity may do serious harm to the paralyzed and contracted muscles. In a word, the general practitioner should as quickly seek the aid of the orthopedist in treating the paralysis of this disease as he would seek a skilled aurist in an internal or middle-ear inflammation.

Surgical repair of deformities that cannot be corrected by apparatus or muscle training has now reached a stage never equaled before, and tendon transplantation and other orthopedic operative measures cannot too soon be considered when improvement ceases to occur in a limb affected with paralysis from poliomyelitis.

Lovett¹⁸ reported an investigation of 293 cases which occurred in the Vermont epidemic during the fall of 1914. In that epidemic the muscles of the limbs nearest the trunk were more frequently affected than the distal ones—the left arm muscles more frequently than the right. The muscles in the right and left leg were equally affected. From his investigation Lovett believes

that much smaller degrees of overuse may be more deleterious than is generally supposed. In the early stage of returning power exceptional care should be taken in the use of muscles in walking and in the use of heavy and prolonged massage. The proportion of total to partial paralysis is greatest in muscles which have the greatest weight to oppose in standing and walking positions and least in those which have the least weight. Meara¹⁹ summarized therapy for the prevention of paralysis as follows:

"The essence of the therapy is rest of function of the affected parts and hence, the inflamed cord centers supplying those parts. Rest means not only a comfortable bed, careful nursing, devices to find comfortable positions for the painful members, but also freedom from excitement, entertainment and visitors and, particularly, avoidance of pernicious measures of mechanico- or electro-therapeutics, often insisted on by the parents in an eagerness to see something done for the condition."

New and Nonofficial Remedies

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Manufactured by the Schlesinger Radium Co., Denver, Colo.

16. Jones, R.: Infantile Paralysis (Acute Anterior Poliomyelitis). Its Early Treatment and Surgical Means for Alleviation of Deformities, *Brit. Med. Jour.*, May 30, 1914; abstr., *THE JOURNAL A. M. A.*, July 4, 1914, p. 63.

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SATURDAY, JULY 8, 1916

THE SIGNIFICANCE OF NITRATES IN HUMAN URINE

Combined nitrogen, it has been well said, is the common capital of the living kingdom. In an environment like that of the earth's surface, with an atmosphere of which free nitrogen constitutes four fifths of the gases, the element can nevertheless be taken up by most plants in the form only of ammonia, nitrites or nitrates. To animals even these compounds have appeared to be useless; and the only source of nitrogen to this class of living organisms, which includes man, has seemed to be the protein which has been built up by the agency of the plant cells. It has not been easy to dispose of the possibility that gaseous or elementary nitrogen may play a part in the processes of animal metabolism. The careful experiments of Oppenheimer¹ and Krogh² have at length demonstrated conclusively, however, that no nitrogen is eliminated in the free state from the body and that the earlier claims of positive findings were based on experimental errors.

The question of the metabolic significance of nitrites and nitrates has not been so readily settled. Not only has the possibility of the assimilation of nitrogen in the form of ammonium salts provoked discussion,³ but also the availability of nitrates for constructive purposes in mammalian metabolism has been seriously suggested. The increasing recognition of fundamental biologic similarities in the chemical processes of plants and animals has contributed to the promotion of such a hypothesis; for it often seems as if the real difference between these two groups of living forms were a quantitative rather than a qualitative one. Why, then, should animal forms not be able to utilize nitrates in some degree? Not to venture a final word, the consensus of opinion indicates that although nitrates may influence the progress of nitrogenous metabolism, they do not enter into constructive

processes. Ingested nitrates can be recovered quantitatively in the excreta.⁴

Although nitrates cannot enter into the constructive processes of the higher animals, it by no means follows that they never represent the end-products of nitrogenous metabolism in these species. Human urine, as well as that of animals, has long been known to contain nitrates under ordinary conditions of living. Calculated as the potassium salt, the quantity is represented by amounts varying from 100 to even 400 mg. per liter (quart). The wide distribution of nitrates in food materials, especially in fresh vegetables,⁵ has quite naturally led to the supposition that the urinary nitrates have their sole origin in the food consumed. Obviously the solution of this problem became a matter of exact determinations of the nitrate "balance" of the organism. An elaborate research⁶ in the Department of Animal Husbandry at the University of Illinois in Urbana has indicated, in most cases beyond reasonable doubt, that the animal body may excrete in the urine more nitrate than is ingested in the food. The marked differences between the determined nitrate intake and nitrate excretion cannot be accounted for by differences in the accuracy of the analytic methods as applied to foods and to urine.

It is conceivable that nitric and nitrous acids in the air may gain access to the blood by way of the lungs and thus ultimately reach the urine. This explanation of the source of the excess of nitrate appearing in the urine over the nitrate ingested with the food is excluded, however, by a consideration of the maximum quantity of nitrate which could be formed in this way, even if the lungs were readily permeable to the nitric fumes. From Mabery's⁷ figures obtained by analyses of samples of air taken at Cleveland, it may be shown that the total quantity of nitric acid which would be introduced into the lungs per day, on the assumption that the tidal air is 500 c.c. and the respiration rate 20 per minute, would average about 5 mg., the maximum being 15.3 mg. The quantity of nitrous acid inhaled is entirely negligible.

The alternative explanation is that the body tissues are able to produce nitrates from unoxidized nitrogenous radicals. The Illinois investigators remark that the problem is of peculiar theoretical interest, since the production of an oxidized nitrogenous product by animal tissues would be unique. The ordinary end-products of nitrogenous metabolism—urea, uric acid, creatinin, ammonium salts, etc.—are of quite different type. Nevertheless Mitchell, Shonle and Grindley believe that the production of nitrates by animal tissues is a fact and is unique in being the only well established instance of the oxidation of nitrogen, aside

1. Oppenheimer, C.: Ueber die Anteilnahme des elementaren Stickstoffes am Stoffwechsel der Tiere, *Biochem. Ztschr.*, 1906, i, 177; Ueber die Frage der Anteilnahme elementaren Stickstoffs am Stoffwechsel der Tiere, *ibid.*, 1907, iv, 328.

2. Krogh, A.: *Sitzungsber. d. Wien. Akad.*, 1906, cxv, (3).

3. Underhill, F. P., and Goldschmidt, S.: Studies on the Metabolism of Ammonium Salts, III, The Utilization of Ammonium Salts with a Non-Nitrogenous Diet, *Jour. Biol. Chem.*, 1913, xv, 341.

4. Abderhalden, E.: *Lehrbuch der physiologische Chemie*, 1915, ii, 1216.

5. Richardson, W. D.: *Jour. Am. Chem. Soc.*, 1907, xxix, 1757.

6. Mitchell, H. H.; Shonle, H. A., and Grindley, H. S.: The Origin of the Nitrates in the Urine, *Jour. Biol. Chem.*, 1916, xxiv, 461.

7. Mabery, C. F.: *Jour. Am. Chem. Soc.*, 1895, xvii, 105.

from the conversion of nitrites to nitrates, which is apparently a reversible reaction. Pending the permanent solution of the fundamental question here involved it would, as they say further, be mere speculation to attempt a theory of the manner in which this oxidation is accomplished, of the intermediate products formed, of the particular organ responsible for it if its production is at all localized, or of the biologic significance of the process.

IS CANCER OF INFECTIOUS NATURE?

Malignant new growths are found in various classes of the animal kingdom and seemingly also in plants. Although cancers were recognized and treated surgically by Galen, the modern conception arose only with the discoveries of Virchow in 1853 and the theory of Cohnheim in 1867. Since that time innumerable workers have approached the problem of cancer from every angle. The clinical symptoms, the gross and microscopic anatomy, the rate and manner of growth, the production of metastases, the chemical changes produced, and their biologic aspects in general have been thoroughly investigated. Little concerning many of these phases remains to be discovered, but of their cause little indeed is known. The theory of Cohnheim remained the most tenable until recent years. At various times, bodies have been found in cancer which were interpreted as protozoa, bacteria or yeasts. The failure to cultivate these bodies, together with the demonstration that they were most likely products of degenerative changes, and other reasons, led to the conclusion that they were not etiologic factors. Recent evidence concerning the infectious origin of cancer has been discussed in these pages.¹ What seems to be important evidence in favor of the parasitic theory is being brought forward by Erwin F. Smith, pathologist of the Laboratory of Plant Pathology, Bureau of Plant Industry, U. S. Department of Agriculture.²

For a number of years he has been studying crown gall of plants. Crown gall is a growth occurring in many plants. It is a new growth in which many characteristics typical of cancer in man are found, namely, (1) the vegetative (embryonic) character of the cells; (2) the rapidity of growth; (3) the peripheral extension, lack of capsule and infiltration of surrounding tissue; (4) the tendency to central degenerative changes; (5) the liability to recurrence after removal; (6) the cachexia, and (7) the tendency to develop metastases in which is reproduced the cell complex of the primary tumor. By means of ingenious staining and cultural methods, an organism has been found and isolated in pure culture which fulfils Koch's postulates for a specific organism. This is called *Bacterium tumefaciens*. By means of inoculation, growths

resembling the original are produced. Now further experiments appear to show that growths resembling sarcoma, carcinoma and epithelioma, mixed tumor, and embryoma (teratoma) can be produced according to the part of the plant and the age of the plant inoculated. Thus sarcoma is formed when the bacterium is introduced into the connective tissue of young plants or well nourished actively growing parts of older plants. Carcinoma and epithelioma develop when the epithelial tissue is inoculated. Perhaps the most striking result is the development of embryoma. By the inoculation of *Bacterium tumefaciens* into the vicinity of growing buds, growths containing all the primary germ layers are produced. Smith explains this in the following manner: "The bud anlage is torn to fragments by the rapidly growing tumor and these fragments are variously distributed and oriented in the tumor where under the stimulus of the parasite they grow into abortive organs." Teratoma is produced also in the leaves of young tobacco plants where no dormant buds are known to exist. Smith explains this by the assumption that certain widely distributed normally arranged cells or groups of cells, and possibly all cells when very young and plastic, carry the potentiality of the whole organism, which potentiality is not ordinarily developed on account of division of labor, but comes into action when the physiologic control is disturbed or destroyed. Teratoma is produced in tobacco leaves only by inoculating very young leaves. When older leaves are inoculated they either do not respond, or yield only the ordinary crown galls.

Smith's hypothesis of the action of the organism is as follows:³

"The micro-organism, entering the cells as the result of slight wounds, grows rapidly for a short time. Its growth is then inhibited apparently by its own by-products. As the result of this inhibition many of the bacterial rods swell, becoming clumpy and variously branched, giving rise to the so-called Y bodies. There then ensues death for many, and a dormant period for the remainder. The organisms which are killed outright, by the by-products evolved during their previous growth in the cell, are the ones which now stimulate the nucleus to development. This I conceive to take place by endotoxins or other substances. As soon as the nucleus begins to divide, its membrane disappears, and its contents flow into the cell, . . . the benumbed bacteria take on new growth, and pass over into the daughter cells" where the process is repeated.

Inoculation of the organism into brook trout produced small nodular growths at the point of inoculation, but the fish died before it could be determined whether or not the growths were malignant in structure.

To recapitulate: Crown gall, according to Smith a cancer of plants, is due to a bacterial organism (*Bacterium tumefaciens*). Pure cultures of the organism when inoculated into plants produce sarcoma, carcinoma and epithelioma, mixed tumor and embryoma,

1. Infectious (?) Cancers in Animals, editorial, THE JOURNAL A. M. A., March 11, 1916, p. 816.

2. Smith, E. F.: Jour. Cancer Research, 1916, i, 231; Science, 1916, llii, 871.

3. Smith: Proc. Seventeenth Internat. Cong. Med., Section III.

depending on the part of the plant inoculated and the age of the plant.

These results upset our orthodox views concerning cancers. That sarcomas, carcinomas and embryomas are due to the same organism would seem scarcely possible, yet certainly they are no more dissimilar than a hunterian chancre, a rupioid syphiloderm, a gumma or the degenerative processes of general paresis. Perhaps a Koch or a Schaudinn will appear, and by new and ingenious methods demonstrate the essential unity of cancers in man. The work of Smith would seem to indicate such a possibility. For the present it would seem that the statement made in a previous review of Smith's interesting work on new growths in plants still holds good:⁴

If it becomes necessary to adopt the view advanced by Smith that the crown gall he has studied with such success is a true cancer, then to him will belong the credit of having discovered first the precise cause of a cancerous growth. On account of the absence of complete analogy between the structure of plants and that of animals (and the fundamental difference in metabolism), the question whether crown gall is a cancer or not in the ordinary sense of the word would seem to be a difficult one to settle at this time; but Smith makes out a very strong case in favor of his view, and we must acknowledge that the view of the infectious cause of cancer in general is strengthened by his work.

THE ASSIMILATION OF FATS

Progress in the study of the metabolism of foodstuffs in the organism has shown that the chemical changes leading to a liberation of energy from the ingested nutrients are not so simple as was once supposed. Instead of merely accomplishing solution, the processes in the alimentary tract bring about extensive cleavage of the foodstuffs prior to their absorption from the gastro-intestinal canal. This profound disintegration of the ingested substances as a preparation for their subsequent rôle in the metabolism was scarcely suspected even a few years ago. It has long been obvious that the fats taken with the food, if not immediately required for the energy needs of the body, may be laid down without change in the adipose tissues as well as in the other cells of the body; but to state, as one recent writer does, that the mechanisms involved in the translation of fat from the alimentary canal to the tissues are of the simplest possible description, and involve changes only of hydrolysis and dehydrolysis, perhaps obscures some of the difficulties which the matter of fat transport presents.

Physiologists are now inclined to locate the actual metabolism of the foodstuffs, or their digestion derivatives, in the tissue cells. How and in what form do the products which undergo metabolism and contribute to energy exchange reach these cells? The carbohydrate travels as glucose in the blood stream. The amino acids derived from the proteins were once

thought to be deaminized on their way into the general circulation; but more recent evidence indicates that they are actually carried as such in the blood and distributed widely in the organism.¹ The limitations of knowledge with regard to the transport of the fats to their depots and combustion centers may be veiled by saying that these foodstuffs are hydrolyzed within the intestine and resynthesized to a certain extent in the passage into the circulation. Part of the absorbed fat enters the thoracic duct as chyle and is thus discharged into the blood stream at the jugular vein. At least two thirds of the ingested fat may ordinarily be accounted for in that way; and this has furnished the justification for the belief in the resynthesis of neutral fat during the act of absorption from the intestine. Not all the reabsorbed fat is to be found in the chyle. The fate of the remnant is not clear. It may reach the blood stream directly by way of the intestinal capillaries and thus find its way to the liver; it may even be used up in the mucous epithelium of the alimentary canal.

Decidedly more uncertain are the details of the subsequent travel of the fats from the time they enter the blood stream until they reach that stage of chemical transformation which converts them into new and different products of metabolism. How the blood fat finds its exit from the blood, says Mathews,² how it gets through the vascular wall, whether by being split into soaps and glycerol or as a neutral fat, and how it is accumulated in the fat tissues, are problems not as yet solved. There is a lipase in the red blood corpuscles, and perhaps all the blood fat is rehydrolyzed before leaving the blood. Into this field of physiologic uncertainty the researches of Bloor³ of the Harvard Medical School have brought new suggestions. He remarks that ever since the chemical similarity between lecithin and the fats was discovered, attempts have been made to connect the two in metabolism; but although there has been much speculation, no definite evidence has been offered. In fact, lecithin has been generally classed as a cytolipoid, having to do more with the structure of the cell than with its processes. However, the idea that there is a dynamic relation between lecithin and fat in normal metabolism has been a persistent one, and has continued to stimulate investigation, so that recently evidence has been brought forward definitely connecting the two. The evidence consisted of fat absorption experiments in which it was found that lecithin increased in the blood during the absorption of the fats.

Equipped with improved and refined methods of analysis to which he has of late devoted much atten-

4. Is Cancer of Infectious Nature? editorial, THE JOURNAL A. M. A., Aug. 10, 1912, p. 448.

1. The Paths of Absorption for Amino-Acids, Current Comment, THE JOURNAL A. M. A., July 5, 1913, p. 46; In What Form Are Protein Digestion Products Absorbed? editorial, Dec. 20, 1913, p. 2245; The Amino-Acids in the Blood, Current Comment, Feb. 21, 1914, p. 621; Amino-Acids and Tumor Tissue, Oct. 16, 1915, p. 1373. A valuable account of the behavior of the amino acids will be found by Underhill, F. P.: The Physiology of the Amino-Acids, New Haven, 1915.
2. Mathews, A. P.: Physiological Chemistry, New York, 1915, p. 453.
3. Bloor, W. R.: Fat Assimilation, Jour. Biol. Chem., 1916, xxiv, 447.

tion,⁴ Bloor has attempted to locate the seat of formation of the lecithin. This substance is found unquestionably augmented in the blood while fat is being absorbed. During the course of this process it was found that total fatty acids increase in both plasma and corpuscles, but the increase is generally more marked in the corpuscles. Lecithin increases greatly in the corpuscles but only slightly in the plasma. No definite changes in the quantity of cholesterol were noted. A fairly constant relationship between total fatty acids and lecithin was noted in whole blood and corpuscles. This constancy, Bloor believes, may be taken as evidence that all the absorbed fat passes through the lecithin stage, and that therefore lecithin is to be regarded as the first stage in fat metabolism.

If it is justifiable to conclude that the blood corpuscles take up the fat from the plasma and transform it into lecithin, and that most if not all of the absorbed fat is so transformed, it follows from Bloor's standpoint that the hitherto unexplainable anatomic mechanism (thoracic duct) by which the fats are thrown directly into the blood stream and thoroughly mixed with the blood in the heart and lungs before they reach any of the organs of intermediate metabolism (as the liver) may be explained on the basis of the foregoing results. Since the first step in the metabolism of the fats takes place in the blood corpuscles, it is to be expected that they will be given an opportunity to take up as much of the fat as possible before it comes in contact with the organs and tissues.

Further interesting speculations of Bloor concern the unsolved question as to which of the blood cells — red or white — take the predominating part in this unique lecithin formation. It has long been known that during fat absorption the white blood cells in the intestinal lymph spaces become loaded with fat and apparently take an active part in the absorption, so that the idea would occur to many that the white cells were responsible for the lecithin increase in the blood. In view of the fact that they constitute less than 0.5 per cent. of the total blood cells, however, it would seem to be physically impossible for them to transform the relatively great amount of fat taken into the blood during a fat meal. It is quite unlikely, on the other hand, that the lecithin formation is limited to the blood cells. Esterases have been found in many tissues, and it is probable that the circulating fat is removed from the blood stream and worked up by many types of fixed cell in the same way as it is done by the blood cells.

Those who have followed the discussions of the recent physiology of the red blood corpuscles from time to time in *THE JOURNAL* must have been

impressed by the rapid expansion of our information in regard to these cells, which were once merely regarded as more or less inert carriers of oxygen. Today we know them to be laden with sugar and amino acids, like other body cells; and now the evolution of the products of fat metamorphosis has likewise been discovered to constitute a presumable part of their varied functions.

A REPORT ON NUTRITION IN A GERMAN INTERNMENT CAMP

War, with its unexpected emergencies and unique demands, with the sudden needs of maintaining large groups of persons in health and strength under unanticipated conditions, has always presented serious problems of food supply and adequate nutrition on a large scale. The European nations are affording instances of this at the present time. The ingenuities and exigencies of nutrition have more than once been brought to light by a study of the management of civil populations in times of siege and in prison camps, as well as in the field. It is instructive to ascertain how unanticipated situations are met and what are the conditions that need to be combated in a nation left largely to its own limited resources in matters of diet in times of stress.

Particular value attaches, therefore, to observations by an unbiased, competent observer on the conditions of diet and nutrition in the camp of the interned British civilians at Ruhleben, Germany. The report submitted successively through the United States ambassadors at Berlin and London, to the British Secretary of State for Foreign Affairs, has been published as a white paper.¹ Its author, A. E. Taylor of the University of Pennsylvania, visited the camp, where he found a total number of 3,700 persons interned. As a criterion of what should constitute a complete, sufficient and normal diet for such persons, Taylor presents certain dicta which deserve to be repeated in view of their widespread significance, particularly at the present time:

1. The diet must contain protein sufficient in amount and representative in component amino acids to maintain the tissues and cells of the body in a state of normal composition and function. Taking into account the extensive investigation of the past few years on the protein requirement of man, it is stated that from 70 to 90 gm. of protein per day are fully competent to maintain normal nutrition in the adult male (not engaged in hard work), provided the proteins offer the body all the needed amino acids, and the diet is rich in carbohydrate.

2. The diet must contain an amount of fuel sufficient to furnish at least 30 calories per kilogram per

4. Bloor, W. R.: *Jour. Biol. Chem.*, 1915, xxiii, 317, and earlier papers.

1. Report by Dr. A. E. Taylor on the Conditions of Diet and Nutrition in the Internment Camp at Ruhleben, received through the United States Ambassador, Miscellaneous, No. 18, 1916.

day. This fuel ought to be largely in the form of carbohydrate. The calories specified are needed for the body at rest or under light exercise only. If the body works, the input of fuel must rise to a value of 3,000 or more calories, depending on the severity of the work. This rule of the German authorities dealing with military prisoners runs at present to the effect that prisoners who work are to receive 10 per cent. more in calories than prisoners living in camp.

3. The diet must contain a certain amount of native fat. Extensive investigations in the nutrition of growing animals have indicated that a certain minimal fat content is indispensable in a diet. It is not known just how much fat is required to cover this factor, and we are therefore not in a position to fix the minimal fat content of a normal diet. Roughly speaking, it is believed that a ration should contain at least 25 to 50 gm. of fat per day. In justification for this conclusion, Taylor points out that quite possibly the indispensable factor in fat does not lie in the tripalmitin, tristearin and triolein therein contained, but in other components (whose nature is not yet clearly understood) which are present in the various native fats. General medical experience supports the view that nutrition is better maintained on protein, carbohydrate and fat than on protein and carbohydrate alone.

4. The diet must contain the various salts required in the body.

5. The diet must contain certain substances of unknown chemical nature which are at present grouped under the term "vitamins," and which are found especially in vegetables and in the coverings of grains. It is possible that the indispensable factor in fats previously discussed is to be classed with the vitamins, when considered from the standpoint of a diet.

6. A diet must not consist entirely of preserved or conserved foodstuffs. A certain proportion of the articles of diet ought to be either freshly cooked or consumed raw.

These conclusions, which are receiving widespread attention under the sanction of a British government report, are peculiarly interesting in the contrasts which they afford in several respects with what one might have expected to read a decade ago. Energy and sufficient protein no longer form the sole desiderata that receive emphasis. Suitable protein, accessories to the diet, salts, vitamins—in other words, the quality of the ration—is given special recognition by direct or implied reference. Taylor also takes into account further criteria of a diet which, as he says, are much more difficult to elucidate and evaluate than are the basal requirements already stated. In dealing with civilized man we are dealing with something more than the contemplation of the human subject as a living machine. Some account needs to be taken of the habits, customs, tastes and idiosyncrasies of the subjects under consideration, and to the degree of refine-

ment or specialization of their nervous systems. The presentation of the physiology of nutrition is changing, indeed.

According to the British white paper, the minimum food requirements are satisfied in the Ruhleben camp. The British dislike the German cooking.² There is widespread dissatisfaction with the German "black bread" furnished to British palates, and other items are not relished; yet making due allowance for the exigencies of the war and the psychologic effects of restriction under military control, the nutritive conditions remain endurable. With one exception the different foodstuffs have been found to be of satisfactory quality. The estimate as to its quantity indicated that for the number of men who partook of the camp rations, the average daily input for the week was 99 gm. of protein, 25 gm. of fat, and 252 gm. of carbohydrate, corresponding to 2,740 calories. If all the men in the camp had taken their numerical share of the food offered, the average daily input per man would have been 60 gm. of protein, 13 gm. of fat and 308 gm. of carbohydrate, corresponding to 1,590 calories. It must be noted, however, that considerable supplies in addition are furnished by friends, relief societies and other agencies, so that the average figures will be above the minimum just quoted. The foremost criticism is that the food shipped in from Great Britain, like the food provided by the German authorities, is poor in fat and rich in starch.

Taylor's recommendations contain the suggestion that the two sets of supplies—from Germany and from Great Britain—should be organized to supplement each other. The proposed plan calls for from 80 to 90 gm. of protein, about 65 gm. of fat, and 425 gm. of carbohydrate, and would yield about 2,600 calories. Such a diet would contain the usual and desirable amount of fat, it would conform to the tastes of the prisoners, and it would provide the interned men with certain desired articles which the German authorities do not provide.

Current Comment

THE RÔLE OF BOOKS IN SPREADING INFECTION

Libraries and school authorities in cities that supply children with books from a common stock, as well as those who use such books, should be interested in a recent laboratory investigation of books as possible vehicles of disease.³ In this investigation three approaches were made to the subject: (1) an investigation of seventy-five soiled and torn library books that for several years had been passing through the hands of children who were living under most undesirable sanitary conditions; (2) a search for diphtheria bacilli on 150 books that were known to have been handled by

2. See London Letter, this issue, p. 131.

3. Laubach, C. A.: The Possible Rôle of Books in the Dissemination of the Contagious Diseases, Bull. Johns Hopkins Hosp., 1916, xxvii, 183.

persons ill with diphtheria, and (3) a study of books artificially contaminated with *Bacillus coli*, *B. typhosus*, and *B. diphtheriae*. In the case of the seventy-five library books, the only organism found suggestive of danger was the colon bacillus, in two instances only; here the fact is pointed out that *B. typhosus* differs very little in viability from *B. coli* and would, if lodged on a book, persist almost equally long. The search for diphtheria bacilli on the 150 books handled by diphtheria patients failed to disclose the organism in a single instance. In this connection the investigator adds the results of a brief and inconclusive study of books open to contamination with tuberculosis to the results of a more extensive investigation by Kenwood and Dove,⁴ quoting them as follows: "There is probably no material risk involved in the reissue of books recently read by consumptives, unless the books are obviously soiled. Even then the risks are slight." The books artificially contaminated by rubbing them, inside and outside, with cotton swabs saturated with broth suspensions of the organisms studied, were held at room temperature under various conditions: dry in diffuse daylight and moist in diffuse daylight; dry in darkness and moist in darkness; at low temperature, and exposed to direct sunlight. It was found that *B. coli*, *B. typhosus* and *B. diphtheriae* on the inside of books remained alive and virulent for months, and also on the outside of books when they were kept in the dark. Exposed to diffuse daylight, *B. typhosus* and *B. diphtheriae* survived not more than twelve days, while direct sunlight killed within a few hours. It is clear that while in the course of natural contamination books do not offer a favorable ground for the lodgment and growth of bacteria, yet in view of the fact that *B. typhosus* and *B. diphtheriae* have been found alive and virulent after the lapse of months under the conditions mentioned, it would be safest if books handled by patients were thoroughly disinfected. Direct sunlight appears to be as efficient and ready an agent here as elsewhere.

POLIOMYELITIS—INFANTILE PARALYSIS

Reports from New York indicate that that city is making desperate efforts to check a beginning epidemic of anterior poliomyelitis, probably the most severe in its onset of any that has threatened American communities. In the summer and fall of 1913 several groups of cases of this disease appeared in California. The field investigations were carried on by Sawyer,⁵ who determined once more that this disease is transmitted by contact. It was impossible to show any connection between the stable fly—formerly incriminated—and the cases which he observed. In practically every instance infection could be explained on the theory that epidemic poliomyelitis is transmitted through contact from acute cases or carriers. He showed also that the active virus may leave the body from the rectum as well as from the nose and mouth. Precautions should be taken, therefore, in the care of

poliomyelitis patients to prevent infection, not only from the nasal and buccal discharges, but also from the feces and soiled bedding. Recently Flexner⁶ summarized his views as to the etiology of this condition. The microbic agent, he states, is present in the nasal and buccal secretions, carried by persons, not insects, and communicated by them in such a manner as to gain access to the upper respiratory mucous membranes of other persons. Those who are susceptible to the injurious action of the virus acquire the infection and develop the disease. Not all of them develop the paralytic or meningitic type. Some represent abortive and ambulatory types. All, however, become potential agents for the dissemination of the virus, as do also healthy persons who have been in intimate contact with those who are ill and others who have recovered from acute attacks of the disease. The prevention of such dissemination is the actual prevention of the disease. The treatment of the condition is at best unsatisfactory, and the restoration of function to paralyzed limbs is a difficult task.⁷ To repeat, prevention of this dangerous and crippling disease should be the primary object.

RUSBY, A GOVERNMENT EXPERT, TESTIFIES

As might have been expected, the technical "experts" who came to the defense of Wine of Cardui were, with but few exceptions, men of little or no standing in their professions. One of the exceptions was Dr. Henry H. Rusby of New York. Rusby is a government official connected with the Department of Agriculture. Some of our readers will remember him as the man whose employment was discussed in the so-called Wiley investigation. This investigation went into the facts regarding the retaining of Rusby in the government service at a higher rate of remuneration than the law allowed, and Dr. Rusby's suggestion that while he was on his vacation Dr. Mansfield should be employed by the government as an unskilled laborer at \$50.00 a month to do his (Rusby's) work. Dr. Rusby's exoneration in this case is, of course, a matter of record and was commented on in these pages. This by the way. For the present we would direct our readers to the testimony of Dr. Rusby in the Wine of Cardui case.⁸ Dr. Rusby is a pharmacognosist. His ability as a medical botanist few will question. Apparently, however, he was willing to qualify also as a physician, although his experience in the practice of medicine seems practically to have been limited to one year's employment as clinical clerk in a lunatic asylum some thirty years ago. This may help to explain Dr. Rusby's weird conceptions of the anatomy of the female pelvis. Dr. Rusby was quite sure that Wine of Cardui would be "useful" as a "diuretic," as "a stimulant of intestinal action," as "a tonic and appetizer," as "beneficial to nutrition," and, last but not least, as "a stimulant to unstriped muscular fiber." Dr. Rusby regarded such a mixture "as a uterine tonic" whose action would be

4. Kenwood, H., and Dove, E.: The Risks from Tuberculosis Infection Retained in Books, *Lancet*, London, 1915, ii, 66.

5. Sawyer, W. A.: Epidemiologic Study of Poliomyelitis, *Am. Jour. Trop. Dis. and Prev. Med.*, September, 1915.

6. Flexner, Simon: Mode of Infection and Etiology of Epidemic Poliomyelitis, *Am. Jour. Dis. Child.*, May, 1915, p. 353.

7. Therapeutics, this issue, p. 118.

8. See page 135, this issue.

"beneficial" in its general tendency "by increasing the nutrition of the muscles and toning the muscles up so that they would support the uterus better." It was brought out on cross examination that Dr. Rusby was quite convinced that Wine of Cardui would act on the unstriated muscular fibers of the broad ligament! During the investigation of the Expenditures in the Department of Agriculture a letter of Dr. Rusby's was put in evidence in which he deplored the fact that he had "only the degree of M.D." In the same letter he stated that while he "never suggested such a thing nor even considered it," he had no doubt that he could "secure a degree from Columbia University" if it seemed "important from a departmental point of view." It might be suggested that when Dr. Rusby gets back to Columbia University, where he is professor of materia medica in the College of Pharmacy, he ask a freshman student in the anatomy class to make a dissection of some of the unstriated muscles in the broad ligament.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ILLINOIS

Soldier Medical Students Allowed Credit.—The Illinois State Board of Health is said to have ruled, June 26, that all medical students who join the Illinois National Guard or Naval Reserve will be allowed full credit for the year's work.

Northwestern Alumni Meet.—At the annual meeting of the Alumni Association of Northwestern University Medical School, held in Chicago, June 10, Dr. James H. Stowell, Chicago, was elected president, and Dr. Henry B. Hemenway, Evanston, vice president. The association recommended that a medical alumni advisory board be established to investigate conditions in the medical school.

Personal.—Dr. Cora I. Kipp, Pontiac, has recently returned after five years' service in Bareilly and Brindaban, India.—Dr. Howard K. Scatliff, Elgin, is ill with smallpox at the Sherman Hospital.—Dr. Henry A. Winter, Saybrook, celebrated his fiftieth anniversary of his entrance into practice, June 23.—Dr. Joseph Pogue, Edwardsville, who has been ill with pneumonia, is convalescent.

Sanatorium Opened.—The Rockford Municipal Tuberculosis Sanatorium was formally opened, June 10. Addresses were delivered by W. H. Smith, Rockford, on "The Relation of the Doctor to Community in the Prevention of Tuberculosis," and by Dr. George W. Webster, Chicago, on "The Rights and Duties of the Municipality in the Control of Tuberculosis." The presentation speech was made by Dr. Daniel Lichty, its president, and Mayor Bennett accepted the institution on behalf of the city.

Infantile Paralysis.—Four cases of infantile paralysis were discovered in the Italian quarter of Standard, Putnam County, July 4. Steps were immediately taken to avoid the spread of the disease, and an investigation was started to trace the source of infection. Dr. C. St. Clair Drake, secretary of the state board of health, believes "that investigation will establish the fact that the outbreak of infantile paralysis among the Italians in both New York and Illinois, is more than mere coincidence."

Chicago

Physicians' Club Election.—The Physicians' Club of Chicago, at its annual meeting, June 29, at the Hotel Sherman, elected Dr. William D. Napheys as secretary. The directors elected for two years are Drs. Arthur M. Corwin, Henry W. Cheney and John Weatherston. The holdover directors are Drs. Joseph Zeisler, Charles P. Caldwell and Henry T. Byford.

On Watch for Infantile Paralysis.—To guard against the entrance of infantile paralysis, which is epidemic in New York, into Chicago, the health commissioner, July 4, withdrew eighteen physicians of his staff from field work and placed them on duty to watch incoming trains from the east which might carry cases of the disease. No cases had been reported when night came, but one family was placed under observation. All babies on incoming trains who remain in Chicago will be watched for at least two weeks. Plans have been made for a survey of the entire city for cases of infantile paralysis.

Personal.—Dr. Arthur Lederer has resigned as chief chemist and bacteriologist of the sanitary district of Chicago, to take up the course for health officers at Harvard-Technology, Boston.—The first five names on the eligible list of the City Civil Service Commission for attending physician at the Municipal Tuberculosis Sanatorium are Drs. William D. Napheys, Arrie Bamberger, Harry G. Hardt, Ellis B. Freilich and Philip J. Murphy.—Dr. Hugh Neil MacKechnie has been appointed head of the department of surgery of Loyola University Medical School, vice Dr. John D. Robertson, resigned.

IOWA

Personal.—Dr. Max W. Emert, Des Moines, has been appointed assistant in surgery of the University of Nebraska and has located in Omaha.—Dr. Oliver W. Boatman has succeeded Dr. Edward J. Wehman as city physician and health officer of Burlington.

New Member of National Board.—At its business meeting, held in Detroit, June 14, the National Board of Medical Examiners elected Dr. Walter L. Bierring, Des Moines, as a member of the board to fill the vacancy caused by the death of Dr. William L. Rodman.

Clinical Society Organized.—June 6, the Iowa Clinical Medical Society was organized at Des Moines by men interested particularly in internal medicine and diagnosis. The following officers were elected: president, Dr. Granville N. Ryan, Des Moines; vice presidents, Drs. C. Palmer Howard, Iowa City, and John W. Shuman, Sioux City, and secretary-treasurer, Dr. Guthrie McConnell, Waterloo. The next meeting will be held in Sioux City, September 2.

KANSAS

Hospital Officials Meet.—At the annual meeting of the Kansas Hospital Association, the following officers were elected: president, Dr. Samuel Murdock, Jr., Sabetha; vice presidents, Drs. Frank W. Shelton, Independence; John C. Hall, McPherson, and George W. Jones, Lawrence, and secretary-treasurer, Dr. William R. Dillingham, Halstead.

Personal.—At the annual meeting for organization of the Kansas Board of Medical Registration and Examination at Topeka, June 14, Dr. George M. Gray, Kansas City, was elected president, and Dr. Henry A. Dykes, Lebanon, was reelected secretary.—The orders directing Lieut. John W. Turner, M. R. C., U. S. Army, to Fort Sam Houston, take away the last medical officer from Fort Riley, and Dr. John E. Hewitt, M. R. C., Wakefield, has been ordered to report for duty at Fort Riley.—At the annual meeting of the state board of health, Dr. Charles H. Ewing, Larned, was elected president, and Dr. Samuel J. Crumbine, Topeka, was reelected secretary for four years. The advisory board, composed of Dr. Sara E. Greenfield, Topeka, bacteriologist, and Prof. C. A. Haskins, engineer, and Joseph Welker and Francis Veatch, both of Lawrence, assistant engineers, were also reelected.—Dr. John W. Young, Hutchinson, sailed with his family from San Francisco for Manila, June 10. He will be engaged in medical missionary work in the Philippines for three years.—Dr. Oscar F. Marcotte, Topeka, has succeeded Dr. John H. Rinehart, resigned, as coroner of Shawnee County.

MARYLAND

Hopkins Seeking Land.—A large block of property immediately east of the present buildings is being sought by the trustees of the Johns Hopkins Hospital for extension of the hospital. The ground is to be utilized for new buildings made necessary by the recent Rockefeller Foundation gift for hygiene research and by other gifts and legacies.

University of Maryland Men Control Medical Corps.—The regimental hospital corps of the Maryland National Guard is composed entirely of graduates of the University of Maryland, as follows: Majors Robert P. Bay, S. Griffith Davis, Jr., J. Harry Ullrich, all of Baltimore, and Henry A.

Mitchell, Elkton. Captains G. Milton Linthicum, Herbert Schoenrich, Frederick H. Vinup, William H. Daniels, William J. Coleman, Baltimore; Jacob C. Madara, Ridgely; Clarence P. Erkenbrack and John C. Stansbury, Baltimore. Lieutenants Paul Hutton, Charles W. Rauschenbach, May; George W. Rice, John S. Fenby, William R. Johnson, Caldwell Woodruff, Hyattsville, and Louis Diener.

Personal.—Dr. Henry Lee Smith, Baltimore, a member of the Medical Reserve Corps of the United States Army, has been ordered to Mount Gretna, Pa. He will be one of the medical officers to examine the Pennsylvania troops.—Dr. L. Palmer Holmes, chief admitting physician to the Johns Hopkins Hospital, has left for a month's vacation in Arizona and San Antonio, Texas, where he will visit the United States Army headquarters.—Dr. George G. Snarr has been reappointed medical superintendent of the Franklin Square Hospital, Baltimore.—Dr. Charles R. Foutz has been appointed health officer of Westminster.—Dr. Frederick N. Tannar, Baltimore, who was operated on at the Franklin Square Hospital recently, is reported to be convalescent.

Base Hospital Forming.—In the event of war, the American Red Cross and the Maryland War Relief Auxiliary have agreed on the immediate need of the establishment of a base hospital. The staff of the hospital has been completely organized. The surgeons, physicians, nurses, orderlies and litter bearers, etc., have all been recruited in Maryland, the total number required to man the unit being approximately 250 persons. All that is lacking is the equipment, and to provide this, it will require about \$30,000. The personnel of the staff is as follows:

Dr. Winford H. Smith, Baltimore, director; Dr. George H. Walker, Baltimore, adjutant; Dr. Victor F. Cullen, State Sanatorium, quartermaster; Dr. Walter A. Baetjer, Baltimore, register; and Miss Bessie Baker, superintendent of nurses.

Surgical Division: Dr. John M. T. Finney, surgeon-in-chief; Dr. William S. Baer, Dr. William A. Fisher, Jr., Dr. J. Staige Davis, Dr. Henry N. Shaw, Dr. George J. Heuer and Dr. Bertram M. Bernheim, assistants, all of Baltimore.

Medical Division: Dr. Theodore C. Janeway, Jr., physician-in-chief; Dr. Paul W. Clough, Dr. Charles M. Byrnes, Dr. Eveleth W. Bridgman, Dr. John H. King, Dr. William M. Happ and Dr. Verne R. Mason, all of Baltimore.

Laboratory Division: Dr. Thomas R. Boggs, chief.

Roentgen-Ray Specialist: Dr. Charles A. Waters.

Pathologist: Dr. Montrose T. Burrows.

Dentist: Dr. A. P. Dixon, Cumberland, Md.

Pharmacists: Dr. D. P. Craumer and W. M. Rodgick.

Chaplain: Rev. Dr. John McDowell.

MONTANA

Tuberculosis Association Organized.—The Montana Association for the Prevention of Tuberculosis was organized at a meeting held in Helena, June 23, at which addresses were made by Charles M. DeForest, field secretary of the National Association for the Study and Prevention of Tuberculosis, and P. A. Surg. A. J. Lanza, U. S. P. H. S., who is making a tuberculosis survey among miners of the state.—The Butte Tuberculosis Society filed articles of incorporation, May 24.

Hospital News.—The movement has been organized for the construction of the Butte Deaconess Hospital to cost \$100,000. The hospital will be for the public and an advisory board of physicians of the city will be maintained.—Before August 1, a hospital pavilion at the State Sanitarium, Galen, will be ready, which will accommodate thirty additional patients. Work will be started in the near future on a new kitchen and dining room for the new institution.—Work has been started on the construction of the new hospital for Custer County which is to be built at a cost of about \$40,000. The hospital will contain thirty rooms.—A contract has been awarded for the erection of a thirty-room hospital in Conrad, to cost about \$13,000. The building will accommodate, when completed, about fifty patients and will be in charge of Dr. Henry W. Powers.—A new private hospital is to be built in Anaconda with accommodations for thirty patients.

NEW YORK

Personal.—Dr. Franklin W. Barrows, Buffalo, has been appointed acting chief of the Bureau of Child Hygiene, Department of Health, during the absence of Dr. Arthur C. Schaefer, who has been called to duty with the Seventy-fourth New York Infantry.—At the meeting of the Binghamton Academy of Medicine, June 19, a loving cup was presented to Dr. John H. Martin, by the Academy, as a token of respect and affection.—Dr. Charles J. Garofalo, Syracuse, has been commissioned captain in the Canadian Army Medical Corps, and has reported for duty at Kingston, Ont.

New York City

Sore Throats Among Guardsmen.—It is reported that fifteen privates of Company L, Forty-Seventh Regiment of Brooklyn, are ill with sore throats and have been isolated in the regimental hospital.

Personal.—At the annual commencement exercises of the University of Michigan, June 29, the honorary degree of Master of Arts was conferred on Dr. James Riddle Goffe.—Three medical inspectors of the Bureau of Child Hygiene have answered the call of duty. These are Maj. John F. Dunseith and Edward R. Maloney, and Capt. James G. Dunseith.—Dr. Carroll Chase, Brooklyn, sailed for Paris, June 4. He went for hospital service under the auspices of the American Relief for France and Her Allies.—Dr. Montgomery E. Leary, Rochester, was reelected president of the New York State Sanitary Officers' Association at the recent meeting of that organization in Saratoga.—Dr. and Mrs. Fred H. Albee have sailed on the St. Paul for Liverpool.—Dr. Francis R. Holbrook arrived home from Europe on the French Liner *Lapland*.

Another Base Hospital Fully Equipped.—Edward B. Close has placed \$50,000 at the disposal of Dr. Samuel Lloyd of the Post-Graduate Hospital for the purpose of organizing and equipping a 500-bed base hospital to be used in case of war with Mexico. The complete personnel of the hospital will consist of 200 men, and volunteers are wanted for hospital orderlies who are accustomed to the work and in proper physical condition. Dr. Lloyd will be the director. The remaining members of the staff, all from the Post-Graduate Hospital, are: Drs. John J. Moorhead, Ward J. MacNeal, James F. McKernon, Frederick S. Lobell, Stanley R. Woodruff, George Francis Cahill, Francis C. Ligouri, Walter J. Wellington, Robert B. Beard, Marshall C. Pease, Jr., Henry R. Kutil, Blake F. Donaldson, Lawrence J. Nacey, Frank K. Pomeroy, James Francis Sullivan, Richard M. Taylor and the Rev. Duncan H. Browne.

The Spread of Infantile Paralysis.—July 1, there were reported fifty-one new cases of infantile paralysis and eleven deaths. July 3, sixty-seven new cases were reported. July 4, twenty-five deaths from infantile paralysis were reported for the previous twenty-four hours. Fifty-nine new cases and thirty-one suspects were reported from four municipal boroughs. Since June 10 there have been 327 cases reported in Brooklyn, with a mortality of about 20 per cent. In speediness of spreading the epidemic has already passed the record of 1907. A house to house canvass is being made in Brooklyn. The known cases are, for the most part, confined to the Italian population. Officials of the sanitary bureau are making a survey of the areas where infantile paralysis is most prevalent, to determine whether the stable fly is responsible for the recent outbreak of the disease. The groups of cases in Brooklyn and Queens are roughly divided into four areas. A special field force has been organized in Brooklyn under the charge of Dr. Simon R. Blatteis, Brooklyn. The premises where infantile paralysis exists will be placarded, and when complete isolation and proper nursing cannot be maintained at the homes, the patient will be removed to a special pavilion at the Kingston Avenue Hospital, where a special visiting staff of experts, including specialists in children's diseases, orthopedics and neurology, are assisting the regular attending staff. The department calls attention to the importance of the highest possible degree of cleanliness in the home and of the patient. In the orders issued June 30, the local health officers of Orange, Rockland, Putnam, Westchester, Nassau and Suffolk counties were instructed to report by telegraph every suspected case of infantile paralysis and enforce the strictest quarantine of the patient. The health officers are also urged to give the widest possible publicity to the order and in the case of an epidemic to issue special bulletins so that the people may be informed of the dangers. The epidemic originated in the tenement population in Brooklyn, and has spread to three of the five boroughs of greater New York. In one day forty-four new cases were reported, and up to June 30 there have been sixty-four deaths. The department of health has enlisted the services of two large life insurance companies to aid in the distribution of warning leaflets, and the distribution of one-half million such leaflets, printed in yellow, the quarantine color, has been begun. There are now 153 cases of infantile paralysis at the special pavilion of the Kingston Avenue Hospital. A special staff of experts to care for these patients has been organized with Dr. Lewis C. Ager as chief. Associated with him are Drs.

Eugene F. Dalton, Murray B. Gordon, Judson P. Pendleton, and Philip W. T. Moxom, who are experts in contagious diseases; Dr. Robert O. Brockway, a nerve specialist, Dr. Walter Truslow, orthopedic surgeon and Dr. Alexander Sophian, a laboratory expert. At the present time the field staff, working under the general direction of Dr. Blatteiss, consists of thirteen physicians, thirty nurses and twenty sanitary inspectors. In addition to this, Mr. Lucius P. Brown, director of the bureau of food and drugs, has detailed twenty-five of his men to inspect and clean up all places where food is handled or sold. The department announces that the free open air moving picture shows which it had planned to hold in Manhattan, the Bronx and Brooklyn, during the middle of July, would not be given since it would be impossible to prevent a gathering of large crowds of children to view the pictures. At the request of Commissioner Emerson the department of licenses has notified all motion picture theaters in the city not to admit children under 16 from July 5 until such time as the board of health declares this health menace at an end.

PENNSYLVANIA

Soldiers Inoculated.—The entire National Guard of this state encamped at Mount Gretna have been inoculated with typhoid vaccine preparatory to their removal to Mexico.

Advisory Board for Sanatorium.—Mayor Armstrong of Pittsburgh announces that he will appoint an advisory board for the tuberculosis hospital on the Leech farm, of which Dr. H. G. Burns of the Bureau of Infectious Diseases is at present in charge.

New Hospital for Pittsburgh.—Plans have been posted for the new Mercy Hospital building, to cost \$500,000. The building is to be eight stories in height, 100 by 250 feet, and is to be built of brick, terra cotta, reinforced concrete and steel.

Personal.—Dr. Charles M. Stephens, York, has gone to Waycross, Ga., where he is a member of the staff of a railway hospital. The degree of LL.D. was conferred on Dr. Samuel Z. Shope, Harrisburg, by Lebanon Valley College, June 16. The degree of Doctor of Science was conferred by Lafayette College, Easton, on Dr. Samuel G. Dixon, state health commissioner, June 14.

Philadelphia

Hospitals Offer Aid.—Practically all the institutions of Philadelphia have announced their readiness to take care of the sick and wounded of the army and navy, and the authorities at Washington have been notified of the action of the hospital officials.

Tribute to Dr. White.—In the London *Spectator* an eloquent tribute appears to the memory of Dr. James William White, who died April 24. The tribute closes with "We shall do well if in reckoning up the toll of those who gave their lives for freedom, we do not omit from our list the name of William White."

Hospital Unit Formed.—Physicians on the staff of the University Hospital have organized a hospital unit for service in the United States Army, and have notified the Southeastern Pennsylvania branch of the American Red Cross that they are ready to respond on call. The university unit, if called, will be assigned to take charge of a base hospital, and will be thoroughly equipped. Dr. Edward Martin is director of the unit and among the members of the staff are Drs. John B. Deaver, Alfred Stengel, George Edmund de Schweinitz, Allen J. Smith, Eldridge L. Eliason, Joseph Sailer, M. Howard Fussell, Charles H. Frazier and George P. Muller.

Philadelphia Physicians Go with Troops.—Five young physicians serving as interns at the Philadelphia Hospital have joined the health department of the National Guard, and will go to the Mexican border with the Pennsylvania troops. The doctors enlisted on June 21, and it is said that they will serve in various field hospitals. Those who joined the guard from the Philadelphia Hospital are as follows: William T. Lineberry, James W. Doughty, Joseph G. Fernbach, Stuart E. Trowbridge and H. Freeman Warren. Dr. Charles B. Kendall, also an intern at the hospital, has been a member of the guard for two years, and will join the Second Field Hospital Corps.

Personal.—Daniel Lincoln Wallace had conferred on him the degree of Doctor in Chemistry by the University of Pennsylvania, June 21, and on the same day Dr. Charles

Karsner Mills was given the honorary degree of LL.D.—Dr. S. Lewis Ziegler has been elected trustee of Bucknell University, Lewisburg.—Dr. Pierre N. Bergeron and Dr. Frank D. Harris have been appointed gynecologists-in-chief to St. Mary's Hospital.—Dr. Royal H. McCutcheon of the Methodist Hospital staff has enlisted with the Pennsylvania National Guard in the Hospital Service.—Dr. Edward K. Tullidge, who recently returned from the Balkans, has been appointed lieutenant-surgeon in the National Guard.

New Health Centers.—There has been appropriated \$25,000 by councils for baby saving work during this summer. Director Wilmer Krusen of the department of health and charities will establish four health centers for mothers and babies in place of the single one held heretofore in the Second Ward. The centers will be located in the Sixteenth Ward with subcenters in the Eleventh, Twelfth, Thirteenth, Eighteenth, Thirty-Sixth and First wards. The appropriation provides for the renting of houses, purchase of tents, use of vacant lots, and milk and ice for poor babies and their families. Each center will have a woman physician, a sanitary inspector, and fifty-eight nurses will be distributed throughout these centers.

GENERAL

Pure Milk Experts Meet.—At the annual meeting of the American Association of Medical Milk Commissions, held at the Cincinnati General Hospital, June 10, Dr. Walter D. Ludlum, Brooklyn, was elected president; Dr. Otto P. Geier, Cincinnati, secretary (reelected); William J. Graf, Cincinnati, assistant secretary; J. P. Sedgwick, Cleveland, treasurer, and Henry F. Price, Pittsburgh, member of the council.

National Board Examination.—The National Board of Medical Examiners announce that its first examination will begin, October 16, at the Army Medical Museum, Washington, D. C., and will continue for one week. No charge is made for the examination itself, but a registration fee of \$5 is required. Further particulars may be obtained from the secretary of the board, Dr. John S. Rodman, 2106 Walnut St., Philadelphia.

Red Cross Hospitals for Border.—The Chicago chapter of the Red Cross is raising a fund of \$200,000 to be used for the creation and operation of four base hospitals on the border and four hospital columns on lines of communication with troops. These hospitals and columns will be fully equipped and will have a full complement of physicians, nurses and all necessary assistants. The chapter will also purchase supplies for wounded men and for troops; will care for the dependent families of national guardsmen and will maintain a general fund for miscellaneous needs occasioned by war.

American Hay-Fever-Prevention Association.—At the annual meeting of this organization, held in New Orleans, of which brief mention was made in THE JOURNAL last week, it was reported that thirty-four state boards of health, including Louisiana, Mississippi and Alabama, are cooperating in the campaign against hay-fever, and that the United States Public Health Service has placed the Hygienic Laboratory at Washington at the disposal of the organization for scientific investigations and has now published an illustrated list of the most common hay-fever weeds. The research department of the association has completed a list of hay-fever weeds for the southern, middle and eastern states and is now making arrangements to complete a similar list for the western and Pacific states.

Military and Civilian Relief.—The relief work of Red Cross chapters is divided into a section for military relief and one for civilian relief. The first section takes charge of the collection, purchase, warehousing, packing and forwarding of supplies to soldiers and sailors. The section for civilian relief has charge of all work pertaining to the relief of destitute families of soldiers and sailors. Care is especially requested in the collection of reliable information, in the proper distribution of relief, the avoidance of haphazard, spasmodic and irregular methods, and discrimination as to whether relief should be in the form of money or supplies. The chapters of the Red Cross are authorized to solicit contributions of money or supplies and to spend or distribute these funds and supplies under proper safeguards, accurate account being made of all monies received and expended.

The Mobilization Camp Personnel.—The following are the changes and additions to the list of officers on duty at mobilization camps in the Central Department: Ohio, Capt. Frank Winders, M. C., U. S. Army; Lieut. Charles F. Bowen, M. R. C., U. S. Army, Columbus. Minnesota, Capt.

Will L. Pyles, M. C., U. S. Army, in place of Maj. George H. Crabtree, M. C., U. S. Army; Capt. Thomas H. Johnson, M. C., U. S. Army. Michigan, Lieut.-Col. Charles L. Willcox, M. C., U. S. Army, in place of Maj. James L. Bevens, M. C., U. S. Army; Capt. Charles E. Freeman, M. C., U. S. Army. Indiana, Capt. Arthur M. Whaley, M. C., U. S. Army, and Lieuts. John J. Boaz, Harvey A. Moore, Edmund D. Clark, and Orange G. Pfaff, M. R. C., U. S. Army, all of Indianapolis. Nebraska, Capt. Ernest R. Gentry, M. C., U. S. Army, in place of Capt. Charles F. Craig, M. C., U. S. Army.

Bequests and Donations.—The following bequests and donations have recently been announced:

For the completion of the fourth base hospital of the American Red Cross in New York, a donation of \$10,000 from Mrs. Willard D. Straight.

St. John's Guild and Lincoln Hospital, New York, each \$100,000, and New York Orthopedic Hospital, \$50,000, by the will of Mrs. Helen Guillard.

St. Luke's Hospital, New York, \$10,000, by the will of Waldron Post Brown.

St. Mary's Hospital, Milwaukee, \$2,000, by the will of Antoinette Weenan, and also unless the contest to the will proves successful, about \$350,000 as a fund for the establishment of free medical dispensary service in Milwaukee.

St. Luke's Hospital (Chicago) building fund, donation of \$100,000, by Mrs. George M. Pullman.

Albany Medical College, \$12,635.20, by the will of Dr. John M. Bigelow, and donations of \$41,000 from five citizens of Albany to meet the deficit of the running expenses.

Medical Preparedness.—Prompted by the considerations that the medical profession in peace and in war has always been ready to serve the best interests of the government out of a spirit of patriotism and cooperation; that the European war has demonstrated the need of greater medical supplies and more efficient organization of medical resources in connection with war activities than was formerly deemed necessary or adequate, and that every United States soldier and sailor is entitled at all times to protection in sanitary matters and to proficient medical and surgical care, a committee including representatives from the principal medical organizations has tendered to the existing agencies of the government its services toward the medical welfare of the army and navy. These services comprise the establishment of an organization to make a comprehensive survey of the resources of the government; the invoicing of the resources available in peace and in the emergency of war, including the names of men available for field or home duty, who are trained in medicine, surgery and sanitation, the equipment of the hospitals with which these men are connected, the buildings available for hospital use; the facilities for transportation of the wounded, food and drug supplies available, lists of trained nurses and other hospital helpers, and to aid in the care of the sick and wounded and the elimination of preventable diseases. A committee of twenty-nine was formed, of which Dr. William J. Mayo, Rochester, Minn., was made chairman, and Dr. Frank F. Simpson, Pittsburgh, secretary of the advisory committee. The general committee has selected a subcommittee in each state to aid in the general survey of the medical resources of the country. The national committee is composed of three honorary members, the surgeons general of the army, navy and Public Health Service; six ex-officio members, Col. Jefferson R. Kean, M. C., U. S. Army, and the presidents of the American Medical Association, American Surgical Association, Congress of American Physicians and Surgeons, Clinical Congress of Surgeons of North America and American College of Surgeons; thirty members appointed by the foregoing and a number of associate members representing important subjects closely allied to medicine. In addition there are state committees of nine members each, and territorial committees of three members each and a number of aides for local work. The committee will endeavor to interest the medical profession of the country in the desirability of applying for commissions in the Officers' Reserve Corps, Medical Department. By a mutual understanding between the committee and the American Red Cross, the organization will cooperate with the Red Cross in raising its civilian and military work to a high point of efficiency and in organizing a considerable number of Red Cross hospital units in strict accord with the most recent advances and the highest ideal of medicine. Up to the present time lists of 21,000 physicians have been made out, thus making a sufficient force to care for 3,000,000 soldiers on the basis of seven commissioned medical officers to each 1,000 men.

LONDON LETTER

LONDON, June 10, 1916.

The War

WASTAGE OF MEDICAL OFFICERS IN THE ARMY

The authorities are always insisting on the need for more medical officers in the army. It is plain that several forms of wastage exist at present. The wounded could be run straight in by motor from the advanced dressing stations to the casualty clearing hospitals, without any necessity for stopping at the intervening "field ambulances," which indeed might be done away with altogether, setting free thirty doctors in each division for more useful work. The plan which makes each division a self-contained medical unit works out as an impediment, instead of a help, to efficiency, for in a battle, when a division moves out of action, its field ambulances move out with it, and lend no help to any other unit. The wastage of physicians due to this arrangement is great, and for every one division in action, two, or more than two, are kept in reserve, and the medical officers belonging to them are for the time being standing idle. If, instead, each army were taken as the unit, then the physicians belonging to this large unit would never be out of action, but constantly available to be sent where they were most needed (except when off duty). Again, physicians' services should not be thrown away on mechanical or purely clerical work, which could be done just as well by men not trained in medicine. Special skill ought to be utilized as far as possible, and medical students employed not as combatants, but as dressers. A great wastage of medical services is caused by appointing the full complement of physicians to serve on the field ambulances of the great army in training at home, and as these doctors are already trained in their profession, they are not needed until the new army is nearly ready to go abroad. No doubt these reforms will be made in time. Our national character is too conservative for rapid reforms. We are, too, so empiric that, as the whole history of the war shows, we do not work by schemes carefully thought out beforehand, but improve as we go along and defects are disclosed.

THE FEEDING OF BRITISH PRISONERS IN GERMANY

Some time ago your Berlin correspondent described the feeding of prisoners in Germany, giving the number of calories allowed and implying that conditions were satisfactory. Unfortunately the evidence is overwhelming that the feeding of British prisoners is far from this. If independent evidence were necessary it is furnished by the report made by Dr. A. E. Taylor, an American physician, through the United States ambassador in Berlin, on the feeding of British subjects interned at Ruhleben. It is published as an official document by the British government. Dr. Taylor lays down what he considers to be a minimum diet for an adult male not engaged in hard work, the figures being supplied largely by German investigators. This consists of protein from 70 to 90 gm. a day, carbohydrate to a value of 3,000 or more calories a day depending on the work done, at least 25 to 50 gm. of fat a day, salts and vitamins, that is, substances found in fresh food and known to be essential to life. This minimum is looked on as enough to keep a man nourished "like a machine." It omits the vital questions of variety and choice and taste altogether. Dr. Taylor surveyed the prisoners' diet during seven days, and he comments as follows: "If all the men in the camp had taken their numerical share of the food offered, the average daily input per man would have been 60 gm. of protein, 13 gm. of fat, 308 gm. of carbohydrate corresponding to 1,590 calories." Happily all the men did not ask for their rations, and so those who did ask got a trifle more. This, however, is the conclusion: "It is equally clear that the food provided and served during the week of the survey was not sufficient in any direction to provide nourishment for the 3,700 men concerned, had they been entirely dependent on it. Fresh fish was served on three days of the survey. On one day the quantity was sufficient, but on the first and third days the supply ran out with 100 and 250 men still in line. These men were then provided with tinned fish, which many of them refused." The refusal is not surprising in view of the following: "The camp possesses a stock of *Brathäring* in large tins. On one occasion I witnessed the opening of seventeen of these tins. Five were distended with gas which rushed out when the tins were punctured. The contents of these tins were found to be in a state of advanced putrefaction. The contents of the other tins were not putrefied, but could not be regarded as in a satisfactory condition. I believe that this lot of herring should be condemned."

HOSPITAL WORK FOR WOMEN PHYSICIANS

At several of the large hospitals in London the calling up of the remaining members of the medical and lay staffs who are of military age will make it difficult to carry on the work efficiently. Wherever women can take the places of men they are being employed, but some of the duties in hospitals cannot be performed by women. Appeals are being made to the tribunals for exemption for dispensers and other servants who cannot be replaced. Before the war there were practically no women dispensers at the hospitals. Now a woman dispenser is engaged at the First London General Hospital, however, and two are to be installed at the London Hospital next month. For clerical work, women are now employed in all the hospitals. The chief difficulty in regard to the medical staffs arises through the dearth of resident officers. The present practice is that when a student has qualified for appointment he receives an honorary commission, and stays for about three months at the hospital before passing on to military service.

Sir Frederick Treves, speaking at the fourth annual meeting of the association and governors of the South London Hospital for Women, whose new premises will be opened by the queen, July 4, said that a feature of this hospital which was most striking and commendable was that it was staffed by women. What might be the full extent of the work of the woman physician it was impossible to foretell; but obviously her first efforts should be directed to the treatment of women and children. He regarded the battle of the woman physician as ended. Until a few years ago her greatest need had been opportunity. This the war had afforded, and she had taken advantage of it admirably. No one could dispute that the manner in which the woman physician had taken her place in the medical work connected with the war was beyond praise. One thing still needed before the woman physician could be said to have come into her own was the opportunity of hospital practice.

PARIS LETTER

PARIS, June 8, 1916.

The War

AN ASSOCIATION OF RED CROSS PHYSICIANS

A society has just been founded under the provisional title "Réunion amicale et scientifique des médecins et chirurgiens des hôpitaux auxiliaires," or "Social and Scientific Reunion of the Physicians and Surgeons of the Auxiliary Hospitals." This society will concern itself with all questions interesting its members as physicians and surgeons of the Red Cross.

Appendicitis and Syphilis

Dr. Gaucher, clinical professor for diseases of the skin and syphilis at the Faculté de médecine de Paris, read a communication before the Académie de médecine in which he sought to prove that appendicitis and enterocolitis are very nearly related to syphilis. He stated that this disease is always found in the history of those who suffer from the first two, especially in their family history. This expression of opinion gave rise to strong objections. Dr. Jalaguier of the Faculté de médecine de Paris and surgeon of the hospitals stated that he had made an investigation, as the result of which he is absolutely convinced that there is no pathogenic relation between appendicitis and syphilis, either congenital or acquired. Appendicitis may occur in a syphilitic person as it may occur in a tuberculous patient; but while tuberculous lesions have been observed in appendicitis, Jalaguier does not believe that typical syphilitic changes have ever been demonstrated in the appendix. Dr. Routier, surgeon of the Paris hospitals, agrees with Jalaguier that it is not safe to follow Gaucher's conclusions. He has performed a great number of operations for appendicitis, but he has never found any relation between appendicitis and syphilis. There does not, in his opinion, exist a syphilitic appendicitis amenable to specific treatment. Professor Quénu supported Dr. Jalaguier and pointed out that, to establish the syphilitic origin of appendicitis, Gaucher should have brought forward anatomopathologic proofs, which he did not do. Dr. Monod, of the Faculté de médecine de Paris, in supporting the statements of Drs. Jalaguier, Routier and Quénu, stated that he also, in the course of a long experience, had never observed an appendicitis which could in any way be attributed to syphilis.

Death of Dr. Paul Redard

The death is announced of Dr. Redard of Paris, which occurred at Cannes. He was formerly chief of the clinic de

la Faculté de médecine de Paris and surgeon in chief of the Furtado-Heine hospital and dispensary. He specialized in orthopedics, on which subject he had published a number of works.

Against Alcoholism

The Union des Françaises contre l'alcool (Union of French Women against Alcohol) has organized, in the form of a vast series of petitions to parliament and to the public authorities, a great public manifestation against alcoholism which is timed to coincide with the reassembling of parliament. For this purpose there have been distributed to the adherents of the various feminist groups copies of the petition addressed to parliament and to the government. In this petition the union insists on the principle that private interests must give way before those of the country, and, when it is a question of the general lives of millions of beings, one must not stop at half measures. The petition demands the abolition of the privilege of the small distillers, the suppression of spirits for drinking, and the development and encouragement of the use of industrial alcohol.

M. Albert Thomas, undersecretary of state for artillery ammunitions, is beginning serious steps for the vigorous repression of the ravages of alcohol in factories working for the national defense in the neighborhood of which new saloons have been opened. These measures comprise regulation of the consumption, and closing of the saloons and the application to soldiers working in the factories of the same rules as those for their comrades with the colors with the accompanying sanctions. Every workman found drunk will be immediately sent to the front.

Marriages

CAPT. ALFRED PARKER UPSHUR, M. C., U. S. Army, Camp E. S. Otis, C. Z., to Miss Amelie Augustine McAlister of Washington, D. C., in New York City, June 15.

KATHERINE ISABEL TATE SLATTERY, M.D., Boston, and Norristown, Pa., to Mr. W. J. Lore Fricka of Philadelphia, at Philadelphia, June 21.

NATHANIEL MILLS, M.D., Mt. Vernon, N. Y., to Miss Gladys Josephine Capen of Bronxville, N. Y., at Mt. Vernon, June 29.

JOHN CLAY WILLIAMS, M.D., to Miss Catherine Corum, both of Stroud, Okla., at Kansas City, Mo., recently.

HENRY EDWARD OESTERLING, M.D., Wheeling, W. Va., to Miss Mary Thornton Patton of Philadelphia, June 14.

CHRISTIAN ULRICH SENN, M.D., to Miss Harriet A. Smith, both of Ripon, Wis., at Westfield, Wis., June 17.

JOHN RUSSELL NOYES, M.D., Brockton, Mass., to Miss Frances Hughes of New York City, June 17.

ARMINIUS CLEVELAND POLE, M.D., to Miss Margaret MacPherson Horn, both of Baltimore, June 22.

MELVIN ALBERT VOGTEL, M.D., Winthrop, Minn., to Miss Emily Beatrice Clark of Chicago, recently.

WALTER IRENAEUS RYDER, M.D., to Bernadette Marie McWeeny, M.D., both of Boston, June 20.

JOSEPH M. SPELLISSY, M.D., Philadelphia, to Miss Josephine C. Schwarz of Harrisburg, Pa., June 21.

RALPH WILBUR HARDINGER, M.D., to Miss Helen M. Calkins, both of Cincinnati, June 17.

WILLIAM JAMES NEUZIL, M.D., to Miss Alice Dobry, both of Cedar Rapids, Ia., June 14.

EGDAR NEWTON FOUGHT, M.D., to Miss Edith C. Donohue, both of Philadelphia, June 22.

CLARA H. MOORE, M.D., to Prof. James D. Phillips, both of Madison, Wis., recently.

JUSTIN ALLIS GARVIN, M.D., to Miss Charlotte Meyer, both of Cleveland, June 16.

WASHINGTON WEST, JR., M.D., to Miss Agnes Mace, both of Belleville, Ill., June 16.

ELMER IRL DUNKELBERG, M.D., to Miss Julia E. Miles, both of Waterloo, Ia., June 17.

KEVIN DAVID LYNCH, M.D., to Miss Florence Sennett, both of Butte, Mont., June 20.

THOMAS J. B. SHANLEY, M.D., to Miss Anna Sennett, both of Butte, Mont., June 20.

Deaths

Thomas A. Ashby, M.D., Baltimore; University of Maryland, Baltimore, 1873; aged 68; a Fellow of the American Medical Association and president of the Medical and Surgical Faculty of Maryland in 1890; a fellow of the American Gynecological Society and of the American College of Surgeons; professor of diseases of women in his alma mater; professor of obstetrics and clinical gynecology in the Woman's Medical College, Baltimore; gynecologist to the Maryland General Hospital and consulting gynecologist to the Baltimore Home for Incurables, St. Agnes' Hospital and Mount Hope Asylum, Baltimore; a member of the House of Delegates of Maryland in 1910; who had conferred on him the degree of LL.D. by Washington and Lee University in 1912; author of several books dealing with the Civil War; widely known as a teacher and gynecologist; died at his home, June 26.

Grear Hill Baker, M.D., San Antonio, Tex.; Medical College of Ohio, Cincinnati, 1903; aged 37; a Fellow of the American Medical Association; formerly of Cincinnati, demonstrator of histology and bacteriology in the Cincinnati Dental College, demonstrator in the Children's Clinic and assistant in the chair of materia medica in his alma mater, and a member of the staff of the Cincinnati City Hospital; chief surgeon of the San Antonio Traction Company and Gas and Electric Company; died at his home, June 15.

J. Seward White, M.D., South Glens Falls, N. Y.; Albany N. Y., Medical College, 1880; aged 59; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of New York; a member of the medical staff of Parks Hospital, Glens Falls; for many years village trustee and health officer; for twenty-five years president of the First National Bank of South Glens Falls; died at his home, June 19.

Vincil O. Williams, M.D., Nevada, Mo.; St. Louis University School of Medicine, 1904; aged 36; a Fellow of the American Medical Association; division surgeon of the Missouri Pacific railroad and superintendent of the Vernon Sanitarium, Nevada; chief surgeon on the staff of Brigadier General Harvey C. Clark; was found dead in his motor car near the state national guard camp, Nevada, June 24.

Thomas Francis Cashman, M.D., Washington, Pa.; University of Georgetown, Washington, D. C., 1902; aged 36; a Fellow of the American Medical Association; a member of the medical staff of the Washington Hospital and lecturer on anatomy in its Training School of Nurses; died in the West Penn Hospital, Pittsburgh, June 21.

Albert G. Clopton, M.D., Dallas, Tex.; Tulane University, New Orleans, 1852; aged 89; a veteran of the Mexican War and in the Confederate service during the Civil War; for eight years a member of the faculty of the University of Texas; died at the home of his daughter in Texarkana, June 20, from senile debility.

Henry J. Cook, M.D., Cincinnati; Medical College of Ohio, Cincinnati, 1893; aged 50; a Fellow of the American Medical Association and a member of the Cincinnati Academy of Medicine; a member of the Cincinnati City Council for eight years; died in Bethesda Hospital, Cincinnati, June 17, from gallstones.

Joel Henry Rieger, M.D., Kansas City, Mo.; College of Physicians and Surgeons in the City of New York, 1872; aged 66; for many years surgeon of all but one of the railroads centering in Kansas City; died in the German Hospital, Kansas City, June 14.

Harold Herbert Johnson, M.D., Princeton, Ia.; University of Illinois, Chicago, 1905; aged 33; while on his way to his old home in Wilton Junction, Ia., in an automobile, June 25, was struck by a Rock Island train at a grade crossing in Wilton, and instantly killed.

Edward M. Hall, M.D., Delaware, Ohio; Homeopathic Hospital College, Cleveland, 1871; aged 70; a Fellow of the American Medical Association and formerly president of the Delaware County, Ohio, Medical Society; died at his home, June 19.

John Owen Smith, M.D., South Canterbury, Conn.; Eclectic Medical College in the City of New York, 1882; aged 75; for forty-five years a continuous holder of public office, and twice a member of the state legislature; died at his home, June 23.

Oscar J. Gwynn, M.D., Granite City, Ill.; George Washington University, Washington, D. C., 1896; aged 48; a Fellow of the American Medical Association; died in St. Luke's Hospital, St. Louis, June 16, from peritonitis following acute gastritis.

William C. Goodwin, M.D., Odessa, Mo.; Jefferson Medical College, 1853; aged 84; also a druggist; surgeon in the Confederate service throughout the Civil War; for sixty years a practitioner of Missouri; died at his home, June 16.

John H. Alpers, Rantoul, Ill. (license, years of practice, Illinois, 1878); aged 80; for nearly forty years a practitioner of Rantoul; died at the home of his daughter in that place, June 18, from cerebral hemorrhage.

James Lewis Williamson, M.D., Tuscaloosa, Ala.; University of Alabama, Mobile, 1881; a trustee of the State Insane Hospital and the oldest practitioner of Tuscaloosa; died suddenly while making a professional call in that city, June 16.

Delbert C. Ayers, M.D., Toledo, Ohio; Eclectic Medical Institute, Cincinnati, 1889; aged 46; formerly a member of the Ohio State Medical Association; died at Battle Creek, Mich., June 14, from a nervous disorder.

Edward P. Montgomery, M.D., Whitewright, Tex.; University of Louisville, Ky., 1887; aged 55; a member of the State Medical Association of Texas; was accidentally killed while crossing a railroad track, June 10.

Frederick Ainsworth Pillsbury, Cambridge, Mass. (license, Massachusetts, 1896); aged 48; who had never practiced medicine, but was employed as a chemist; died suddenly in his room in Cambridge, June 11.

Russell Brown Smith, M.D., Westerly, R. I.; College of Physicians and Surgeons in the City of New York, 1884; a Fellow of the American Medical Association; aged 59; died at his home, June 4.

Frederick H. Sage, M.D., Middletown, Conn.; New York Homeopathic Medical College, New York City, 1884; aged 55; died in Middlesex Hospital, New York City, June 7, from pneumonia.

Upton E. Traer, M.D., Evanston, Ill.; New York Hygieo-Therapeutic College, New York City, 1873; aged 81; died in the Evanston Hospital, June 12, from the effects of a fracture of the hip.

Charles Macalo Tobyne, M.D., New York City; Eclectic Medical College of the State of New York, 1897; aged 48; died at the New York Post-Graduate Hospital, June 13, from heart disease.

Henry B. Tate, M.D., Pacolet, S. C.; Atlanta, Ga., Medical College, 1887; aged 54; formerly a member of the Medical Association of Georgia; died at his home near Pacolet, May 30.

Charles H. Gilbert, M.D., Rushville, Ind.; Pulte Medical College, Cincinnati, 1879; aged 58; an ophthalmologist and otologist; died at his home, June 13, from heart disease.

Thomas Miller, M.D., Fincastle, Va.; M. R. C. S. England, 1859; Guy's Hospital, London, 1860; aged 79; died at his home near Fincastle, May 29, from cerebral hemorrhage.

Augustus Marable, M.D., Dallas, Tex.; University of Vermont, Burlington, 1895; Long Island College Hospital, 1897; aged 48; died at his home, June 1, from acute gastritis.

Walter B. Pier, M.D., Moscow, Pa.; Jefferson Medical College, 1884; aged 56; also a druggist; died at the home of his wife's mother in Moscow, June 9.

John T. White, Grand View, Ind. (license, Indiana, 1897); for two terms auditor of Spencer County; a veteran of the Civil War; died at his home, June 9.

Andrew Franklin O'Bryan, M.D., Longview, Tex.; Medical College of the State of South Carolina, Charleston, 1860; aged 80; died at his home, June 7.

Robert M. Bailey, M.D., Silverrun, (Jenifer P. O.), Ala.; Atlanta, Ga. Medical College, 1866; aged 76; a Confederate veteran; died at his home, June 7.

William Arthur Hanlin, M.D., Middleport, Ohio; Halmemann Medical College, Chicago, 1881; aged 66; died at his home, June 5, from diabetes.

Eugene Albert Gilman, M.D., Boston; Harvard Medical School, 1872; formerly of South Boston, Mass.; died in Boston, June 17.

Wallace D. Jefferson, M.D., Petersburg, Va.; Medical College of Virginia, Richmond, 1905; died in Staunton, Va., June 11.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

WINE OF CARDUI SUIT

(Continued from page 64)

May 17, 1916, Afternoon

TESTIMONY OF DR. GEORGE C. AMERSON (continued)

Dr. Amerson resumed the stand for the plaintiff in rebuttal.

FURTHER CROSS-EXAMINATION BY MR. T. J. SCOFIELD

Q.—Doctor, what is synergism? A.—What is it?

Q.—What is synergism? A.—Well, it is that term applied to the action of drugs whereby their activity or potency is increased by being in combination with another drug of similar action.

Q.—Do you know anything personally about the synergistic action of drugs? A.—No, sir.

Q.—You never had any experience in testing such action? A.—No, sir.

Q.—Well, is there such a thing as synergistic action, or do you know? A.—As far as I know, there is.

Q.—I am not asking so far as you know. I am asking whether there is or is not? A.—From my personal experience and experiments, no.

Q.—Doctor, I suppose you are familiar with what is ordinarily called flooding by the laymen, are you not, in women? A.—Yes, sir.

MENORRHAGIA AND METRORRHAGIA

Q.—That is what you call menorrhagia, is it? A.—Yes, sir.

Q.—Or metrorrhagia? A.—Yes, sir.

Q.—What is the difference between menorrhagia and metrorrhagia? A.—One is flooding between the regular periods, that is menorrhagia, and metrorrhagia would be excessive flooding at the regular period.

Q.—How is that, doctor? State that again. I did not get your answer. A.—Menorrhagia is flooding between the periods, or flooding between the periods, excessive flooding, and metrorrhagia is excessive flowing at the normal period.

Q.—That is your understanding of the definition of the two terms, is it? A.—Yes, sir.

Q.—You feel quite sure that you are right as to that definition, or those definitions? A.—These terms are very often used together. I believe I am right; yes, sir.

Q.—Well now, is it not a fact, that you are not right, and that you have just got that reversed?

An objection was made by Mr. Walker, attorney for the plaintiff, but withdrawn.

Q.—You still adhere to that answer, do you? A.—Yes, sir.

Q.—Now, I ask you again, don't you know that that is not the proper definition of either one? A.—I could not say that, when I just said that I believe it is.

The witness then stated that menorrhagia and metrorrhagia might have a common cause. He does not believe that—as stated in the Ladies Birthday Almanac for 1907—"Flooding is always a sign of danger. The best treatment is complete rest in bed and Wine of Cardui three times a day." The witness stated the various causes which produce flooding, in which this treatment would not be proper treatment.

He stated that where there was simply an engorgement of the uterus and tubes and adnexa, that treatment would be all right. He stated that the medicine in Wine of Cardui might be indicated and be a good treatment and would not do any damage in a case of acute salpingitis without suppuration, recognizing the fact that it contains 48 drops of alcohol. He considers the alcohol negligible absolutely in the doses and frequency given in Wine of Cardui. He considers the alcohol negligible because it is oxidized in the stomach. He does not know how much is oxidized in the stomach but he believes that some of it is. He does not know that none of it is oxidized in the stomach. He stated that the rest of it is oxidized in the blood stream and intestinal tract. He thinks it could be broken up anywhere. He does not know what it is broken up into.

Q.—I understand you to say that it loses its toxic effect by reason of being oxidized? A.—No.

Q.—Is that right? A.—No, sir.

Q.—What was it you said about that? A.—I said that alcohol in the quantity given would not be toxic.

Q.—Why? A.—Because in the dilution and percentage of it, I would consider it possibly to have—to be a food, possibly a tonic, and if given in stronger doses, or larger quantities it would be a stimulant. When you get beyond the stimulant stage, you get the toxic action.

Q.—Then it does not lose its effect, whatever that may be, by reason of oxidization? A.—Certainly it does.

Q.—How does it produce intoxication then, doctor? A.—Because, of its rapid absorption in enormous quantities.

Q.—Well, need the quantities be enormous in order to produce intoxication? Does not that depend on the person? A.—It varies with the individual; yes, sir.

Q.—So that, notwithstanding the fact that you say it is oxidized, it will nevertheless produce its effect, don't it? A.—I do not understand you.

Q.—That is, its intoxicating effect, doesn't it? A.—If taken in sufficient quantities, yes.

Q.—When does it produce that intoxicating effect, before it is oxidized or after? After it is oxidized or before? A.—I don't know; I suppose it would be before.

Q.—So that the toxic effect precedes oxidation, does it? A.—Yes, I should imagine so.

Q.—How rapidly is alcohol oxidized? A.—I do not know; it varies with the—

Q.—How much of the alcohol—

Mr. Walker:—Wait a moment. He has not finished his answer.

A.—I said I do not know. It will probably vary with the amount of it that was taken, and the contents of the stomach probably would influence it.

The witness has never tested for alcohol in urine. He stated that almost any intoxicant, if taken in sufficient quantity to produce a toxic effect, would be found in all the secretions, and if it was oxidized and broken up and separated, it could not be identified. He stated that if the alcohol is found in the urine, it is not oxidized. He does not know how much alcohol is oxidized in the system but he imagines that it varies with the individual and with the amount of tolerance of the alcohol. He does not know how much of 48 drops of alcohol contained in the Wine of Cardui is oxidized but he imagines that it all is. He does not, however, know. He stated that alcohol is a habit forming drug but he does not know what percentage of alcohol is necessary in a solution to be habit forming. He believes that it would vary in different individuals.

Q.—Is it not true that the tendency of the formation of the habit depends more particularly upon the effect of the amount of alcohol that is taken, on the person, rather than on the percentage? A.—I do not know as to that. I could see how it would be both ways.

Dr. Amerson stated that the medicine similar to Wine of Cardui is a proper medicine, provided the symptoms call for a medicinal agent that was in the solution. It would not be a proper medicine when there were no symptoms and therefore it is not good in all cases.

The witness stated that puberty is an entirely physiologic and natural process, and that in a great percentage of cases, no medicine is indicated.

The witness stated concerning a statement in the Home Treatment for Women for 1912, to the effect that "every girl should take Cardui at the time of puberty. It could not do her anything but good," that he did not believe every girl should take it without symptoms.

Dr. Amerson stated that he does not agree that such a combination is indicated for and should be used by all married women regardless of their physical condition. The witness stated concerning the statement from the Home Treatment Book for Women for 1913 "all newly married women should take Cardui," that he does not agree with it. The witness stated that unless there was some indication for its use, such a medicine should not be used by all pregnant women.

Q.—Do you believe, doctor, in the statement contained in Home Treatment, that that medicine so taken could never do a pregnant woman anything but good? A.—Yes, I do agree with that.

Mr. T. J. Scofield: Q.—Do you believe in that? A.—Yes.

Q.—That this alcoholic medicine could never do a pregnant woman, anything but good? A.—Yes, I do.

Q.—Suppose that she had Bright's disease, doctor, then do you think it would do her good? A.—The good that might be accomplished by the medicine would probably be overcome by the very slight possibly irritating effect that you are trying to assume that the alcohol would have.

Q.—You say it might be? A.—Yes, yes I believe it would be.

Q.—Then you think that a woman who is pregnant, and suffering with Bright's disease, and had albumin in her urine, might with perfect safety and with good results take this medicine three or four

times a day, throughout the period of pregnancy, do you believe that? A.—Yes, if she had the Bright's disease as bad as you are asking of me, she probably would not continue her pregnancy.

Q.—What? A.—If she had her Bright's disease, as acute and as active as you are indicating to me, she probably would not continue her pregnancy.

Q.—She would have eclampsia, wouldn't she? A.—She might have.

Q.—Would you be willing, or do you subscribe to the doctrine that a woman in that condition, should continue to take such a medicine as that in that condition throughout the time that she would carry her child? A.—I don't believe the alcohol would have any influence on it at all.

Q.—You don't? A.—No, sir.

Q.—And you state that upon your reputation as a physician and surgeon? A.—Yes, sir.

MEDICINE IN PREGNANCY

Q.—Do you believe that such a medicine as Mr. Walker has described, and which contains 48 drops of pure alcohol, taken as it is recommended, three or four times a day in tablespoonful doses, should be used by all women during the lying-in period? A.—Well, it would be a help to practically all of them.

Q.—Do you believe that it should be taken by all women during the lying-in period? A.—Well, "all women" is a pretty general term.

Q.—I understand it is, but that is the language of the book. A.—The great majority of them, probably it would do a lot of good to practically all of them, I should say.

Q.—Do you agree with that statement that it should be taken by all women during the lying-in period? A.—No, because I believe some of them do not need anything.

Q.—Then you don't agree with that statement, do you? A.—Not—

Q.—How is that? A.—Well, my answer suggests that I don't agree with it entirely, not in its entirety. I can see conditions where—

Q.—Do you believe, doctor, that such a medicine as we have been talking about should be used by all women during all the years of the menopause? A.—Not unless she has some symptoms that would suggest its use.

Q.—If she does not have symptoms that would suggest its use, then that statement is not true, is it? A.—There would be no indication for medication then.

Q.—Then that statement is not true, is it, that all women should take it all through the period of the menopause? A.—Well, of course, that includes them all again, the same question over again.

Q.—You don't approve of it? A.—I don't believe that all women would find it necessary to take it; no sir.

The witness stated that he has found albuminuria by examination of the urine, a great many times in pregnancy. He treats such cases by putting the patient on a bland treatment of milk, etc. If the medicine was indicated, the witness stated that it would be proper treatment to give an alcoholic solution. He would not let the fact that there was alcohol in the medicine make any difference.

Q.—Would you try to avoid a medicine under such circumstances that contained 48 drops of pure alcohol, which was given in dosages, running in from three to four doses, tablespoonful doses, a day? A.—It would depend upon what I thought of the kidney complication.

Q.—Suppose, doctor, that she was drinking two thirds of a bottle of beer every day, would you want her to continue that, or would you want her to cut it off? A.—The chances are I would have her stop it for the time being, in order to see what influence it had. If she was in the habit of drinking beer right along—

Q.—Why would you have her stop it? A.—Well, just for purposes of observation, I suppose.

Q.—That would be all? A.—Yes.

Q.—If she had been drinking it right along, would you think that had anything to do with the condition of albuminuria? A.—No, I probably would not.

Q.—Then why would you want to stop taking it? A.—Just as I say, to satisfy myself. We meet lots of foreigners who drink wines and beer repeatedly and in large quantities, and if albuminuria came up in a case of that kind, why I would not feel justified in blaming it on the small amount of alcohol she had been in the habit of taking daily for years, probably.

The witness stated cancer is a relatively common condition at the menopause. He did not think he could cure a beginning cancer of the cervix at the menopause, by using Wine of Cardui. He did believe that at early stages of this disease, a radical operation might prevent the progress of the disease, and stated that he has eradicated some.

Q.—Now, doctor, take one of these cases, such as you have had a cure of, or eradicated in the early stages of the trouble, suppose the woman had been taking such a medicine as Wine of Cardui for several months along in the dosage prescribed. What then do you think would have been her chances of being cured, when you discovered finally that she had cancer, after it had involved the lymphatic glands? A.—Well, ordinarily, carcinoma of the cervix and uterus is not recognized until it had extended quite far, even by the surgeon and the medical men.

Q.—Well, those are the cases then, that you cured, are they? A.—No, sir.

Q.—Then you did recognize them before, did you? A.—What do you mean?

Q.—You say you cured cases of cancer of that kind? A.—Certainly, I have cured cases of cancer.

Q.—You recognized it early, didn't you? A.—Yes, sir.

Q.—Well now, I say, suppose that instead— A.—By means of the pathologist, who identified it.

WINE OF CARDUI IN CANCER

Q.—I don't care what the means were. Suppose that instead of coming to you for examination, and the examination being made as you made it, and the discovery being made as you made it, this woman had been taking Wine of Cardui, along for months and months and months, for a year until that involved the lymphatic glands, could you have done anything for her when she came? A.—That would be all problematical, I could not tell.

Q.—What is your judgment and opinion about it? A.—I don't believe Wine of Cardui would influence it either way.

Q.—You don't think it would influence it one way or the other? A.—No.

Mr. T. J. Scofield: Q.—In the meantime, I suppose, while she is taking it, the disease would be progressing, would it not? A.—That is the history of cancer, yes, sir. That it progresses.

The witness stated that he agrees with the following statement from the Home Treatment Book for Women for 1912, "Cardui acts on the cause of the disease, and is, therefore, not a mere palliative, but a scientific and specific remedy, with a curative effect on the seat of the trouble."

The witness stated that he has an office in the same suite with Dr. Funck, that they have a common reception room and that he has talked the case over with Dr. Funck several times.

REDIRECT EXAMINATION BY MR. WALKER

Dr. Amerson stated that there are six or seven other doctors and a couple of dentists in the same suite. The witness stated that in those cases of menorrhagia and metrorrhagia in which he stated that this medicine would not cure, the disease was surgical, and that in such cases this medicine would be valuable as atonic. The witness stated that he does not believe Wine of Cardui would mask the symptoms of a cancer.

Dr. Amerson stated that within his knowledge of the medical profession, after a diagnosis is made they are often at fault. The witness stated that he believes that this medicine was a scientific and specific medicine with a curative effect. There is no specific for the cure or treatment of gonorrhea. Anything that would have a tendency to improve the general health, thereby increasing the local resistance and vitality, would be a scientific medicine with a curative effect.

RECROSS-EXAMINATION BY MR. T. J. SCOFIELD

Q.—That is the way you cure gonorrhea, is it?

Mr. Walker:—That is objected to.

THE COURT:—He may answer.

To which ruling of the Court the plaintiff, etc., excepted.

A.—Sir?

Mr. T. J. Scofield: Q.—That is the way you cure gonorrhea? A.—That is the way gonorrhea is treated, and that is the way a cure is accomplished.

Q.—That is the way you cure it, is it? A.—How do you mean, just the internal—

Q.—Just as you have told Mr. Walker. A.—I told you my theory as to how it is cured, and I told you this morning, how I treated it.

Q.—That is the way you do it? A.—I treat it locally and generally and my general treatment is given for the purposes of accomplishing just what I have stated now.

Q.—Isn't it true that sometimes when you think you have gotten a case of gonorrhea cured that you give them a dose of alcohol for the purpose of seeing whether it livens up the condition, and whether in fact it is cured or not? A.—Some authorities say that gonorrhea is incurable.

Q.—Well, isn't that true, don't you give them alcohol after you think you have cured them, for the purpose of seeing whether or not they are cured? A.—I never have.

Q.—That profession generally does that, or do you know? A.—I don't believe they do.

Q.—Do you know whether they do or not? A.—Deliberately give alcohol?

Q.—Yes, for the purpose of seeing whether or not the condition of gonorrhea has been cured? A.—I don't believe they do; I don't do it myself.

Mr. Walker:—If you did give it, you would not give it in a dose that would be negligible, would you? A.—No, sir.

TESTIMONY OF DR. HENRY H. RUSBY

Dr. Henry H. Rusby was called as a witness on behalf of the plaintiff in rebuttal, and, having been first duly sworn, testified as follows:

DIRECT EXAMINATION BY MR. HOUGH

Q.—State your name? A.—Henry H. Rusby.

Q.—Where do you live? A.—Newark, New Jersey.

Q.—What is your age? A.—Sixty-one.

Q.—What is your business or profession? A.—I am professor of materia medica in the College of Pharmacy of Columbia University.

Q.—When did you graduate? A.—1884.
Q.—Where? A.—New York University.
Q.—What did you graduate as? A.—M.D.
Q.—Now, what are you doing? A.—I am teaching materia medica.
Q.—Where? A.—At the College of Pharmacy of Columbia University, in New York.

Q.—Do you occupy any other position? A.—Yes, I am pharmacognosist for the Department of Agriculture of the United States government, examining drugs that come to the port of New York to see whether they are up to standard.

Q.—How long have you held that position? A.—Ever since the Food and Drug Law went into effect, 1907.

Q.—What is a pharmacognosist, doctor? A.—It is a man whose profession is to identify and select drugs.

Q.—What honorary positions have you held? A.—I have been a member of the revision committee of the United States Pharmacopeia since 1890. I also taught materia medica in Bellevue Medical College for seven years.

THE COURT:—New York City?

A.—Yes, sir.

Mr. Hough:—Are there any other positions you hold? A.—Not in a medical line.

Q.—Are you connected with the New York Botanical Gardens? A.—Yes, sir; I am chairman of the scientific directorate of the New York Botanical Gardens.

Q.—Are you a curator also? A.—Of the Economic Museum.

Q.—Are you member of any other revision committee than the revision committee of the United States Pharmacopeia? A.—The National Formulary.

Q.—Are you a member of any other committee? A.—Nothing in this line. I am a member of a good many committees and societies.

Q.—Are you connected with the National Pharmaceutical— A.—Oh, yes; that is another thing. That book has already been published.

Q.—You are a member of that committee? A.—Oh, yes.

Q.—Well, are you not a member of the New York Board of Health, the advisory committee? A.—Yes, sir.

Q.—Are you a member of any other scientific organization? A.—The American Pharmaceutical Association, and some foreign societies.

Q.—Sir? A.—And some foreign societies.

Q.—Are there any others? A.—Botanical societies, and the Academy of Sciences of New York.

Q.—Are you the author of any books? A.—Yes, sir; I am one of the authors of the National Standard Dispensatory. I am the author of the materia medica articles in Buck's Handbook of the Medical Sciences, and several books on botany.

Q.—Botany of what? A.—Just structural botany, textbooks.

Q.—What positions have you held, doctor? A.—Why, those that I have just stated; I might mention this; I was for some years botanist for Parke, Davis & Company.

Q.—Who are they? A.—A large drug house of Detroit.

Q.—Were you ever connected with any hospitals or asylums? A.—Yes, sir; I was clinical clerk to the medical staff of the Woman's Lunatic Asylum, on Blackwell's Island for a year.

Q.—For what length of time? A.—One year.

Q.—Have you ever engaged in any exploratory work? A.—Yes, I have been physician to two exploring expeditions.

Q.—What were they? A.—One was on the Orinoco River, an exploring company gotten up in Minnesota, and the other was a journey across South America.

Q.—What part of the world have you been in in studying drugs? A.—Pretty nearly the whole of the North and South American continents. I have studied a good deal in England also, in the drug markets.

Q.—Does that examination of drugs in New York that come into this country, is that under the Treasury Department, or the Department of Agriculture? A.—Department of Agriculture, Bureau of Chemistry.

Q.—Have you ever practiced your profession any, doctor? A.—Well, I practiced—I was clinical clerk on the medical staff of the asylum in New York for a year, and I practiced as physician to those exploring expeditions, but I have never had any general family practice.

Q.—What are your duties, doctor, as professor in the College of Pharmacy? A.—I lecture on materia medica and toxicology and also on physiology.

Q.—Do you lecture on drugs? A.—Yes.

Q.—And actions? A.—Their actions.

Q.—And their properties? A.—Not on the drugs themselves. I used to do that, but I had too much to do, and I turned it over to the associate professor. I simply lecture now on their uses, and effects on the system, poisonous effects.

Q.—Well I say, that is of drugs? A.—Yes, sir.

Q.—Doctor, do you know a drug called viburnum prunifolium? A.—I do.

Q.—Have you any opinion as to its therapeutic value? A.—I have.

Q.—What is your opinion as to its therapeutic value? A.—It is one of the most valuable drugs in the pharmacopeia.

Q.—For what conditions? A.—For spasmodic conditions of the abdominal organs.

Q.—What do they include? A.—The intestines and uterus.

Q.—Doctor, do you know a drug known as carduus benedictus? A.—I do.

Q.—Or cnicus benedictus, or blessed thistle? A.—I do.

Q.—They are all one and the same, are they? A.—Yes, sir.

Q.—Have you any opinion as to its therapeutic value? A.—I have.

Q.—What is your opinion as to its therapeutic value? A.—It is a useful medicine.

Q.—For what conditions? A.—It is a diuretic, it is a stimulant of intestinal action; it is a tonic and appetizer; generally beneficial to nutrition, and it is a stimulant to unstripped muscular fiber.

Q.—Would you regard it as a uterine tonic or medicine? A.—It is.

Q.—Doctor, would there be any advantage in combining those two medicines in a liquid form, we will say to the extent of 60 grains to the fluidounce of viburnum prunifolium, and six grains to the fluidounce of carduus benedictus—no, just the reverse, carduus benedictus, 60 grains, and six grains of viburnum prunifolium? A.—There might be in some cases. I think there would be generally.

Q.—Have you any opinion as to the value of that medicine in that combination, in a fluidextract of 20 per cent. alcohol? A.—It would be a useful medicine.

Q.—For what conditions? A.—For the conditions that I have just stated, especially in regulating the blood pressure, what we call a vaso-motor regulator.

Q.—Doctor, is there any danger in giving that medicine, which we will say contains 48 drops of alcohol to the dose, in that diluted form, the dose being a tablespoonful three or four times a day, to a girl or a woman suffering with some female trouble? A.—Well, I would not—

Q.—I mean, on account of the alcohol that is in it? A.—No, sir, there would be none.

Q.—Would there be any danger of creating a habit because of that amount of alcohol in it? A.—None.

Q.—Why not, doctor? A.—Because that is the basis of all the pharmacopeial medicines. It is the basis of the materia medica, that is, the alcoholic preparations contain about that amount of alcohol or some more. I think none of them contain less than that.

Q.—Would that amount of alcohol have any—given to a girl per dose—have any effect in stimulating or arousing her passions? A.—No, sir.

Q.—Doctor, how would a medicine of that character act in a case of uterine prolapse, which did not require a surgical operation? A.—Its general tendency would be beneficial.

Q.—How would it bring about that result? A.—Why, by increasing the nutrition of the muscles, and toning the muscles up, so that they would support the uterus better.

Q.—Doctor, can a medicine be both a tonic and a sedative? A.—It can.

Q.—Is this particular medicine both a tonic and a sedative? A.—The combination, or one alone?

Q.—The combination? A.—The combination would be both tonic and sedative.

Q.—Doctor, have you ever written about carduus benedictus prior to being told of this case? A.—Yes, sir.

Q.—Were your opinions the same as you have expressed here? A.—Yes, sir.

Q.—Doctor, in your capacity as examiner of the purity of drugs that come into the United States through the port of New York, have you ever had occasion to observe whether any carduus benedictus comes in? A.—Large quantities of it, yes, sir.

Q.—Large quantities? A.—Yes, sir.

Q.—Have you had occasion to observe where it goes in the United States? A.—Yes, it goes into the general trade.

Q.—What do you mean by "the general trade?" A.—Why, the large drug houses get it and keep it in stock for sale.

Q.—Doctor, what is the significance of a drug being named or appearing in the different pharmacopeias of the world? A.—Why, it is an indication that they are believed to have therapeutic value, and that they are in general use. I would like to change that and say, in common use. The use need not be general, that is, it need not be everywhere, but it must be commonly used.

Mr. Hough:—Take the witness.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

Q.—Doctor, you have not practiced medicine, have you? A.—Yes, I have.

Q.—How much? A.—I stated that.

EXPERIENCE OF THE WITNESS

Q.—Well, state it again. A.—I practiced medicine, I think, for about two years and a half.

Q.—Where? A.—In the New York City Lunatic Asylum for Women.

Q.—Where else? A.—And on two exploring expeditions in South America.

Q.—How many people were on the exploring expeditions? A.—On one I think we had about 30. Well, we had more than 30, but there was 30 in the regular party, and in the other I practiced medicine on the establishments which I visited, the plantations.

Q.—How many women did you have in the expedition of 30? A.—Did not have any.

Q.—How many women did you treat on those expeditions, or either of them? A.—Why, I think two or three hundred.

Mr. Hough:—I do not think the witness understood the question.

Mr. T. J. Scofield: Q.—I say, how many women did you treat on those expeditions that you spoke of, the two expeditions? A.—I should think about 200 or 300.

Q.—Women? A.—Yes.

Q.—Who were they? A.—People of the establishments that I visited, the rubber stations, and the haciendas of those plantations.

Q.—Did you carry medicines with you? A.—A very large stock, yes, sir.

Q.—Did you treat any women for uterine troubles? A.—No, sir, they do not treat them for that down there. They only allow women to treat women down there. Men are not allowed to treat women for diseases of women in South America.

Q.—Did you ever treat any woman for uterine prolapsus? A.—No, sir.

Q.—Did you ever treat any uterine troubles at all? A.—Oh, yes.

Q.—How often? A.—Well, I could not tell you that.
Q.—Where was that, in the lunatic asylum? A.—Yes, sir, we had an enormous quantity of it there.
Q.—Did you give them your personal attention? A.—I was clinical clerk and I had to record everything that was done.
Q.—I am asking you whether you treated them, or whether you were simply the agency for making the records? A.—I was the agency for making the records.
Q.—So that is as near the treatment as you have been? A.—Yes, sir.
Q.—Now, then, you say that viburnum prunifolium will act on what? A.—I say it will act on any spasmodic condition of the intestinal organs.
Q.—Did you say that it would act on the muscles? A.—Yes, sir.
Q.—What muscles would it act on? A.—Muscles of the intestines, the uterus, muscles of the blood vessels and of the stomach.
Q.—What muscles would it act on to cure uterine prolapsus? A.—It would act on the muscles of the ligaments.
Q.—What ligaments? A.—The ligaments that support the uterus.

MUSCLE FIBERS IN THE LIGAMENTS

Q.—In what way would it act on those muscles? A.—By increasing the strength and vigor and nutrition of the muscular fibers.
Q.—How many of those ligaments, if any, contain muscular fiber? A.—They all contain some.
Q.—To what extent do they contain it? A.—How, is that?
Q.—To what extent is there muscular fiber in the ligaments of the uterus? A.—The extent differs at different times.
Q.—Tell us about it? A.—During pregnancy there is a great increase in them.
Q.—In the number? A.—In the number and in the size.
Q.—Of what? A.—Of the muscular fibers.
Q.—What kind of muscular fiber is it? A.—Unstripped.
Q.—In the ligaments? A.—Yes, sir, and in the uterus.
Q.—What ligaments are you talking about? A.—I am talking about the broad ligaments chiefly.
Q.—What say? A.—I am talking about the broad ligament chiefly.
Q.—Which other ones? A.—Well, that is the principal ligament that gives support.
Q.—What are the names of the other ligaments? A.—Well, I do not know that I can give you the names of all of those ligaments.
Q.—The only ligament that you can give us the name of is the broad ligament? A.—That is all I can think of at the moment.
Q.—You say that is unstripped muscle? A.—I say it contains unstripped muscle.
Q.—Don't you know that it is not unstripped muscle? A.—No, I do not.
Q.—Don't you know there are no muscles in it? A.—No, sir, I know there are.
Q.—Did you ever make a dissection of this broad ligament? A.—I have.
Q.—How often? A.—When I was a student in the laboratory.
Q.—How many years ago was that? A.—That was in 1883.
Q.—You have never followed it up with a subsequent dissection? A.—No, sir.
Q.—You go on record here as saying that the muscles of the broad ligament are unstripped? A.—I do.
Q.—You are the author of a book, are you not? A.—Not on muscles.
Q.—Are you the author of the National Standard Dispensatory? A.—I am one of the authors of that.
Q.—Hare, Caspari and Rusby? A.—Yes, sir.

ACTION OF VIBURNUM

Q.—Now, Doctor, what are the actions and uses of viburnum prunifolium? A.—It is an antispasmodic; it is a sedative. It also acts as a bitter tonic to some extent. It is largely used in warding off threatened miscarriage or abortion.
Q.—The action of viburnum prunifolium, doctor, is a very feeble action, isn't it? A.—It is not.
Q.—It is not? A.—No, sir, it is a very marked action.
Q.—What say? A.—It is a very marked action.
Q.—Then you do not agree with this statement in your book, contained on page 1714: "The virtues attributed to viburnum prunifolium, are as feeble as they are numerous." You don't agree with that, do you? A.—No, sir.
Q.—So that when you said that in your book, which you issued in 1908, you said a thing that was not true? A.—I did not say it.
Q.—What? A.—You have not drawn out yet that I said it.
Q.—Your name is on this book, and you say that you are one of the men— A.—Yes, but it don't say that I wrote the whole book, sir.
Q.—It don't matter whether you wrote the whole book or not. A.—It matters a great deal to me.
Q.—You don't agree with that? A.—I don't agree with that, and I did not write that.
Q.—You don't stand responsible for that book? A.—I do for my part of it.
Q.—Do you stand responsible for this book, that has your name on the back of it? A.—I stand responsible for the part of it which I wrote, and now since you have asked the question, I claim the right—
THE COURT:—Does the title page show the portion of the work that was written by the witness?
Mr. T. J. Scofield:—No, it does not.
The Witness:—The preface shows it, your Honor.
THE COURT:—I mean, does the book show it? If it does, let's have it.

Mr. T. J. Scofield:—I don't think it does, your Honor, not so far as I know, at least.

Mr. Hough:—I guess the witness knows.

Mr. T. J. Scofield:—He is one of the editors, at least.

The Witness:—No, sir, I am not one of the editors, sir, I am one of the writers.

Q.—Well, one of the authors, or whatever you please. A.—I wrote a certain part of it, but it had no reference to the actions or uses of drugs at all. That was done by Dr. Hare.

THE COURT: Q.—Is it stated in the book anywhere, the part of the book that you wrote, and the part that your associates wrote? A.—Yes, sir.

Q.—Do you recall just where the statement was made? A.—It is in the preface, I do not know just what page.

THE COURT:—That is not necessary.

The Witness:—I can state it myself very clearly.

Mr. T. J. Scofield:—Well, state it for yourself. A.—I wrote everything relating to the drugs themselves, their botanical names, their titles and their descriptions, their adulterants, their constituents; but at that point I stopped it, and Dr. Hare took it up, and wrote the articles on their uses.

Q.—Then you only feel qualified to testify as to those things?

A.—As far as that book is concerned.

Mr. Hough:—I object to that.

Mr. T. J. Scofield: Q.—Then, doctor, I will ask you this: Do you agree with this statement—

The plaintiffs here objected but later withdrew the objection.

Mr. T. J. Scofield:—(Reading.) "It is an ingredient of many proprietary preparations vaunted as uterine sedatives, but the experience of most physicians fails to justify a belief in the qualities claimed for it." Do you agree with that?

THE COURT:—No, no, did you write it?

A.—I had nothing to do with it, and I do not agree with it.

Mr. Hough:—What edition is that you have there?

Mr. T. J. Scofield:—I am reading from the 1909.

Q.—Doctor, did you write that part of this book—

Mr. Hough:—What page?

Mr. T. J. Scofield:—that relates to carduus benedictus?

A.—The part which related to its description, I did. The part that relates to its action and uses, I did not.

Q.—You did not say anything about its actions and uses, or the book does not, does it? A.—Not in that book, no, sir. I did not say anything about it.

Q.—There is nothing said in that book about its action and uses, is there? A.—That I cannot tell you.

Q.—Excepting that it is a bitter tonic? A.—That is something I cannot tell you. If Dr. Hare wrote it, I do not know it; I paid no attention to that part of the book, sir. I had nothing to do with it.

Q.—Doctor, what is it that you say has a tonic effect on unstripped muscles? A.—I said blessed thistle did.

Q.—Well, that is carduus benedictus, isn't it? A.—Yes, sir.

Q.—On what do you base that statement? A.—On the reputation of the drug in the literature. I have not used it myself for that purpose.

Q.—Will you tell us the name of an author or an article that was ever written by any person of any standing, or anybody at all, who has said that carduus benedictus has an effect on unstripped muscle? A.—In those words?

Q.—Yes? A.—No, sir.

Q.—Or words in substance that? A.—Yes, sir.

Q.—Who? A.—Hale and King's Dispensatory. I have given the action of it, and the action which they give must have worked in that way; that is the only way it could work in.

Q.—That is a deduction, doctor? A.—That is a deduction.

Q.—I am wanting to know what they said. A.—I cannot give you the wording, the precise wording, but what they have said about it involves that effect.

ALCOHOL CONTENT

Q.—Doctor, what was it you said about the alcohol content in medicines generally speaking? A.—I said there are none of the alcoholic preparations of the pharmacopeias that contain less alcohol than this preparation you have spoken of; 20 per cent. is the smallest amount.

Q.—You mean per cent., don't you, doctor? A.—I do.

Q.—How about the question of dosage? A.—Well, the dosage is different with different things.

Q.—Well, I am asking you about the dosage? A.—Well, what do you ask me?

Q.—I want to know what the percentage of alcohol in the dosage of these different pharmacopeial preparations that you speak of, or pharmaceutical preparations is, as compared with the dose of Wine of Cardui? A.—I do not know anything about—nobody has asked me anything about Wine of Cardui yet.

Q.—This preparation that is involved in this suit is supposed to contain 48 drops of alcohol to every dose. A.—That is about the dose of the tinctures of the pharmacopeia.

Q.—In the doses that they are used by physicians? A.—Yes, sir.

Q.—How about aconite? A.—That is not one of them.

Q.—How much is there in a dose of the tincture of aconite, how much alcohol? A.—Will you ask that question again, I did not catch the question.

Q.—I say, how much alcohol is there in a dose of the tincture of aconite? A.—Very little in a dose, inappreciable.

Q.—How much alcohol is there in a dose of the tincture of nux vomica? A.—Nearly, as I remember, about 27 drops.

Q.—Why don't you know that the dose is only five drops, doctor, the whole dose? A.—You are talking, I think, of the fluidextract.

Q.—I am talking of the tincture. A.—Well; I don't remember the percentage of alcohol in the tincture of nux vomica.

Q.—Don't you know that the dose is from 5 to 10 drops? A.—I want to call attention to the fact that you are asking me about something I did not say. I said, drugs of this class. Now those drugs are poisonous drugs, which are given in very small doses.

Q.—You mentioned tinctures, didn't you? A.—When I answered this question, I said drugs of this class.

Q.—Well, what drug do you refer to now? A.—I should say tincture of columbo, and compound tincture of cinchona, drugs used for their bitter tonic properties.

Q.—Are the two drugs that you have just mentioned in the same class as viburnum prunifolium and carduus benedictus? A.—In the same class as carduus benedictus, yes.

Q.—How about viburnum prunifolium? A.—They are not in the same class.

Q.—Mention some that are in the same class with viburnum prunifolium, where the alcohol content is as large? A.—I do not think there is any other drug that is quite like viburnum prunifolium, except viburnum opulus. Valerian is something like that.

DOSAGE OF TINCTURES

Q.—What is the dose of tincture of valerian? A.—The ordinary dose is a teaspoonful.

Q.—How much alcohol is there in it? A.—I think there is 75 per cent.

Q.—Don't you know, doctor, that the dose of that preparation is 15 drops? A.—It is given sometimes in 15 drops.

Q.—Don't you know that that is the average dose? A.—No, sir.

Q.—Do you say that it is given in teaspoonful doses? A.—You have got an ammoniated tincture, and you have got the tincture; the ammoniated tincture is given in 15 drops, and the other 30.

Q.—I am asking about the tincture. A.—They are both tinctures.

Q.—Both of them? A.—Yes, sir.

Q.—Is the dosage the same? A.—No, sir, one is twice as great as the other.

Q.—I am speaking of the simple tincture? A.—The ordinary dose of it, which is given, is sixty minims, one teaspoonful.

Q.—Do you know how much alcohol there is in that? A.—I say, I think 75 per cent.

Q.—Do you know how much? A.—About 75 per cent.

Q.—About 75 per cent.? A.—Yes, sir, which would give us about 45 drops.

Q.—Doctor, can you imagine, or can you name a single tincture where the dose contains as much as 48 drops of alcohol? A.—Oh, yes.

Q.—What one? A.—That is one that I have just given you.

Q.—Which one is that? A.—That is the tincture of valerian, and tincture of columbo, which is given very often in teaspoonful doses.

Q.—What is the alcoholic content? A.—Sixty per cent.

Q.—That would be 30 drops, wouldn't it? A.—No, it would be 36 drops.

Q.—Can you mention one that contains 48 drops to the dose? A.—I don't think there is any that has exactly 48. I think that the tincture of cinchona contains more than 48 drops to the dose.

Q.—How is that? A.—I think the tincture of cinchona contains more than 48 drops to the dose, I think it is 90 per cent. of alcohol in that, a teaspoonful at a dose.

Q.—You don't profess to be certain about that, doctor? A.—Well, it is pretty hard to remember all the strengths given in the pharmacopeia, off hand, but I am pretty sure of it.

Q.—Now you say that carduus benedictus is imported into this country pretty largely? A.—Yes, sir.

Q.—When you say that, what do you mean? That is a relative term. A.—Well, I think I have seen several tons of it come in at a time, a very large number of bales.

Q.—How often have you seen that, doctor? A.—Probably two or three times a year.

Q.—How? A.—Probably two or three times a year, I should think.

Q.—Two or three times a year. How many tons would you think a year? A.—I could not possibly answer that question. That would be purely guess work.

Q.—Just simply guess work? It is a matter of record, isn't it? A.—I have not those records with me.

Q.—I say, it is a matter of record, isn't it? A.—Yes, they are all recorded.

Q.—You knew you were coming out here to testify, didn't you? A.—I did.

Q.—You knew what was wanted of you, didn't you? A.—I did not know that that was wanted of me.

Q.—You had talked this matter over with Mr. Hough a number of times? A.—Not that matter, no, sir.

Q.—Never had mentioned that matter? A.—No, sir.

Q.—Through how many years of that time have you noticed that carduus benedictus was coming into this country? A.—Since 1907, that is the only time when I have examined drugs.

Q.—How is that? A.—Since 1907. That is the only time that I have been examining these drugs.

Q.—Do you know where the carduus benedictus went to that came through the custom house? A.—I don't know where each particular lot went to.

Q.—Do you know where any of it went? A.—Oh, yes.

Q.—How many different consignees were there, do you know? A.—No, sir, but it don't stay in the hands of the consignee. The consignee imports it and sells it to a manufacturing house.

Q.—Who was the consignee? A.—I could not tell you, I never—

Mr. Hough:—You know what?

A.—I never know who the consignee is, sir.

Mr. T. J. Scofield:—You don't know what became of it after it left? A.—Yes, I do, because I know that it is for sale by the different manufacturing and jobbing houses, and so I know those manufacturers got it.

Q.—You know they must have got it all? A.—Oh, no.

Q.—Do you know whether any of it went to Chattanooga or not? A.—I do not know.

Q.—You don't know anything about that? A.—No, sir.

THE COURT: Q.—What is the size of those bales they come in? A.—They differ in size, your Honor. There is no regularity about the size of the bales. Some come in sacks, and some come in pressed bales.

THE COURT:—You referred to bales and I wondered what the approximate size was.

The Witness:—I should have said packages, perhaps, packages. We go by weight, however. It is always the weight that is stated, and I know they were large.

Mr. T. J. Scofield: Q.—What would the packages weigh?

The Witness:—I could not remember.

THE COURT:—You have estimated its weight at several tons, and I thought perhaps you could give us some idea of the size of the units approximately, and the number of units.

A.—No, your Honor. There would sometimes be a very large shipment, and at other times a moderate shipment, and the size of the bales would differ in any case, according to who it came from.

Mr. T. J. Scofield:—I think that is all I care to inquire.

REDIRECT EXAMINATION BY MR. HOUGH

Q.—Do you know whether those drugs are imported at any other port besides New York? A.—I do not know that, except by hearsay.

Mr. Hough:—I think that is all.

DEPOSITIONS

Three depositions were then read into evidence.

Adjournment was taken until Thursday, May 18, 1916, at 10:30 a. m.

May 18, 1916, Morning

TESTIMONY OF MR. JAMES HENRY M'FALL

The Court met pursuant to adjournment. Mr. James Henry McFall was called as witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. James Henry McFall testified that he has resided in Slayden, Tenn., for about eighteen years. He has been cashier of the bank since 1911. He is acquainted with Mr. J. J. Parrott, who lived about three quarters of a mile from his own residence. He has known Mr. Parrott for about eighteen years. This is the same Mr. Parrott who testified for the defendant. Mr. McFall testified that the general reputation of Mr. Parrott for truth and veracity is bad in the neighborhood in which he lives. From what he knows of Mr. Parrott and from his reputation Mr. McFall would not believe Mr. Parrott under oath.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

On cross-examination Mr. McFall testified that Slayden is a town of about 250 population. He testified that he has had business transactions with Mr. Parrott. Mr. Parrott owes him money, but it is not due. He has lent Mr. Parrott money twice since the bank has been there. The last note was renewed a short time ago.

The witness testified that Mr. Richter came to Slayden as representative of the Chattanooga Medicine Co. and made arrangements with him to come to Chicago, for which he receives a per diem with expenses.

TESTIMONY OF DR. WALTER R. SCHUSSLER

Dr. Walter R. Schussler was called as witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. WALKER

Dr. Walter R. Schussler testified that he is a physician residing in Orland, Ill. He was graduated from the Bennett Medical College in 1889. He is a member of the Illinois State Eclectic Medical Society, the National Medical Association, and is an ex-member of the Illinois State Board of Health. He has been professor of orthopedic surgery in the Chicago College of Medicine and Surgery. Years ago he taught thera-

peutics at the Bennett Medical College. He has been surgeon of the Wabash Railroad Company for 25 years.

The witness testified that he does work in the Frances E. Willard Hospital, the St. Bernard Hospital, the Englewood Hospital, the Jefferson Park Hospital, etc. He was a member of the state board of health from 1906 until 1913. When he graduated from the Bennett College it was an eclectic medical college.

The witness testified that he practices both medicine and surgery; he is familiar with the diseases peculiar to women. He stated that he has treated such conditions for 27 years. About one fourth of his practice is among women. He has treated them from puberty to old age. He has performed operations on the female organs. He believes that about 90 per cent. of the diseases of women are nonsurgical.

Dr. Schussler testified that he has treated prolapsus medically, and has obtained good results from the use of medicine and general treatment. He has used viburnum prunifolium almost daily for 27 years in the form of Lloyd's Specific Tincture. He assumes the proportion of alcohol is about 40 per cent.

Dr. Schussler testified that he has read about carduus benedictus and has heard physicians discussing it. He has not used it in his practice. From what he has learned of it and from what he has read about it, he considers carduus benedictus a valuable remedy. He taught therapeutics only during one session of the college year. He understands the use of drugs in combination—synergistic action. He does not pay any attention to the alcohol content of drugs which he prescribes. He makes a distinction between alcohol as alcohol, and alcohol as a menstruum. When alcohol is given as alcohol in the form of whisky it is given as a stimulant in doses of one half of an ounce to an ounce and a half. Fifty or sixty per cent. of whisky he considers is alcohol.

The witness testified that he would not consider a drug or medicine containing 20 per cent. of alcohol given in diseases of the female reproductive tract as deleterious by reason of the alcohol when these conditions were not surgical. He stated that invariably he had good results with the use of viburnum prunifolium. He has had no bad effects from the alcohol content in the preparation.

Dr. Schussler testified that he would consider carduus benedictus a tonic medicine, having a special effect on the portal circulation or on the uterus. He prescribes 5 to 15 minims of Lloyd's Specific Tincture of viburnum prunifolium, or 5 to 15 grains of the powdered drug. He has used viburnum in cases of uterine displacement which did not require surgical operation. He believes that medicine will aid cases of inflammation such as endometritis and testified that a special tonic will assist in overcoming engorgement and restoring the natural function of the organ.

Dr. Schussler testified that women very frequently suffer pain at the time of puberty. He treats such cases with medicine containing alcohol, and does not believe that the alcohol would have any tendency to heighten the passions. He testified that he has never prescribed Wine of Cardui.

The witness stated that there would be no toxic effect from the alcohol in a medicine similar to Wine of Cardui, and that if given to a girl at puberty it would not tend to give her an alcoholic habit. He would not hesitate to give such a medicine to a girl at puberty. He does not believe that all girls should take medicine at puberty, but they should take some when they have pain. He does not think the medicine known as "Wine of Cardui" would do a girl any harm. He stated that there are many cases during the menopause that require medicinal treatment.

Q.—I am speaking now as you understand me, not when the symptoms are accompanied with some disease like malaria or any other disease, but from the symptoms that arise from this change of life itself. Do you understand what I mean? A.—The change of life usually—

Q.—Like morning sickness.

Mr. Hough:—That is not right.

Mr. Walker:—I get that mixed up. On two occasions I have had a woman with change of life, pregnant, and I wish to withdraw it. I am not engaged in miracles here, doctor, at all. But I am speaking of the menopause and I want to know if there are any distressing symptoms, flushing of the face and so forth that accompany it, for which medicines may relieve? A.—There are.

Dr. Schussler described some of the conditions which may occur during the menopause which may be treated medically. He would consider medicines like Wine of Cardui to be general and special tonics. Medicines containing the same ingredients would be indicated in the various conditions arising during the menopause. He stated that a medicine similar to Wine of Cardui would be of assistance to the newly married woman and would not be harmful. He would not consider that a medicine like Wine of Cardui would mask a cancer.

The witness testified that he has not read the Home Treatment Book for Women issued by the Chattanooga Medicine Company, and that he is familiar with the conditions known as vaginitis. There was then read to him from this book "that the most frequent cause of vaginitis is gonorrhea brought on by infection, sexual excesses or unhealthy discharge from the womb, ovaries, tubes or bladder." He stated that gonorrhea cannot be brought on by sexual excess or unhealthy discharge as mentioned. The germ of gonorrhea must be present.

The witness mentioned some of the various causes of vaginitis. He stated that leukorrhea is a symptom of disease. The treatment of gonorrheal vaginitis would include douches, rest, hygienic conditions and tonics. He stated that in gonorrhea there would be no effect from the alcohol in a tonic containing 20 per cent. of alcohol; it would not tend to increase the microbes. He makes a distinction between alcohol given as alcohol, and alcohol which is a menstruum. Eclectics prescribe in such conditions cimicifuga, gelsemium, digitalis, golden seal and sometimes viburnum.

Dr. Schussler stated that a woman can hardly ever tell if she has prolapsus. She could not make a correct diagnosis of any of the female diseases. If the womb was in reach of the finger she could determine that she had prolapsus. She could tell that the difficulty was in the female organs without being able to name exactly the condition. He stated that the information given by the patient is always important in arriving at a diagnosis.

The witness stated that the injection of viburnum into the wall of the uterus in a mixture containing 40 per cent. of alcohol and the fact that the uterus did not contract would not be any test of the efficiency of the drug when taken through the mouth in the treatment of female diseases. The same was true of Wine of Cardui similarly injected. The fact that pituitrin was injected and produced a definite action would not, in his opinion, be any test that Wine of Cardui was inefficient when taken through the mouth. In his opinion the fact that Wine of Cardui showed no physiologic action on animals under anesthesia would not be a test of its efficiency in illness of women when taken through the mouth.

Dr. Schussler stated that medicines are frequently indicated in pregnancy when there are symptoms accompanying pregnancy that indicate an unnatural condition. A tonic would very often be indicated. There are frequently nervous systems which occur during pregnancy when tonics and sedatives are indicated. Viburnum would be indicated under such conditions, and viburnum would be decidedly indicated, he believes, in cases of threatened abortion. In cases of pregnancy when menstruation may occur usually medicine is not indicated. During pregnancy, he stated, child bearing may be made easy by toning up the general system. If medicines are given for this purpose, 20 per cent. alcohol as a menstruum would not be injurious by causing kidney difficulty, creating a habit, or by injury to the fetus. Such a medicine would have no deleterious effect.

The witness described some of the causes of sterility. He described vicarious menstruation and stated that viburnum would be a good remedy to use under such conditions. He stated that there is a relation between the breasts of a woman and the organs of generation, and in a general way by restoring the vital organs to a natural function the medicine might cause the breasts to be built up and assume their natural condition.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

On cross-examination Dr. Schussler testified that he has an office in Chicago and one in Orland. He has cases at present in St. Bernard's Hospital and one patient in the

Frances Willard Hospital. The surgical cases are taken to St. Bernards. His district for the railroad is from Englewood to Essex. He is an eclectic physician. He usually buys the viburnum from Fuller and Fuller. He gives it in capsules. He gives Lloyd's Specific Tincture when he gives it as a fluid. He does not carry it with him in his medicine case. He does not always give it in the dosage suggested on the bottle; he sometimes gives it in larger doses; in fact, quite frequently. It is his understanding that the same dosage of viburnum prunifolium does not meet all conditions. In some conditions you would have to use one dosage and in other conditions you would have to use another dosage.

Q.—What is that, doctor? A.—Some patients are very susceptible to the action of drugs; and in those cases a small dose will give better results; while in other cases, the patient is larger, the circulation is more active, and, consequently, I deem it necessary to give a larger dose.

Q.—Now, that—

THE COURT:—How do you determine or discover that personal idiosyncrasy? A.—I discover that by the general condition of the patient; for instance, the condition of the tongue; the condition of the circulation; the general vitality of the patient. In some patients a large dose would cause nausea, the stomach would not tolerate it.

Q.—What I am getting at is this—you don't get that in the first instance? That is something you learn either from the patient or from your experience with that patient, after a while? A.—No; not always; we—

THE COURT:—Tell me—make it shorter—can you tell the minute you see the patient, whether they are unusually susceptible to drugs or not; whether they need a large dose or a small dose? A.—Usually we can tell whether they need the small dose or the large dose; but we cannot always tell the idiosyncrasy at once; that requires some time.

Mr. T. J. Scofield: Q.—Now, doctor, usually, if I understand you, when you see the patient, you can tell whether you can give her a small dose or a large dose; you can usually tell that, can't you, when you see the patient? A.—I can—I would arrive at my judgment.

Q.—Yes? A.—I cannot tell positively.

Q.—No. Now then, I suppose also the size of the dose depends on the condition, doesn't it? A.—It does.

Q.—Yes. And you reach a conclusion as to the actual conditions by the examination which you make, I suppose? A.—Yes, sir.

Q.—That is, not only by your physical or digital examination, but taking into consideration also those subjective things which you say form a part of the diagnosis; taking all that together, then you reach your own conclusion as to whether the dose should be large or small? A.—I do.

Q.—Now then, what are some of the conditions, doctor, that you might find in the treatment of which you might require a large dose? Oh, just a few; it doesn't matter about how many. A.—In conditions where the stomach seems to be healthy and in conditions to assimilate the drug readily, and thereby obtain the physiological effect of the drug, I deem that it can be given in larger doses, and perhaps obtain results sooner than I could if the stomach was irritable and the patient would be inclined—it would be inclined to nauseate the patient, and thereby perhaps do harm. In those cases then we would give the drug in smaller doses, so that the stomach can be—can assimilate the medicine.

Q.—Then you do not think, do you, doctor, that it would subserve the purposes of your practice, at least according to your view, if you should give uniformly to every patient and for every condition, the same amount of viburnum prunifolium, or any other drug? A.—No, sir.

Q.—No. You have found, as the result of your experience, that there is no common—no one certain amount that will answer in all conditions, or for all purposes? A.—There is no fixed rule.

Q.—So that is your treatment, after you have diagnosed the conditions and become familiar with your patient, you give the dosage, or the size of dose, which your experience and your knowledge of the case indicates to you to be the proper one to give? A.—I do, yes.

Dr. Schussler stated that the smallest dose would be five minims, and the largest dose would be about fifteen or twenty drops of the specific tincture. Eight or ten drops would be an average dose, and the witness judges that of this there would be about four drops of alcohol. He considers that amount of alcohol negligible. It would be given about every three hours until there was indication to change the drug or until the patient recovered. The length of time would depend on the illness with which the patient was suffering, and the duration of that illness. Most of the time he prepares the medicine for the patients himself. After the patient's treatment is completed he does not leave more medicine for him to take unless he gets sick again.

Dr. Schussler stated that he also uses gelsemium, golden seal and cimicifuga, prescribing the liquid more frequently than the powder. He gets good action from the powder. The dose of gelsemium which he gives depends on whether the patient is a child or an adult, and on the urgency of the condition. Sometimes he gives gelsemium every two or three minutes until the antispasmodic effect has been obtained, sometimes this is obtained in fifteen or twenty minutes. In a

small child of 4 or 5 years of age he would give two drops to a teaspoonful of water in a single dose. This would be repeated every five minutes until convulsions subsided. He usually gets results in an hour's time. The patient would have twenty-four drops in that time, of that about eight or nine drops would be alcohol. He would administer the specific medicine of gelsemium to adults in five to eight drop doses in one dram of water. This would be given once every two or three hours until the physiologic effect manifested itself. He usually prepares about half a tumblerful—about 4 ounces—and in this there are about fifty drops of alcohol. The patient gets twelve doses in twenty-four hours; this would be continued another twenty-four hours if necessary. He considers the amount of alcohol negligible.

The witness testified that he gives nux vomica in smaller doses. He has had no personal experience with carduus benedictus. He knows of the *Eclectic Medical Journal*. He is not acquainted with Dr. Felter, the editor, but is acquainted with his predecessor, Dr. Scudder. He reads the journal occasionally. He would give some weight to the opinions of Drs. Felter and Scudder expressed editorially. He did not read the article on cnicus benedictus published October, 1915.

The witness spoke of the action of drugs in combination as synthetic action. The effect is usually good when the drugs are compatible. (He stated "you get the action of the drug by giving half the dose that is ordinarily given when the drug is given by itself.") You get the sum of action of the two drugs. This he considers the same as synergistic action.

Whereupon the case was adjourned until 2 o'clock p. m. of the same day.

May 18, 1916, Afternoon

The Court met pursuant to adjournment. Dr. Walter R. Schussler resumed the stand as witness for the plaintiff in rebuttal.

FURTHER CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that he prescribes in various conditions according to the cause. He does not always prescribe the same dosage. There was described to the witness a hypothetical case in which the patient could feel the cervix or mouth of the womb about an inch from the outside, this condition having existed for a period of four years. He stated that neither viburnum nor carduus benedictus, nor the best combination of the two in a 20 per cent. menstruum of alcohol, could lift that uterus to its proper position inside of three weeks or any other time.

REDIRECT EXAMINATION BY MR. WALKER

Q.—A derrick could not do it, could it? A.—No sir.

Q.—For how long a time do you think a woman would know that her womb was in that position herself, if it had run for four years?

A.—Perhaps within a week or ten days.

Q.—After it started? A.—Yes.

Q.—So that she would know all about that condition for nearly four years? A.—Four years.

The witness then stated the various symptoms which would accompany such a condition, and testified that a tonic would benefit the patient. Douches, medical treatment, the knee chest position or other positions would be of benefit.

The witness stated that in prescribing nonpoisonous drugs not much attention is paid to the dosage as with poisonous drugs. It does not make much difference unless the patient has nausea and if not too vast an amount is given, if the drugs are nonpoisonous.

UTILIZABILITY OF ALCOHOL

Dr. Schussler was asked if he knew THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and he had read an editorial in THE JOURNAL for December 11, 1915, on the subject of utilizable alcohol. He had not read the article. Mr. Walker then offered in evidence a query and minor note from THE JOURNAL, p. 2108, on the subject of utilizable alcohol. The query and minor note follows:

"To the Editor.—The amount of alcohol which can be oxidized by the adult human being in 24 hours, that is, serve as a food, has been determined by a physiologist and formulated into a law. Can you inform me concerning the name of the physiologist, and the amount of alcohol that can be utilized? S. C. Mecklin, M.D., Pittsburgh.

"Answer:—The maximum dose of alcohol has been estimated at 15 grams per day. Such an amount can be taken without causing the alcohol tension in the blood to become so high that more than the usual amount will be excreted in the kidneys and lungs. It has long been known that 90 per cent. of alcohol ingested is burned in the blood. Atwater and Benedict within the last few years have determined that as much as 99 per cent. of alcohol ingested undergoes combustion in the organism when the amount of alcohol ingested per day is equal in quantity to that contained in six ounces of whisky. It is well known that alcohol tolerance depends largely on habituation of the individual to this substance. In other words, greater combustion of alcohol occurs in the tissues of a steady drinker than in the habitual abstainer. We are unable to find any reference to the formation of a law for the determination of the alcohol utilized in the human body."

DEPOSITIONS

Thirteen depositions were then read in evidence.

Whereupon an adjournment was taken until the following day, May 19, 1916, at 10:30 a. m.

May 19, 1916, Morning

TESTIMONY OF DR. EFFIE L. LOBDELL

The Court met pursuant to adjournment. Dr. Effie L. Lobdell was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. WALKER

Dr. Lobdell testified that she is a physician and surgeon residing in Chicago. She graduated from the Ft. Wayne College of Medicine in 1891. Soon after she received an appointment to the staff of the Hospital for the Insane at Kankakee. She worked one day a week in examining cases and had in her care 200 to 500 cases each day. Later she studied in Vienna. She was eight years on the staff of the Mary Thompson Hospital, five years on that of the Frances Willard Hospital and four years in the Cook County Hospital. She was at one time herself superintendent of a hospital and taught in that institution. She is not now regularly connected with any hospital but attends patients in the various hospitals. She practices especially in obstetrics and women's diseases. During the month of March, she had 150 cases of which 13 were operative and ten were obstetric. She treats daily from four or five to twenty-five patients.

She testified that she has been called in many girls' schools and stores and that many of the dry goods stores keep medicine for the relief of young women. Objection to this question was made and overruled.

Dr. Lobdell stated that she has performed the cesarean operation and is familiar with cancer. She has treated female diseases from the age of four to late in life. She has treated women during puberty, pregnancy and the menopause.

Q.—Doctor, is there anything peculiar as distinguished from other pain and conditions generally, of the pain that accompanies either young girls or women at the time of the monthly periods? A.—Yes, sir, it is a peculiar kind of pain.

Q.—Just please tell me what you mean by that? A.—Well, it is, I should say different from the pain of any other part of the body, or any other class of symptoms. It is a spasmodic and of neuralgic character, such as we understand to be neuralgic in character. It is quite different from other pains.

Q.—Would all women who require assistance for some disturbance of the female functions—what proportion of those are surgical cases as distinguished from medicinal cases? A.—Rather a small percentage, considering the entire number that require attention.

Dr. Lobdell stated that 10 or 15 per cent. of the cases require surgery. She testified that 90 per cent. of the young girls suffer pain and other distressing symptoms at the time of puberty.

Q.—Doctor, in that 90 per cent. where those symptoms are present, do they require or is it legitimate to give medicinal treatment? A.—It is.

Q.—Take instances of that kind, what do you give? A.—My most common remedy is viburnum compound or combination, the viburnum—simply a combination in which viburnum is one of the principal ingredients.

Q.—Have you ever used Hayden's Viburnum Compound? A.—Yes, sir; before other ones were perfected.

Q.—What percentage of that was alcohol? A.—Hayden's is 50 per cent. alcohol.

Q.—You understand, doctor, do you, that I am speaking of the epoch of puberty? A.—Yes, sir.

Q.—Now, take those cases, what consideration if any, do you give to the alcohol? A.—Nothing at all, only that it is rather, I think, a good thing at that time.

Q.—Now, Doctor, have you used any other drugs containing alcohol in various conditions for female distresses and troubles? A.—Yes, sir; in combination, like the Helionin Compound or Liquor Sedans of Parke, Davis & Company, and there are various good preparations on the market made by the various pharmaceutical houses, which I think are better than the usual prescriptions.

Q.—What was the first one you named? A.—Helionin Compound.

Q.—What alcohol does that contain? A.—That contains about 48 per cent., I think.

Q.—What was the other please? A.—Liquor Sedans.

Q.—What does that contain? A.—That contains less, about 28 per cent.

Q.—I don't know whether you used those in cases of distress at puberty or not? A.—Yes, sir; they all belong to the same class of remedies.

Dr. Lobdell testified that when she was on the staff of the Insane Hospital, there were many cases where the mental conditions were due to pelvic disturbances. These were treated medicinally and many of them relieved. Dr. Lobdell testified that she is actively interested in cases where women are brought into court. She helped introduce the examination of girls in the Juvenile Court, Morals Court and Criminal Court, etc. She was president of the Women's Club of the City of Chicago until this year. She is a member of the Chicago Medical and Illinois State Medical Societies. She was formerly a subscriber for THE JOURNAL.

Mr. Walker: Q.—What medical journals, doctor, do you subscribe for, in your reading of the medical journals? A.—Well, I only subscribed for the last year, I think for two, the Johns Hopkins, *Experimental Medicine and Clinical Reports*.

Q.—Do you get any German or Italian studies on that subject? A.—No, my textbooks are German. I have German textbooks.

Dr. Lobdell testified that she has treated prolapse of the uterus satisfactorily by medical measures in cases which did not require surgical measures. She has always considered that viburnum prunifolium has therapeutic value and still uses it. Recently at the request of Mr. Walker, she has informed herself concerning carduus benedictus. She has an opinion not from her reading but from consulting with a German pharmacist on the North Side who prepares it for physicians. The Court ruled that such evidence was incompetent. She formed no opinion from her reading.

There was then described to the witness the experiment performed by Dr. John Clarence Webster. She stated that she would not expect the uterus to show any reaction because the fluid injected was an antispasmodic. The Court ruled that this was not the correct answer to the question. The witness then answered that in her opinion such an experiment was no proof that the drug injected had no therapeutic value when taken by mouth.

Mr. Walker: Q.—Doctor, suppose that same substance was injected into a dog or other animal through the respiratory or circulatory system, or while those were being watched, would the fact that nothing was observed in that connection be any evidence in your opinion as to whether that drug was of therapeutic value, or that compound of therapeutic value upon a sick woman?

Mr. T. J. Scofield:—That is objected to for the same reason. THE COURT:—She may answer.

To which ruling of the Court the defendants, etc., excepted.

A.—I would not know because I am not familiar with the use of drugs on the lower animals.

Dr. Lobdell stated that the giving of the hypothetic medicine to a girl at puberty would not, she believed, heighten the passions. The Court ruled that in the future questions, the cnicus benedictus be eliminated as the witness stated that she knew nothing about it.

Dr. Lobdell stated that she considers the alcohol in 20 per cent. solution, 48 drops to a dose, is negligible. The witness stated that a tonic would frequently be indicated for the symptoms accompanying pregnancy, that there are no objections to alcohol in pregnancy in moderate doses.

Q.—Do you know anything about the giving of wines or gin and champagne to women during those periods? A.—Yes, sir. It is sometimes not only necessary, but we do it as a sort of diet where we want to control the size of the child, and various things of that sort.

Q.—When you were in Europe, Doctor, did you notice whether or not in pregnancy any stimulants of that kind were given? A.—They were allowed, the wines of the country, clarets and beers, light beers as a part of their diet.

Q.—Take the medicine that I have alluded to, and state whether or not in your opinion that would have a detrimental action, if given in those doses, on the kidneys of a woman when she was in that condition? A.—No, sir; it is not known to have.

The witness stated that some cases of sterility may be treated with drugs given by mouth. There is an intimate connection between the breasts and the genital tract in a woman, she stated, and she would expect a tonic to have an effect on the breasts by toning up the system. She distinguishes between a tonic and a stimulant by the time which it takes it to act; the stimulant gives immediate action; a tonic has a continued effect. In her opinion, a drug may be both a tonic and a sedative; examples are viburnum and alcohol. The witness stated that in her opinion, a tonic medicine containing 20 per cent. alcohol, 48 drops to a dose, would not mask the symptoms of cancer.

Dr. Lobdell prescribes hygienic treatment for slight prolapse. She stated that in vaginitis, antiseptic douches are indicated. She stated that in metritis and endometritis, medicines are given by mouth to counteract the disagreeable effect of these conditions and that medicines of the class of viburnum prunifolium are usually prescribed. She gives medicines combined, as the combined action of the two gives less necessity for large doses. The witness stated again that alcohol in a solution of 20 per cent. in the dosage of 48 drops would not, in her opinion, increase the passions of a young girl.

Mr. Walker: Q.—Why not, doctor? A.—In the first place the ingredients themselves are antispasmodics and when a young girl is having the distressing effects of an approaching menstruation, she is over-stimulated naturally, that is the physiological condition. If it is extreme, it of course is distressing and any drug, any antispasmodic or anything given that would relax and relieve the internal congestion and bring the blood to the smaller vessels, particularly the skin (which is controlled by the same set of nerves practically as the internal organs), she would be relieved of those distressing symptoms and it would be a sedative in her case.

Q.—Independent of the medical feature, doctor, of the thing, what are the usual home remedies, if you know, in those cases? A.—Well, I suppose the most common remedy is gin.

At this point defendants' counsel objected but the objection was overruled.

The witness stated that sexual excess without the presence of a germ cannot produce gonorrhea.

THE COURT:—Is there any doubt about that?

Mr. Walker:—I do not know.

THE COURT:—It seems to me that all the witnesses for the defendant testified that that was a germ disease.

Mr. Walker:—Well, this seems to say that gonorrhea is brought on by sexual excess. I want to be able to go to the jury on the lack of grammar in this sentence, when the time comes, and explain it.

THE COURT:—It is not disputed. You can attack the grammar of that book as much as you please, the English, rather.

Mr. T. J. Scofield:—We have no fault to find with its grammar and no contention to make either way.

Mr. Walker:—I understand what your contention is.

Mr. T. J. Scofield:—I do not know whether you do or not.

Mr. Walker:—Well, I will make an attempt at it and I think the jury will understand me when I say that I shall get—

THE COURT:—The jury and I will take another recess, gentlemen, if you don't get busy on this case.

Mr. Walker:—All right, Your Honor, will pardon me for just a moment.

Dr. Lobdell then stated some of the disagreeable symptoms accompanying the menopause, and stated that the hypothetic medicine would be more apt to be beneficial than otherwise. The witness stated that tonics are indicated in amenorrhea, dysmenorrhea, menorrhagia, and metrorrhagia and that viburnum prunifolium would be one of the remedies indicated. This remedy in a solution containing 20 per cent. alcohol given in a dosage of 48 drops would not be detrimental.

Viburnum prunifolium, Dr. Lobdell stated, would be a proper drug for threatened abortion and that the fact it was in 20 per cent. alcohol, a dosage of 48 drops would not make it objectionable.

(To be continued)

Correspondence

The Pay Consultation Clinic at the Massachusetts General Hospital

To the Editor:—Two reasons led to the establishment of the pay consultation clinic which was opened at the Massachusetts General Hospital, Jan. 25, 1916: One was the desire to make the facilities and staff of a large general hospital available to the practitioner in his care of patients of moderate means. The other was to enable this group of patients to obtain the benefits of a complete range of skilled advice and expensive equipment at a fee within their reach.

It is intended that both the family physician and his patient shall be benefited. If not accompanied by his physician the patient is required to bring a letter from him, which is a guarantee that the person to be admitted belongs in the group for which this clinic is intended. Experience with the 700 patients so far received shows that the family physician is making legitimate use of the opportunity. Two or three patients outside of those "of moderate means" have been noted, but it is expected that even this small number will be reduced by the consideration of the doctor who asks for a diagnosis and advice.

After a sufficient number of visits has been made for the clinic physician to establish a diagnosis, a letter is sent to the family physician summing up the opinions of the consultants, together with the evidence given by the Roentgen-ray department and laboratories. The treatment that seems advisable to the consultant is suggested to the patient's physician. The patient is not treated, and after the diagnosis is made he does not return except at the request of his physician. Each of the New England states has contributed its interesting and difficult cases to the total of over 700 patients so far seen in the clinic.

The clinic seems to be a concrete expression of thoughts that have existed in the minds of some of the more progressive men in and outside of the profession of medicine.

Before the consultation clinic was established, the opinions of 100 representative physicians and surgeons in and around Boston were ascertained regarding such a step. The sixty replies received endorsed the idea without exception.

Recently fifty-nine replies have been received from letters sent to physicians who have sent cases to the clinic. One has considered it a failure; fifty-eight have found it of great help and expressed their appreciation of it, and ten of this number have made some minor suggestions by which the clinic could be made of still greater assistance to them.

ALGERNON COOLIDGE, M.D., CHARLES A. PORTER, M.D.,
RICHARD C. CABOT, M.D., CHARLES L. SCUDDER, M.D.,
DAVID L. EDSALL, M.D.,

FREDERIC A. WASHBURN, M.D., Secretary,
General Executive Committee.

Blood Transfusion Apparatus

To the Editor:—Noting your article on methods of blood transfusion (Therapeutics, THE JOURNAL, June 17, 1916, p. 1923), may I call attention to the advantages of the Abellmann syringe method which you illustrate? This simple instrument makes it possible for one operator to transfuse blood with certainty and ease. I have performed over a thousand blood transfusions, without any assistance whatsoever. The apparatus is also admirably adapted for administering salvarsan. With all my transfusion work, I have had no fatalities and during the past year have had no alarming symptoms develop as the result of administering incompatible blood. The biologic test for blood incompatibility developed by this method is more delicate and reliable than the laboratory tests, and can be made in a few minutes. The blood is taken at chosen intervals, giving such measured quantities as the condition warrants. The results obtained in treating certain chronic conditions in this way are better. The donors are also safeguarded and suffer no ill effect. The danger of transmitting disease from the patient to the donor is

eliminated. The danger of air and clot emboli, as well as thrombosis and infection, is nil. The rate of flow of blood into the patient's vein is under absolute control. The simplicity of method and apparatus eliminates technical difficulties, and places the transfusion of blood in the hands of the general practitioner, widening the field of its usefulness. The apparatus is compact, can be carried in the coat pocket, is easily sterilized and prepared, and can always be kept ready for immediate use. The method requires no cutting, and consequently there will be no offensive scars, no destruction of blood vessels and nerves, and no wasting of blood. Ambulatory patients can be treated in the physician's office in a short time. Donors are readily secured on account of simplicity, safety and convenience. Recipient and donor can be in separate rooms. The operation requires no speed or dexterity. On the whole, therefore, the syringe method should appeal to the average physician as the most desirable routine method.

HENRY W. ABELMANN, M.D., Chicago.

Esophageal Stricture

To the Editor:—In a recent issue of THE JOURNAL (April 15, 1916, p. 1198), Dr. Anthony Bassler states that the surgeons failed to give him the aid and comfort he expected, in a case of esophageal stenosis.

I have noted no answer to the letter, and as the same trouble may occur to others, and the measures to obviate it are simple, I am giving three methods, any one of which would be efficient in such a case, but of which some one might appeal more than another to the individual case, or operator.

1. The oral end of the cord may end in a material which the child cannot bite through—leather, wire or chain.

2. The oral end may be fastened by a dental ring to a tooth, the ring being easily removed by the physician.

3. The simplest means of all, which is applicable to the largest number of cases, is to bring the upper end through the nasopharynx, and out through the nose, where a piece of adhesive plaster would anchor it.

Probably other men would give other methods.

FREDERICK S. WEINGARTEN, M.D., New York.

Request for Surgical Instruments

To the Editor:—Mrs. Russell A. Alger, Jr., of Detroit, has just returned from a trip to France. While there, she visited many hospitals, especially throughout Brittany, where thousands of wounded soldiers are being treated. Everywhere she heard a most urgent cry for all kinds of surgical instruments, especially in the hospitals of the country.

Mrs. Alger has asked me to request you to appeal with all the earnestness and publicity you can to the physicians throughout the land to donate any instruments, no matter how simple, which they have no further need of or may spare, the same to be sent to Mrs. Russell A. Alger, Jr., 2039 Penobscot Building, Detroit, Mich., from which place they will be forwarded without expense to the donor to France, to be distributed to the hospitals most in need of them.

Permit me to add my personal appeal to you to lend your influence to this cause. The need is urgent and the gratitude of thousands of soldiers awaits your action.

ANDREW P. BIDDLE, M.D., Detroit.

Inhibitory Properties of Magnesium Sulphate and Their Therapeutic Application in Tetanus

To the Editor:—I have discovered an important omission in my article on this subject (THE JOURNAL, March 25, 1916, p. 931), an omission which may have practical consequences. On page 934, second column, the first paragraph of the summary reads: "In each and every case of tetanus, 1.2 c.c. of a 25 per cent. solution of magnesium sulphate should be given by subcutaneous injection," etc. It should read: "1.2 c.c. of a 25 per cent. solution of magnesium sulphate per kilogram body weight." S. J. MELTZER, M.D., New York.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ADVISABILITY OF FAMILY USE OF PATERNAL AUTOGENOUS VACCINE

To the Editor:—In a family of four, who had previously been exceptionally healthy, four months ago "influenza" developed in very acute form. Since that time there have been recurrences in all of the family. In the girl of 12 there was unusually severe nosebleed. In the boy of 6 there was intestinal hemorrhage. There has been double external ear abscess in two of the family, peritonsillar abscess in one, and something very nearly akin to multiple neuritis in two. In one of these the condition simulated erythema nodosum with intestinal involvement. In this one there have been several articular inflammations during these months. In such a family would it be good treatment to use in the other members of the family a vaccine made from the father's nostrils, throat and ears, during a time when he had an acute attack of pharyngitis with involvement of eustachian tubes, and just after external ear abscesses had been lanced?

A. C. B.

ANSWER.—The family epidemic here described is apparently similar to many others which have occurred throughout the country in the past months. In those which have been investigated bacteriologically, the organism most frequently found has been a hemolytic streptococcus; the term "influenza," of course, is meaningless. The complications, such as articular inflammation and erythema nodosum here described, are also those which have commonly been found in streptococcal infections.

Recurrences of the symptoms of infection suggest a lighting up of the original infection, which has probably persisted, partially protected, in some part of the patient's body. Each patient should be carefully studied, and if any local collection of pus in a small persistent tonsillar abscess, or in the ear, is found, this should be drained. If one will think of the relation of such a small deep seated abscess to the surrounding tissues, one would not expect to accomplish the drainage of the pus by the injection of vaccines into some other part of the body, but would rather attempt to relieve tension and absorption from this abscess by incision. When the focus is removed, improvement follows without the use of vaccines.

In patients with severe and extensive infections such as those described, recovery is largely a matter of increasing resistance to infection by improving nutrition, and where this is possible, by the eradication of areas in which the infecting organism is growing. Vaccines have accomplished much in the prophylaxis of disease such as typhoid fever, but careful clinical observers have not found that favorable results can be regularly anticipated from the use of vaccines in situations such as those described.

For these reasons it would not be good treatment to inject into other members of the family a vaccine made from the father's nostrils, throat and ears during an acute attack of pharyngitis, even assuming the father to be suffering from the same infection as other members of the family. Such a procedure is undesirable because it probably will do no good and may do harm.

HEAT CRAMP

To the Editor:—As a result of natural gas facilities, we have many zinc smelters in this district. The furnaces are extremely hot, and consequently the furnace men are exposed to an almost unbearable heat. After they are "burnt in," however, the heat does not seem to affect them. Frequently a man takes on a "double shift" or does another's work and gets very hot for a prolonged time; he naturally goes out, after his work is done and imbibes freely of ice water. This throws him into the most violent muscular contractions of the arms and legs. The muscles knot up in huge cords, and he goes down in a heap in apparently the most frantic agony. The pulse is normal as well as the temperature. The convulsive seizures come at intervals of from two to fifteen minutes, and in the severe cases are absolutely unaffected by any amount of opiates that will allow the patient to breathe. Chloroform relaxes the spasms for the time being, but they usually return again in a few hours. The patients usually recover in from a few hours to a few days; but a few have been lost, apparently from exhaustion.

This condition may not be new to those having experience with furnace men, but I have never seen anything in the literature or books describing it or giving the pathology. I desire an explanation or direction for data.

P. S. MITCHELL, M.D., Iola, Kan.

ANSWER.—Heat cramp is produced by a combination of intense heat and hard work. The disease is more frequent in summer than in winter, and the use of alcohol probably

plays a minor part as a predisposing cause. The principal symptoms are well enumerated in the case described. The condition has been ascribed to a deficient serosity of the blood with acute degenerative change in the muscles. The prophylactic treatment is, of course, as much ventilation as possible where the men are working. Cool oatmeal water or similar drink should be used rather than ice water. For the acute condition morphin seems to be generally recommended, although, as noted above, opium in large doses may have little effect in some cases. According to H. M. Welsh (*THE JOURNAL*, April 10, 1909, p. 1179), apomorphin, in doses varying from $\frac{1}{12}$ to $\frac{1}{20}$ grain, will produce immediate relaxation; he has employed this remedy with success in the severer cases. Warm baths are also recommended to relax the spasm.

This subject was discussed in *Queries and Minor Notes*, *THE JOURNAL*, June 1, 1912, p. 1706, and Nov. 9, 1912, p. 1734. The following are further references:

- Cameron, W. H.: A Disorder Due to Exposure to Intense Heat, *THE JOURNAL*, May 8, 1909, p. 1483.
Clendening, L.: Muscular Spasms Due to Heat in Cooks on Pullman Diners, *THE JOURNAL*, May 7, 1910, p. 1517.
Edsall, D. L.: *Tr. Assn. Am. Phys.*, xxiv, 625; *Wisconsin Med. Jour.*, 1910, p. 425.
Elliott, M. S.: *Mil. Surg.*, xxii, 227.
Mann, W. L.: *U. S. Naval Med. Bull.*, October, 1912.
Fiske, C. N.: Effect of Exposure to Intense Heat in Working Organism, *Am. Jour. Med. Sc.*, April, 1913.
Oliver, Thomas: *Dangerous Trades*, New York, E. P. Dutton & Co., 1902, p. 184.
Anders: *Practice of Medicine*, Ed. 12, 1915, p. 1296.

INJECTION OF PASTE IN DISEASE OF HIP JOINT

To the Editor:—I have a patient with tuberculous hip joint disease who was operated on some months ago. The head and neck of the femur were removed at that time. There is now evidently a relapse, and there is at the present time a discharging fistula in the inguinal region that is evidently draining the joint cavity. The patient—a girl 8 years old—is in good general health with the possible exception of a rise of about 0.8 degree in temperature each day. Would it be advisable to inject a paste through the fistula into the joint; if so, what kind of a mixture is being used in such cases at this time? The joint has been immobilized for the past month without apparent benefit. In replying, please omit my name.

M. J. M.

ANSWER.—It seems quite evident from the foregoing letter that the tuberculous condition is still active, either in the joint or, more likely, in the bone. Before determining on any line of treatment it would be desirable to make some good roentgenograms to show the exact location and extent of the involvement. If sequestrums are still present, they may be removed before attempting to inject the sinus with paste. If all the dead bone has been removed and the cavity remaining is not too large, the use of bismuth paste, 30 per cent. of bismuth in petrolatum, sterilized and injected under proper pressure, may be tried. The joint should then be completely immobilized over a long period, even after the sinus is apparently closed. Many months are required for recovery to take place in these cases under the most favorable conditions.

REGISTRY NUMBER ON PRESCRIPTION BLANKS UNDER HARRISON LAW

To the Editor:—Does the Harrison Narcotic Law permit a physician to print his registration number on his prescription blanks? M. F.

ANSWER.—Yes. There is nothing in either the law or the treasury decisions thereunder which would preclude a physician from printing the registry number on his prescription blank. Treasury Decision 2172 holds that a physician can use any blank that is properly dated and signed and has indicated thereon the physician's address, registry number, and name and address of person for whom prescription is written.

TOXICITY OF ACETYLENE GAS

To the Editor:—I use acetylene gas to read by, the tube of the lamp being connected to an acetylene tank. After acetylene was turned on last night my throat troubled me and I coughed for a while. My secretary detected an odor and seemed to think it was the acetylene gas that caused the irritation in my throat.

C. de P. F., Peekskill, N. Y.

ANSWER.—Pure acetylene is very slightly, if at all, poisonous. The commercial product is generally prepared from calcium carbide and therefore contains such impurities as carbon bisulphide, carbon monoxide, each present to the extent of about 0.5 per cent., and phosphoretted hydrogen, 0.04 per cent. It is therefore slightly poisonous. The toxic effects of these impurities, even in larger quantities, is not such as

to produce irritation of the throat. Naturally, should the carbon bisulphide be present in an altogether abnormally large amount, which is unlikely, then sulphur dioxide formed by combustion would be irritating to the mucous membranes of the throat and nose as well as to the conjunctiva.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

- ALABAMA: Montgomery, July 10. Chairman, Dr. W. H. Sanders, Montgomery.
CONNECTICUT: Regular, New Haven, July 11-12. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven; Homeopathic, New Haven, July 11, Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven; Eclectic, New Haven, July 11, Sec., Dr. T. S. Hodge, 19 Main St., Torrington.
DISTRICT OF COLUMBIA: Washington, July 11-13. Sec., Dr. Edgar P. Copeland, The Rockingham.
INDIANA: Indianapolis, July 11-13. Sec., Dr. W. T. Gott, 84 State House, Indianapolis.
MASSACHUSETTS: Boston, July 11-13. Sec., Dr. Walter P. Bowers, 1 Beacon St., Boston.
NEW MEXICO: Santa Fé, July 10. Sec., Dr. W. E. Kaser, East Las Vegas.
OKLAHOMA: Oklahoma City, July 11. Sec., Dr. R. V. Smith, 502 Daniel Bldg., Tulsa.
PENNSYLVANIA: Philadelphia and Pittsburgh, July 11-13. Sec., Mr. Nathan C. Schaeffer, Department of Public Instruction, Harrisburg.
SOUTH DAKOTA: Deadwood, July 11. Sec., Dr. Park B. Jenkins, Waubay.
VERMONT: Burlington, July 11-13. Sec., Dr. W. Scott Nay, Underhill.
WEST VIRGINIA: Charleston, July 11. Dr. S. L. Jepson, Charleston.

Colorado January Report

Dr. David A. Strickler, secretary of the Colorado State Board of Medical Examiners, reports the written examination held at Denver, Jan. 4, 1916. The total number of subjects examined in was 8; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 4, of whom 3 passed, including 2 osteopaths, and 1 failed. Eleven candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Pennsylvania.....	(1915)		86.4
FAILED			
St. Louis College of Phys. and Surgs.....	(1915)		53
College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Chicago College of Med. and Surg.....	(1913)		Illinois
Hahnemann Med. Coll. and Hosp., Chicago.....	(1913)		Illinois
Indiana University.....	(1910)		Indiana
University of Louisville.....	(1894)		Missouri
Tulane University of Louisiana.....	(1906)		Louisiana
Harvard University.....	(1898)		Mass.
University of Michigan Medical School.....	(1880)		Iowa
University Medical College, Kansas City.....	(1898)		Missouri
John A. Creighton Medical College.....	(1910)		Nebraska
Startling Medical College.....	(1882)		Illinois
McGill University.....	(1894)		Minnesota

Idaho April Report

Dr. Charles A. Dettman, secretary of the Idaho State Board of Medical Examiners, reports the written examination held at Boise, April 4-7, 1916. The total number of subjects examined in was 11; total number of questions asked, 110; percentage required to pass, 75. The total number of candidates examined was 17, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
College of Physicians and Surgeons, Los Angeles.....	(1905)		80
University of Colorado.....	(1911)		84
Northwestern University.....	(1911) 84; (1914)		82
University of Illinois.....	(1913)		83
Medical College of Indiana.....	(1905)		83
Keokuk Medical College, Coll. of Phys. and Surgs.....	(1905)		76
University of Louisville.....	(1905)		77
Beaumont Hospital Medical College.....	(1896)		79
Missouri Medical College.....	(1896)		84
National University of Arts and Sciences.....	(1914)		82
John A. Creighton Medical College.....	(1909)		83
Medical College of Ohio.....	(1900)		83
Ohio Medical University.....	(1900)		80
Jefferson Medical College.....	(1914)		85
Medico-Chirurgical College of Philadelphia.....	(1909)		85
University of Nashville.....	(1902)		79

Book Notices

CANCER OF THE STOMACH. A Clinical Study of 921 Operatively and Pathologically Demonstrated Cases. By Frank Smithies, M.D., Gastro-Enterologist to Augustana Hospital, Chicago. With a Chapter on the Surgical Treatment of Gastric Cancer. By Albert J. Ochsner, M.D., LL.D., F.R.C.S., Professor of Clinical Surgery in the School of Medicine of the University of Illinois. Cloth. Price, \$5.50 net. Pp. 522, with 106 illustrations. Philadelphia: W. B. Saunders Company, 1916.

This monograph is composed of twelve chapters, eleven of which, covering the general features of the subject, including the nonsurgical treatment, are by Smithies, and one chapter on the surgical treatment is by Ochsner. The opening chapter, on general distribution and etiology, contains many interesting facts regarding the distribution, but nothing that can be said really to touch the etiology. It is to be expected that a disease as prevalent as cancer, which occurs, as a rule, after the individual has lived more than half of his expectancy, would be accompanied by many conditions such as healed tuberculosis, gallstones, syphilis, chronic infections, etc., without there being any causal relation between them; hence there is no sound reason for concluding that any of these incidental conditions bear any causal relation to cancer of the stomach.

The chapter on morbid anatomy is well illustrated, most of the gross specimens being from the Mayo Clinic, while the text follows closely that of McCarthy. Considerable space is devoted to symptomatology and examination, particularly to the examination of gastro-intestinal function. The author thinks there is no procedure which "enables one to estimate the status of a given case of gastric cancer so quickly, accurately and inexpensively, as does intelligent scrutiny of test meal data. There is no disease of the stomach per se which returns gastric extract analyses so characteristic as those exhibited in instances of what is clinically advanced gastric cancer."

One can easily agree with both of these statements, for in the first the diagnosis is assumed in "a given case of gastric cancer," and the second statement deals with "what is clinically advanced gastric cancer." When it comes to making a diagnosis in an early case, however, it is a different matter. In these cases gastric extract analyses fail to give definite results, as do all other present known methods of examination, except the microscope.

Concerning Roentgen examination, the author says: "It is well to admit that much of the positive information which x-ray examinations give us concerning the function or abnormality of the stomach can be as well obtained by routine clinical examination. In the majority of instances x-ray findings only concern what might be termed accidents in the progress of the disease process." By this the author means such features as stenosis, alterations in shape or position of the viscus with relation to adjacent organs, or deformities in outline. Until such complications occur, Roentgen findings may be entirely negative and the diagnosis must be made clinically or chemically. Concerning the taking of many roentgenograms (from eighteen to forty), the author says: "The perfection of the fluoroscope has rendered this method [roentgenographic plates or films] largely obsolete, tedious, of little added clinical worth, and unnecessarily expensive."

Concerning the significance of gastric ulcer and the so-called "precancerous" history with respect to a subsequent cancer, the author says: "So far as we can judge clinically, a careful development of such history furnishes extremely valuable diagnostic and prognostic information. It would appear from the facts submitted that such interpretation allows the greatest degree of operative benefit with the minimum of operative risk." The surgical treatment of cancer of the stomach naturally relates to complete removal of all the cancerous tissue, and this phase of the subject, including indications and operative technic, is well covered. On the whole, the book is a well gotten up, thorough exposition of present day knowledge of carcinoma of the stomach.

Medicolegal

Relation of Physician and Patient—Skill Required with Regard to Locality

(*Viita vs. Dolan et al.* (Minn.), 155 N. W. R. 1077)

The Supreme Court of Minnesota affirms a judgment against defendant Fleming for \$2,000 damages for alleged malpractice in the treatment of a fracture of the plaintiff's left leg between the knee and ankle. The court says that defendant Dolan died after this action was commenced. The defendants were partners as physicians and surgeons, and operated a hospital. They had an arrangement with the company in the employ of which the plaintiff was when injured by which the company deducted 75 cents a month from the pay of each employee, and turned this over to the defendants, who agreed for this compensation to care for and treat injured employees which the company should send to them. The plaintiff, after his injury, received a ticket from his employer, presented it to the defendants, and was taken into the hospital and treated. Defendant Dolan attended the plaintiff, who claimed that the failure to get a straight union was due to the omission of the defendants to apply an extension weight to the injured limb. Negligence was also claimed in respect to their failure to use a "fracture box" or to take a roentgenogram for diagnosis. Assuming that the relation of patient and physician existed, the court holds that the evidence was sufficient to justify the jury in finding that the physician failed to exercise toward the patient that degree of care and skill which the law requires. Nor were the damages awarded excessive. The defendants, however, contended that the relation of physician and patient did not exist, under the circumstances stated; but the court holds that it did, and that the defendants owed the plaintiff the duty to exercise ordinary care and skill in treating him. It was true, the court says, that the company, under the terms of the workmen's compensation act, was required to provide medical and surgical treatment to the injured employee during the first ninety days of his disability and to an amount not exceeding \$100. But the court is unable to see how this changed the relationship between the injured employee and the physician or surgeon employed, or affected the duty of the latter to the former. Moreover, a settlement between the plaintiff and his employer under the workmen's compensation act, by which the employer was released from all claims on account of the injury to the plaintiff, did not operate as a settlement or release of any claim for malpractice which the plaintiff might have against the physician who treated him. The court thinks it is plainly correct that the locality in which the physician or surgeon practices must be considered in determining whether he has the requisite skill and learning, but the court does not think that he is bound to possess and exercise only that degree of skill and learning possessed by other practitioners in the same locality, if by that is meant the same village or city. If the same general locality is meant, as, for instance, the Northwest, or the state, no fault can be found with such a rule. But in these days the physician or surgeon in a village is not hampered by lack of opportunity for advancement. Frequent meetings of medical societies, articles in the medical journals, books by acknowledged authorities, and extensive experience in hospital work put the country doctor on more equal terms with his city brother. He would probably resent an imputation that he possessed less skill than the average physician or surgeon in the large cities, and this court is unwilling to hold that he is to be judged only by the qualifications that others in the same village or similar villages possess. It was not error to permit questions to the experts in regard to the propriety of taking roentgenograms. While this was not specifically alleged as a charge of negligence, the complaint contained a general allegation of negligent treatment, and the court thinks this evidence was properly received, at least as against the general objection "incompetent, irrelevant and immaterial."

Delay in Discovering Pieces of Glass from Vaginal Douche*(Rogers vs. Voorhees (N. Y.), 157 N. Y. Supp. 330)*

The Supreme Court of New York, Appellate Division, First Department, divided three to two, reverses a judgment for \$2,628.28 which was entered in favor of the plaintiff, and grants the defendant a new trial. It appeared that the defendant attended the plaintiff during her confinement at a maternity hospital. The dissenting opinion, which gives the more details, says that, accepting the version of the facts which the jury believed, the plaintiff first began to feel intense, sharp pains in her body some ten days after the birth of her child, and told the defendant of her suffering on the very next day, June 26. She had been under his care for some time, and he knew, or should have known, of her general condition, and have been aware of any abnormal change in it. He treated her for the condition which existed after the childbirth, and made an examination before she left the hospital, but could suggest no cause for her suffering, save the failure of the stitches which he had inserted to heal properly. She complained of these pains, and of other conditions, beginning six days after her discharge from the hospital, which was July 7, and repeated the complaints three or four times during July. The defendant was out of the city during August, but when he returned the plaintiff again called on him and complained of her pains and other disturbances. He examined her, but discovered no reason for the condition, and it was not until the early part of December, after many apparent examinations, that the defendant finally made up his mind that there must be some foreign substance in the plaintiff's body apart from the calcareous material which he had thought might be there from the chromicized catgut used in the stitches failing to be entirely absorbed. Then, for the first time, without apparently any further action than the making of his first really careful examination, by the use simply of a probe, which he pressed into a sinus, he found what he thought was calcareous material, which he removed with forceps, and brought out two spears of glass. It was quite apparent that these pieces of glass came from the nozzle of a douche which had been broken within the plaintiff's body during the process of administering hot douches to her by the nurses in the hospital. There was no other explanation of the presence of the glass in her body, as she herself never made use of a glass nozzled douche. Furthermore, when the defendant removed this glass from her body, he gave the two pieces to her and said, "This is outrageous!" and going to a cabinet in his office showed her two douche nozzles, one very thin, the other thicker, and told her that the thin one was a physician's nozzle, which should not have been used except by a physician. As the result of the condition which still existed, the plaintiff was obliged to submit to an operation, December 29, when granular particles of glass were removed from her body. The prevailing opinion says that the only negligence claimed against the defendant was for his delay in making such an examination of the vaginal cavity as would disclose the foreign substance thereafter found. Two experts of standing swore in his behalf that it would have been poor surgery to make such an examination as would disclose the existence of the foreign substance before the time that it was actually made by the defendant. One expert, on behalf of the plaintiff, swore that such an examination ought to have been made three months before it in fact was made. It is always easy, after the cause of an injury has been found, to look back and say that that cause should have been sought for. The jury failed to give proper force to the fact that the defendant had never had the slightest cause of suspicion that any foreign substance could be causing the trouble. The breaking of the glass of a vaginal douche within the vagina is a circumstance so rare as not to have been reasonably contemplated at any time by the defendant, and for failure to anticipate this most unusual occurrence the defendant was most unjustly charged with a substantial money judgment, and, what was worse, with a stain on his professional fidelity.

Society Proceedings**COMING MEETINGS**

Montana State Medical Association, Miles City, July 12-13.
Washington State Medical Association, Seattle, July 12-14.

AMERICAN PEDIATRIC SOCIETY

*Twenty-Eighth Annual Meeting, held in Washington, D. C.,
May 8-10, 1916*

*(Concluded from page 72)***Early Morning Toxic Vomiting in Children**

DR. THOMAS S. SOUTHWORTH, New York: I believe this vomiting to be of toxic origin, because the vomitus after the long night period contains no food residue unless a morning feeding has been given. Vomiting from failure of gastric digestion usually occurs later in the day. The cases have neither the characteristic histories nor the clinical symptoms and course of recurrent vomiting, which is another toxic type, in which the toxemia is probably of gradual and cumulative evolution. Elimination is slow and vomiting prolonged. Fever is not constant. In the type under consideration, early morning vomiting, fever is a usual accompaniment, and there is an acute putrefactive process in the intestines, with absorption and attempted reelimination by the gastric mucous membrane. It is thought that this toxic material, accumulating in the stomach during the hours of sleep, when reflexes are deadened, asserts its presence in vomiting on awakening. Purgation results in foul stools, often containing mucus. After the stomach has been emptied by one or two acts of emesis, there is no tendency to recurrence. The extreme caution in resuming feeding often displayed after attacks of the recurrent type frequently leads to undernutrition in children whose attacks occur at rather short intervals. A slightly greater care is demanded in the acute toxic type of intestinal origin.

DISCUSSION

DR. DEWITT H. SHERMAN, New York: A gastric analysis of the material vomited in the early morning might afford an indication as to whether or not there was hyperchlorhydria, and as to the amount of neurotic element in the case.

DR. ISAAC A. ABT, Chicago: I am skeptical as to the gastro-intestinal nature of the vomiting. This occurs in a great many conditions outside the gastro-intestinal tract; for instance, nasopharyngitis.

DR. THOMAS S. SOUTHWORTH, New York: I think it probable that some of the children may have had hyperchlorhydria. In many of these cases there is unquestionably an odor of acetone to the breath; but I have not made examinations of the urine in these cases. If Dr. Abt had seen the case I related, he would have had little doubt that the gastro-intestinal condition was the cause. The symptoms all subsided when the gastro-intestinal tract was cleaned out. The type of cases to which I refer have not had a cough with mucus in the nasopharynx that could have been the cause of the vomiting.

Etiology of Chorea

DR. JOHN LOVETT MORSE, New York: There was nothing in the previous history of the patients seen or in the family history to indicate the presence of syphilis, so we decided that this disease plays no part in the production of chorea. We found no micro-organisms in the spinal fluid, but in the blood we found some. None of these, except the streptococcus, however, would produce lesions in animals. This streptococcus produced the lesions of chorea in rabbits. The organisms found in the blood were different in the different cases. There was a local infection in all the cases in which cocci were found in the blood, so that these organisms might have had no connection with the chorea. The absence of organisms in the cerebrospinal fluid would seem to show that the chorea was not due to an organism. We think that we are justified in concluding that while there is much that points to an organism or a group of organisms as the cause, the bacterial origin of chorea is not proved. The results of

the investigation seem to show that if chorea is caused by a micro-organism, the source of infection is ordinarily in the tonsils or the teeth, and to confirm the belief that there is an intimate connection between rheumatism and endocarditis and chorea.

DISCUSSION

DR. HENRY KOPLIK, New York: I have made a number of blood cultures for syphilis in cases of chorea, with negative results. We have had a number of cases of endocarditis in which chorea came on secondarily, and have had some cases of progressive endocarditis in which we have also found a streptococcus; but that does not mean necessarily that chorea in any of the other cases is of bacterial origin. There may, however, be a bacterial invasion at first, the bacteria disappearing and leaving behind the toxin that causes the symptoms.

DR. I. A. ABT, Chicago: It seems to me that chorea expresses a state of the nervous system that occurs under a variety of circumstances. I collected 225 cases from our hospital records, and the largest number of the patients had had chorea for a definite time without any history of a previous infectious disease that could be connected with chorea.

DR. B. S. VEEDER, St. Louis: I think it is simply a syndrome. We have never been able to get a change in the colloidal reaction, which indicates that it is not a primarily bacterial condition.

DR. JOHN L. MORSE, New York: Thirty-seven per cent. of these children had rheumatism in the past or with the chorea, with acute endocarditis and with valvular lesions. The tonsils were normal in eleven, and had been removed on account of disease in five others. The teeth had been removed in seven, and definite pus pockets were found in three when the teeth were extracted.

Subcutaneous Injections of Magnesium Sulphate in Chorea

DR. HENRY HEIMAN, New York: In five successive cases of chorea, a 25 per cent. sterile solution of magnesium sulphate was used. Three injections were given daily for from ten to fifteen days. The objections to this treatment are the possibility of inflammatory reaction, the fact that very young patients may become unduly excited by the treatment itself, the danger of breaking the needle in the tissues, and albuminuria. We found that the injections did not produce sufficient improvement to justify a further trial.

Familial Icterus in the New-Born

DR. ISAAC A. ABT, Chicago: There seems to be no connection between this disease and chronic family jaundice, in which the patient may experience but little inconvenience and may attain advanced age, although the condition is present at birth. In familial icterus, the children seem to be all right at birth, but must be defective; as the liver soon seems to be unable to perform its extra-uterine function. I have encountered examples in two families. In the first family, of the five children born living, the first two were well and remained so. The third died of the disease on the fourth day, the fourth on the third day, and the fifth child died on the fourth day. In the second family, there were six children. The first two are living and well. The third died of meningitis. The fourth child died of icterus on the third day; and the fifth on the third day. The sixth child was affected and was very ill. It, however, began to improve on the fifth day. It is now a year old and is well. No causes for the disease could be discovered in the history in either family.

DISCUSSION

DR. WILDER TILESTON, New Haven: Yellow staining of the nuclei of the base of the brain and the medulla is never encountered in jaundice in the adult. It indicates a powerful poisoning, because these areas are found to be necrotic. I agree with Dr. Abt that this cannot be a purely septic condition. I should like to ask whether fragility of the red cells has been noted in either the mother or the child in connection with this disease. In chronic family jaundice, this is always present, and there is an excretion of urobilin in the urine, but not in the bile.

Some Observations on Measles

DR. CHARLES HERRMAN, New York: The deaths reported as due to measles give an incorrect idea as to their real number. A large number are caused by a complicating bronchopneumonia, especially between 1 and 2 years of age. This is shown by the parallelism between the curve of morbidity from measles and the curve of mortality from bronchopneumonia between 1 and 2 years. In a study of 300 secondary cases of measles in which the time of infection was definitely known, fever appeared on the tenth or eleventh day in 56 per cent.; the catarrh on the eleventh or twelfth day in 50 per cent., and the tonsillar spots on the ninth to the thirteenth day. The Koplik spots were seen on the eleventh or twelfth day in 54 per cent. The catarrh was present in only 7.2 per cent. on or before the tenth day; the Koplik spots, in 12.3 per cent., and tonsillar spots in 34 per cent. In some patients, the tonsillar spots were present as early as the seventh day. They were occasionally noted in patients who did not show Koplik spots. Infants under 2 months are absolutely immune. This immunity gradually disappears, and is entirely absent at eight months. In infants between 5 and 8 months, the period of incubation is usually longer, the infection is milder, and they lose less weight. The immunity is probably conveyed through the placental circulation. Infants between 3 and 5 months who are brought into intimate contact with measles and do not contract the disease are frequently not infected when exposed in later life.

DISCUSSION

DR. HENRY KOPLIK, New York: At the very outset, sometimes five days before the eruption, there is a febrile movement; and with it, the first appearance of the Koplik phenomenon. We isolate these children, and then wait patiently until the eruption comes out.

Meningitis in the New-Born and in Infants Below Three Months of Age

DR. HENRY KOPLIK, New York: Many authors assume that meningitis is always secondary to general sepsis in the new-born, but in many instances it is a primary infection. It is difficult to diagnose, because the signs that we apply later are inadequate to apply to these new-born children. We can, however, find some characteristic symptoms. First are convulsions, which are usually accompanied by fever, often very high. It is only after a week or ten days that there is an increase in the quantity of fluid, which, on lumbar puncture, may show various organisms. The disease is not always caused by the meningococcus. All the cases seem to be fatal, sooner or later. Only one of my twelve patients is alive, a child with hydrocephalus. The results of washing out the ventricle through the lumbar puncture have not been encouraging. How does a new-born baby get meningitis? If you stop to think of some of the methods used in resuscitating infants in some of our hospitals, you can well understand how mouth suction, etc., may afford an avenue of infection with the meningococcus.

DISCUSSION

DR. D. J. MILLER, Atlantic City, N. J.: I had a case of meningococcus meningitis in almost a new-born baby, whose first symptom was an attack of conjunctivitis, which was erroneously diagnosed as of gonococcal origin. The material obtained by lumbar puncture was gelatinous and almost sterile; but later I made a ventricular puncture and found the meningococcus. The child died. The blood was sterile.

DR. CHARLES HERRMAN, New York: The case which I reported last year was unusual, because the child did not even have one convulsion. This indicates that cases of meningitis in very early life may not be so rare as the few reports would lead us to believe. In some cases the organism causing the disease is the colon bacillus.

DR. J. H. M. KNOX, Baltimore: I reported a case in which a child only a year old, with beginning hydrocephalus, was found with slightly turbid cerebrospinal fluid containing the meningococcus. There was only a very indefinite history of meningitis in the case.

DR. I. A. ABT, Chicago: Is there any difficulty in differentiating between meningitis and meningeal hemorrhage in the new-born, cerebral abscess, or sinus thrombosis? Is there any difficulty in hospitals in making lumbar puncture in the case of new-born babies?

DR. L. E. LA FETRA, New York: Meningitis is frequent as a part of general sepsis in infancy, without the symptoms of meningitis. If we had necropsies and did lumbar punctures more frequently, I think we should find more cases. The meningitis often exists a long time before it is discovered, but we had an interesting case in which pus containing meningococci was known to have developed in the cord within two days.

DR. HENRY KOPLIK, New York: I know nothing about the minutiae of bacteriology, but go by the report of the bacteriologist. When there is a slight rise of temperature in the new-born, there is considerable difficulty in differentiating between meningitis and ordinary meningeal hemorrhage. Otitis is quite common as a secondary infection in new-born babies, but I know nothing about sinus thrombosis in them. The difficulty of lumbar puncture is not great.

Use of Salt Solution By the Bowel in Infants and Children

DR. EDWIN E. GRAHAM, Philadelphia: My experience leads me to consider this method as of more value than is usually thought. I have used it in pylorospasm with gratifying results. It has also been of use in erysipelas and typhus fever. Feeding children who cannot retain nourishment by mouth in this manner has resulted in their retaining the nutriment enemas, if given slowly. Isotonic serum may be given by proctoclysis better than by subcutaneous injection. The fluid should trickle into the rectum at the rate of half a pint an hour, at a temperature of from 98 to 100 F. The flow should be checked for an hour every second hour, to give the bowel a rest. When slight edema of the tissue is noted, the giving of the fluid should be stopped until this disappears. The treatment can usually be continued from four to six days, and it may sometimes be kept up, with interruptions, for ten days or two weeks.

DISCUSSION

DR. T. H. McCLANAHAN, Omaha: Infants from 2 to 6 days old often suffer from high temperature and anuria, and this is called inanition fever. In other cases, such as those of harelip and cleft palate, the baby cannot create suction, and sometimes starves on this account. I have seen a case in which breast milk was pumped from the breast of the mother and introduced into the stomach of the child, saving its life.

DR. I. A. ABT, Chicago: I have never had a great deal of success in keeping the tube in place. Very frequently one sees considerable irritation around it. We are simply inverting the natural process by giving the baby water to drink by the rectum, and I should think that it would cause the infant an increased amount of labor that might decide against it in its fight for life.

DR. L. E. LA FETRA, New York: We found it best to use a vacuum bottle, inverted, for keeping the solution warm. It is better to put the water in by some other way than the rectum, if this is possible.

DR. EDWIN E. GRAHAM, Philadelphia: There are quite a large number of children in whom it is impossible to introduce fluid by the mouth and stomach. My cases were of this sort, and I naturally chose the rectum instead.

The Energy Metabolism of a Cretin

DR. FRITZ B. TALBOT, Boston: A typical cretin, aged 3 years and 8 months, was studied in the Benedict respiratory chamber of the Massachusetts General Hospital. It was found that when he was quiet, he produced, respectively, 39 and 42 calories per kilogram of body weight, which is relatively much lower than the amount of calories produced per kilogram of body weight by two normal babies, aged 8½ and 10 months. His metabolism, estimated on the basis of body surface (Lissauer), was also relatively lower. This is consistent with the findings of Du Bois in his cretin, aged 36 years.

The Dangers From Carriers of Diphtheria to Hospital Efficiency

DRS. SAMUEL S. ADAMS and FRANK LEECH, Washington, D. C.: One of the dangers that menace hospital efficiency is the diphtheria carrier. The efficiency of our hospital has lately been greatly crippled from this cause. Our wards were closed to new patients for three weeks, and one ward is still closed. The original source of infection was a child admitted for lobar pneumonia. A nurse complained of sore throat, but was not off duty. She associated with the other nurses and with her patients. The baby ward gave the greatest trouble, and eight nurses distributed through the other wards gave cultures, spreading the disease among the patients there. Cultures were made after the discovery of the first cases, but before the epidemic could be stopped forty children and one physician, besides the nurses and hospital employees, were affected.

THE AMERICAN ASSOCIATION OF IMMUNOLOGISTS

Third Annual Meeting, held in Washington, D. C., May 11-12, 1916

(Continued from page 70)

Immunity Results Obtained From the Use of Diphtheria Toxin-Antitoxin Mixtures and the Use of the Schick Test

DRS. WILLIAM H. PARK and ABRAHAM ZINGHER, New York: It is advisable to immunize children soon after the first year of life, so as to afford them a protection against diphtheria at a time when the disease is most dangerous. In addition, such young children, by not having any hypersensitiveness to the bacillus protein, show very mild local and constitutional symptoms after the injections. An immune child population could thus be developed with the result that fresh clinical cases would be prevented and the bacillus carrier would probably soon disappear as a hygienic factor in our communities. The use of the Schick test in the selection of susceptible children for immunization and in controlling the results of the treatment is justified by the great clinical accuracy which the test has shown during a period of several years in the separation of the susceptible from the immune individuals. The test should be carried out properly with a fresh toxin solution, and the results read daily, for a period of from seventy-two to ninety-six hours. The pseudoreactions should be controlled with heated toxin, or recognized by their rapid disappearance after seventy-two hours. It is only these individuals who give the more marked local reactions after the injections of toxin-antitoxin.

Epidemiology of Lobar Pneumonia

DR. A. R. DOCHEZ, New York: Examination of normal individuals showed that the two types of pneumococcus responsible for the majority of the severe cases of lobar pneumonia are not found in the normal healthy mouth, except in such instances as when the individual harboring the organism has been in intimate association with a case of lobar pneumonia. When such a condition exists the organism found in the normal mouth invariably corresponds in type to that found in the lung of the diseased individual. These studies make it probable that the majority of cases of pneumonia are dependent on either direct or indirect contact with a previous case.

DISCUSSION

DR. EDWARD B. VEDDER, Washington, D. C.: We learned a long time ago that many normal individuals carried the pneumococcus in their sputum. Now, Dr. Dochez and his associates tell us that this is wrong. In any case prevention is more important than cure. It means that every case of pneumonia may be traced to a previous case. This means that from a sanitary point of view every case of pneumonia must be treated just like any other infectious disease in which the infecting agent is transmitted by the buccal secretions of those affected, and the present widespread prevalence of pneumonia is probably due to our policy of *laissez faire*. Boards of health should demand: 1. Notification of

all cases of pneumonia. 2. Prompt visitation by a health officer, collection of specimens and laboratory diagnosis of the type of organism present in the patient and in the contacts. 3. Isolation of the patient and of any contacts who harbor the type of pneumococcus found in the patient. 4. A negative culture requirement before the patient or carriers are permitted to mingle with the community.

DR. E. C. L. MILLER, Richmond, Va.: Dr. Frederick Hanes of Richmond has been doing some work with pneumonia along these lines. He has kept mice and diagnostic serums on hand and has treated some patients with the curative serums. However valuable this work may be from an experimental standpoint, it is evidently not practical. It can be done only by an expert.

DR. JOSEPH HEAD, Philadelphia: Obviously only a small percentage of the germs that are introduced into the mouth find lodgment within the tissues and become pathogenic. In making my bacterial examinations for autogenous vaccines, I cauterize the surface of the infected spot with an electric cautery until it turns slightly white, and then extract blood from the tissues through the cauterized spot with a hot platinum spear. Out of 400 such examinations I found streptococci in 95 per cent., the influenza bacillus and the *Micrococcus catarrhalis* in about 75 per cent., while the pneumococcus appeared in about 25 per cent.

Studies in Typhoid Fever

DR. A. L. GARBAT, New York: A positive complement fixation test after prophylactic typhoid immunization is not a regular occurrence, as it is during or after typhoid fever. This point may be of aid in deciding for or against the diagnosis of typhoid fever in an inoculated individual still having a positive Widal and ill with a suspicious typhoid and negative blood culture. A positive complement fixation test was obtained most often after three injections with a polyvalent vaccine; two injections with the same vaccine or three injections with the single strain vaccine (Rawlings) gave hardly any complement fixation. Cultures of the duodenal contents (bile) removed by means of the duodenal tube seem to be a more reliable and simpler method for the detection of typhoid bacilli than stool examinations. The serum from convalescent typhoid patients has been employed with distinct benefit in three very severe acute typhoid cases.

DISCUSSION

DR. A. H. SINCLAIR, Honolulu, H. I.: I do not believe that any patient who gives a positive Widal after typhoid could again contract the disease.

DR. ABRAHAM ZINGHER, New York: With intramuscular injections of fresh whole blood, obtained from convalescent scarlet fever patients, either citrated or noncitrated, distinctly beneficial effects were noted in toxic cases after injections of blood obtained from patients who were three or four weeks' convalescent. Very striking improvement was seen from 300 c.c. of fresh blood obtained from a three months' convalescent donor. I have used intramuscular injections of normal blood in late septic cases of scarlet fever. In these the toxemia of scarlet fever was no more in evidence. Injections of normal blood are given in quantities of from 120 to 240 c.c., and repeated every four days. Such blood is not given for any specific action but for its general stimulating and nutritive value, which helps in tiding the patient over a critical period.

Prophylactic and Therapeutic Inoculations in Certain Affections of the Respiratory Tract

DRS. GEORGE W. ROSS, H. K. DETWEILER, and J. C. MAYNARD, Toronto: In connection with the recent epidemic in Toronto, it was shown that the *Streptococcus pyogenes* largely prevailed in cultures from the nose, nasopharynx and sputum. The duties of a battalion of soldiers quartered there were greatly interfered with because of this epidemic cold. We prepared vaccines from many strains of different organisms isolated. Sixty-two soldiers received from one to six inoculations, and we were strongly impressed by the results obtained.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

June, LXXIII, No. 6, pp. 997-1192

- 1 Pregnancy in Tuberculous; Report of Sixty-Eight Cases. C. C. Norris, Philadelphia.
- 2 Operating During Puerperium for Cure of Old Lacerations of Cervix and Perineum. A. A. Hussey, Brooklyn.
- 3 Management of Ovarian Tumors Complicating Pregnancy, Labor and Puerperium. R. M. Beach, Brooklyn.
- 4 Lipoid Content of Maternal and Fetal Blood. A. Hymanson and M. Kahn, New York.
- 5 Postmortem Cesarean Section; Report of Ten Cases. J. A. Harrar, New York.
- 6 Legal Aspects of Postmortem Cesarean Section. G. W. Whiteside, New York.
- 7 End Results in Cases Operated for Salpingitis. E. MacD. Stanton, Schenectady.
- 8 Posterior Dislocation of Lower Humeral Epiphysis as Birth Injury. E. D. Truesdell, New York.
- 9 Case of Osteomalacia. H. Bailey, New York.
- 10 Palpation of Ureters Per Vaginum. A. M. Judd, Brooklyn.
- 11 Case of Congenital Amputation (?) of Fingers. T. Abbe, Washington, D. C.
- 12 Spinal Anesthesia. F. H. Knight, Brooklyn.
- 13 Fibro-Adenorrhodomyomatous Mesothelioma of Kidney. R. A. Keilty, Philadelphia.

Archives of Internal Medicine, Chicago

June, Part I, XVII, No. 6, pp. 711-854

- 14 *Study of Salt, Nitrogen and Water Excretion in Nephritis. J. P. O'Hare, Boston.
- 15 *Experimental Hypercholesterolemia. K. Dewey, Chicago.
- 16 *Pharmacologic and Clinical Study of Papaverin. D. I. Macht, Baltimore.
- 17 Clinical Hemoglobinometer. H. Haessler and H. S. Newcomer, Philadelphia.
- 18 *Use of "Karell Cure" in Treatment of Cardiac, Renal and Hepatic Dropsies. E. H. Goodman, Philadelphia.
- 19 *Reaction of Cerebrospinal Fluid. S. H. Hurwitz and C. L. Tranter, San Francisco.
- 20 Method for Determination of Alkali Reserve of Blood Plasma. W. McK. Marriott, Baltimore.

June, Part II, No. 6, pp. 855-1059

- 21 Clinical Calorimetry. Further Measurements of Surface Area of Adults and Children. M. Sawyer, Iowa City, Ia.; R. H. Stone and E. F. Du Bois, New York.
- 22 Id. Formula to Estimate Approximate Surface Area if Height and Weight Be Known. D. Du Bois, Burlington, Vt., and E. F. Du Bois, New York.
- 23 *Id. Comparison of Metabolism of Men Flat in Bed and Sitting in Steamer Chair. G. F. Soderstrom, A. L. Meyer and E. F. Du Bois, New York.
- 24 *Id. Metabolism of Boys Twelve and Thirteen Years Old Compared with Metabolism at Other Ages. E. F. Du Bois, New York.
- 25 Id. Basal Metabolism of Normal Adults With Special Reference to Surface Area. F. C. Gephart and E. F. Du Bois, New York.
- 26 *Id. Metabolism in Exophthalmic Goiter. E. F. Du Bois, New York.
- 27 *Id. Basal Metabolism in Pernicious Anemia. A. L. Meyer and E. F. Du Bois, New York.
- 28 *Id. Basal Metabolism of Patients With Cardiac and Renal Disease. F. W. Peabody, Boston, A. L. Meyer and E. F. Du Bois, New York.
- 29 *Id. Metabolism and Treatment in Diabetes. F. M. Allen and E. F. Du Bois, New York.

14. Study of Salt, Nitrogen and Water Excretion in Nephritis.—Several methods have been proposed for the study of salt and nitrogen excretion in chronic nephritis. In one method, with the patient on a standard diet, the elimination of an added amount of salt and nitrogen is followed for several days; in another, the salt and nitrogen excretion is quantitated for one day in two-hour urine specimens with the patient on several standard meals of varying composition. A third way is to quantitate salt and nitrogen in the blood and urine and express their relations by a formula giving an index of excretion. In thirty cases the first two tests have been carried out by O'Hare along with other tests of renal function. He found that in general, salt excretion is impaired before there is much disturbance of water and nitrogen excretion; in most patients salt and water excretion behave very similarly; the nitrogen excretion is greatly impaired usually only in the severe cases. Salt, water and

nitrogen excretion show some disturbance in even the very mild cases in which phenolsulphonephthalein excretion is normal, and there is no increased blood nitrogen. These dietary tests can not be used in all cases of chronic nephritis. They cannot be carried out in those that are very severe. The methods involving the determinations of the indices of excretion of urea and salt do not have a number of the difficulties met with in carrying out the dietary tests. These indices were determined in fifteen cases in which both dietary tests were carried out, and the indices seemed to give as much information as the other tests and to possess distinct advantages inasmuch as they can be determined for practically every patient and require considerably less time and less labor in their execution. According to the author the great advantage of all three of these tests is that they give information as to disturbed renal function in those mild cases in which phenolsulphonephthalein excretion is normal and the blood urea-nitrogen is not increased.

15. Experimental Hypercholesterolemia.—As a result of hypercholesterolemia Dewey states that gallstones may be formed in sterile bile without infection or injury of the gall-bladder. Their formation is preceded by desquamation of the epithelial cells, due to the irritating action of an excess of cholesterol. Cholesterol injected into the circulation of rabbits is not accumulated in the blood to any large degree, but is rapidly deposited in various organs, while the elimination of it through the bile and urine is also greatly increased. The focal infiltration of the kidney with cholesterol which occurs in hypercholesterolemia is accompanied by degenerative processes of the parenchymatous structures. The urine, as a rule, contains appreciable amounts of cholesterol.

16. Pharmacologic and Clinical Study of Papaverin.—The alkaloid papaverin Macht found exhibits certain very interesting pharmacologic properties. Chief among these are its effect on the heart and blood pressure, its action on the coronary circulation, its stimulating effect on the respiration, its relaxing and tonus-lowering influence on the smooth muscle structures, and its considerable analgesic power. These, together with its comparatively low toxicity, suggested its employment for therapeutic purposes. The clinical experiences described speak in its favor, and Macht suggests that further observations be made to determine its exact therapeutic value in medicine.

18. Use of "Karell Cure" in Treatment of Dropsies.—The diet which has served Goodman best and which he has employed successfully for some time is that known as the Karell diet, or the Karell cure. The technic of the Karell cure is simple and easily carried out. The patient receives daily at 8 a. m., 12 m., 4 p. m., and 8 p. m. 200 c.c. of raw or boiled milk, warm or cold, according to taste. No other food or liquid should be given. This strict diet many times meets with violent opposition from the patient, and great complaint is made because of thirst. Thirst is particularly tormenting during the first three or four days of the "cure," and often it becomes necessary to allow the patient to rinse out his mouth with water, instructing him to swallow none, however. Hunger is not so common a complaint, but when urgent, a small piece of dry toast or zwieback may be given with each portion of milk. During the first few days the patient requires continual encouragement to persist with the treatment, but the moral effect of the rapid loss of weight, as shown by daily weighings, together with the very evident decrease of the edema, prove sufficient argument to him, and no further complaint is heard. Just how long this very strict diet is to be continued depends on the rapidity with which edema diminishes and on the patient's plea for more food. Usually the diet may be increased at the end of a week's time by giving a soft-boiled egg, without salt or pepper, at 10 a. m., and a piece of zwieback at 6 p. m. The next day an egg may be given at 10 a. m. and at 2 p. m., with a piece of white bread, and from now on food is gradually increased until a full diet is being taken. During this time the daily quantum of liquid should not exceed 800 c.c., and this fluid should be in the form of milk, until the patient receives a full diet, when the milk may be discontinued and cocoa or tea substituted, the amount of liquid remaining the same,

however. No more than 800 c.c. of fluid should be taken for from two to four weeks after the disappearance of edema. During the "cure," which must be carried out with the patient in bed, the bowels must be kept open, and for this purpose laxatives in pill form are preferable to salines, merely because they require no water for their administration. In a typical case, that is, in those individuals who begin to lose weight through the loss of edema, and who show increased diuresis, no other medication is required, but in cases in which improvement is not seen at the end of three days, or when symptoms are urgent, such as dyspnea, oppression, restlessness, unduly frequent and weak pulse, or active uremic signs, the drugs and other measures usually indicated in such conditions should be used.

19. Reaction of Cerebrospinal Fluid.—The colorimetric method of determining the hydrogen ion concentration of the cerebrospinal fluid is recommended by Hurwitz and Tranter because it gives constant and reliable results. The method, when applied to cerebrospinal fluid, possesses greater accuracy than in the case of other biologic fluids, notably blood. The simplicity of the technic makes it applicable as a routine procedure in the examination of spinal fluids. As determined colorimetrically, normal cerebrospinal fluid is more alkaline than blood, the difference in the hydrogen ion concentration of the dialysates of the two fluids being equal to 0.45, the value of pH for cerebrospinal fluid being 8.11; value of pH for blood, 7.66. No alteration from the normal reaction has been noted either in the blood or in the fluid of patients suffering from primary or secondary syphilis or from syphilitic affections of the nervous system. Thus far no study has been made of the reaction of the cerebrospinal fluid in acute inflammatory conditions of the meninges. The demonstration that a change in reaction does or does not occur would have an important bearing on the value of hexamethylenamin as a therapeutic agent in the prophylaxis and treatment of meningeal infections.

23. Comparison of Metabolism of Men Flat in Bed and Sitting in Steamer Chair.—Four normal men and two cardiac patients were studied by the authors in the calorimeter lying flat in bed and in the semireclining position propped up with a back rest, or else in a comfortable steamer chair. A total of twenty-one experiments showed that the metabolism averaged 3 per cent. lower in the semireclining posture. One of the cardiacs, and possibly one of the normal controls, showed a slightly higher metabolism when propped up in bed. The difference between the results is so small that in the study of pathologic cases the authors can use the same figures for the average normal metabolism in both postures. In the majority of cases, however, the energy requirement is lower in the orthopneic position.

24. Metabolism of Boys of Twelve and Thirteen Compared with Metabolism at Other Ages.—Eight normal boys, 12 or 13 years old, were studied by Du Bois in the respiration calorimeter four to six hours after a small breakfast. They were allowed to read for one of the two experimental hours, but were very quiet. The methods of direct and indirect calorimetry agreed within 0.04 per cent. Their heat production per unit of surface area was 32 per cent. higher than the adult level according to Meeh's formula, or 25 per cent. higher according to the more accurate "Linear Formula." In studying the effect of growth on metabolism, interpretation of the results obtained on infants is complicated by the fact that babies differ greatly from adults in the proportions of the body and the relative size of the viscera, notably the liver and thyroid. Boys just before the onset of puberty have almost adult proportions. They are in the midst of a period of accelerated growth. The fact that the metabolism is high, points to a specific increase in the metabolism of the growing organism.

26. Metabolism in Exophthalmic Goiter.—The metabolism in exophthalmic goiter has been studied for the first time by Du Bois in a respiration apparatus which is also a calorimeter. Thirty-seven observations were made on eleven patients with this disease, and six experiments were made on a cretin. With some of the patients the nitrogen balance was also studied. The measurement of the heat production

gives the best index of the severity of the disease and of the effect of treatment. Very severe cases show an increase of 75 per cent. or more above the normal average, severe cases 50 per cent. or more, and moderately severe and mild cases less than 50 per cent., while a few mild and several atypical or cases in which operation has been performed may be within normal limits. In severe cases the warmth of skin and sweating can be accounted for entirely by the necessity for the increased elimination of heat. At least a part of the tachycardia is due to the increased metabolism, and perhaps it might be possible to reproduce the extreme tachycardia, the cardiac enlargement, emaciation and mental irritability if it were possible to stimulate the metabolism of normal men for twenty-four hours a day over a period of months or years. The specific dynamic action of protein and of glucose is within normal limits, and there is no consistent difference between the effects of protein in meat and an equal amount in milk and eggs. One patient was able to derive 89 per cent. of his calories from carbohydrate in an experiment when he was showing an alimentary glycosuria. The average water elimination through skin and lungs in the severe and moderately severe cases of hyperthyroidism is 39.9 gm. per hour. The increase above the normal is closely proportional to the increase in heat production; 25.7 per cent. of the calories are dissipated through vaporization in goiter patients, whereas the mean normal is almost the same, 23.9 per cent. The level of the heat production was used as an index of the effect of medical treatment. Rest in bed for a week or more caused a drop of more than 10 per cent. The effects of treatment with Beebe's serum, thyroid "residue," ergotin and quinin hydrobromate was less marked, each being tested on one patient. Ligation of the thyroid arteries with three out of the four patients studied caused a distinct rise in metabolism, the duration of which was uncertain. There is as yet no proof that any conservative form of treatment causes a greater reduction of metabolism than mental and physical rest.

27. Basal Metabolism in Pernicious Anemia.—Three mild cases of pernicious anemia showed very slight increase in the metabolism. In two severe cases the demand for oxygen was from 7 to 33 per cent. above the normal average. The basal metabolism of pernicious anemia is lower than that of leukemia, but, as a rule, higher than that of secondary anemia. The agreement between the direct and indirect calorimetry as well as the respiratory quotients indicates that the basal metabolism of pernicious anemia is qualitatively identical with the normal. Although the demand for oxygen may be increased, the compensatory processes in uncomplicated cases of pernicious anemia are capable of meeting the demand in spite of a greatly diminished hemoglobin content. There is some ground for the belief that the height of metabolism is a measure of the severity of the clinical pictures.

28. Basal Metabolism of Patients with Cardiac and Renal Disease.—Sixteen patients with cardiac and cardiorenal disease were studied by the author. The respiratory quotient in all cases was within normal limits (0.73 or above). Patients with compensated cardiac lesions or with mild nephritis showed no increase in the metabolism. Of twelve patients with dyspnea, nine showed a distinct rise in metabolism, and in five of these the increase was from 25 to 50 per cent. above the average normal. Two out of the five gave evidence of marked acidosis in the low content of carbon dioxide in the alveolar air. In two others, whose metabolism was just as high, there was no significant depression of the alveolar carbon dioxide.

29. Metabolism and Treatment in Diabetes.—Three patients with severe diabetes and three with moderate or mild diabetes were studied by Allen and Du Bois in the respiration calorimeter. The effects of the oatmeal treatment and the fasting treatment were followed in detail. No special influence of oatmeal in diabetes or special readiness of oxidation of this form of carbohydrate was demonstrable in these experiments. The occurrence of "total" diabetes in human patients, with dextrose-nitrogen ratios approximating 3.65 to 1 and corresponding respiratory quotients, is shown. Not-

withstanding the extreme severity, neither the sugar excretion nor the gaseous exchange gives ground for assuming the formation of sugar from fat in any instance. Even in the severest type of diabetes the active symptoms may be eliminated completely by prolonged fasting. The observations in the respiration calorimeter prove that patients as a result of the fasting acquire the power of oxidizing sugar derived first from their own body protein and later from the protein and carbohydrate of a carefully regulated diet. The respiratory quotients during fasting and after the glycosuria had ceased were in some such instances higher than can easily be explained by the oxidation of the materials supposedly available. Also the ingestion of alcohol was sometimes followed by respiratory quotients higher than would theoretically be expected. The specific dynamic action of food, especially fat, was apparently normal in a patient with moderately severe diabetes. The results of two respiration experiments in a severely diabetic patient have shown that mild exercise slightly raises the quotient, and this suggests the possibility that exercise may improve carbohydrate utilization. Generalizations or positive conclusions from these experiments are not attempted.

Boston Medical and Surgical Journal

June 22, CLXXIV, No. 25, pp. 891-924

- 30 Movements in Medicine. D. L. Edsall, Boston.
- 31 Respiratory Exchange, Respiration Apparatus for Clinical Use. (To be concluded.) F. G. Benedict and E. H. Tompkins, Boston.
- 32 Cholecystostomy vs. Cholecystectomy. F. B. Lund, Boston.
- 33 Case of Sacro-Iliac Strain Following Symphysiotomy. C. F. Painter, Boston.

Bulletin of Johns Hopkins Hospital, Baltimore

June, XXVII, No. 304, pp. 157-192

- 34 *Thorium for Pyelography. J. E. Burns, Baltimore.
- 35 *Statistical Study of Six Hundred and Thirty-Five Labors With Occiput Posterior. E. D. Plass, Baltimore.
- 36 Letter of Edward Jenner Containing Brief Account of His Discovery of Vaccination. C. M. McBryde, Washington, D. C.
- 37 Sixty-Four Cases of Epilepsy in Patients From Fourteen Years to Forty Years of Age. L. R. Waters, Baltimore.
- 38 Severe Anemia With Eosinophilia. A. F. Beifeld and M. E. Barnes, Chicago.
- 39 Possible Role of Books in Dissemination of Contagious Diseases. C. A. Laubach, Baltimore.

34. Thorium for Pyelography.—Burns is emphatically of the opinion that thorium solution fulfils all the conditions necessary for an ideal pyelographic medium. Clinically, there has never been the slightest evidence of toxicity in a series of 125 cases, the amounts used in a single case varying from a few cubic centimeters to almost a liter. This alone, Burns says, is proof of its nontoxicity. Experimentally, although in a few instances death has followed the injection of large doses into the peritoneal cavity and tissues of animals, larger doses intraperitoneally and intravenously have produced no ill effects. That the solution is nonirritating is shown by the absence of urinary symptoms after its use, and the absolute lack of any such evidence cystoscopically, and at operation. The pyelograms and cystograms made with this solution show a splendid shadow which possesses an unusual clearness of delineation. The solution is clear and watery, therefore it possesses a great degree of fluidity, permitting its ready elimination from the urinary tract. It is perfectly clean and does not stain the linen. In this particular it possesses another marked advantage over other solutions, particularly those of the silver salts. It is quite inexpensive, being about one third as costly as collargol.

35. Occiput Posterior in Labor.—Plass analyzed 5,770 cases, representing 5,801 children. There were 635 cases of occiput posterior among 5,488 vertex presentations, an incidence of 11.57 per cent. (right 7.96 per cent., left 3.3 per cent.). These figures are considerably lower than those usually given. The discrepancy is explained by the fact that the majority of the patients applied for admission only when labor was well advanced, and after a certain amount of internal rotation had taken place. Rotation of the occiput into the hollow of the sacrum occurred in 14 per cent. of the cases. Premature rupture of the membranes was not especially frequent when the occiput was posterior. Spon-

taneous delivery was the usual outcome. The total operative incidence was 22.9 per cent., but in only 11.02 per cent. was the position possibly accountable for the need for intervention. There was no increased infant mortality because of the posterior position. Labor was not prolonged, independently of whether the occiput rotated to the symphysis or into the hollow of the sacrum. A contracted pelvis did not increase the incidence of the posterior positions. There was no additional maternal morbidity or mortality.

Colorado Medicine, Denver

June, XIII, No. 6, pp. 167-198

- 40 Surgical After-Treatment. W. W. Grant, Denver.
- 41 *Use of Heat in Control of Inoperable Cancer. C. E. Tennant, Denver.
- 42 Deep Roentgen Therapy of Benign and Inoperable Malignant Conditions by Improved Technic. L. G. Crosby, Denver.
- 43 Intratracheal Insufflation of Ether. K. F. Roehrig, Denver.
- 44 Traumatic Rupture of Pancreas; Report of Case. C. B. Dyde, Greeley

41. **Heat in Inoperable Cancer.**—Experiments made on large masses of beef led Tennant to believe that the d'Arsonval current is a very potent and serviceable means of obtaining the same or even better results than by Percy's method in tumor masses located in some of the more inaccessible portions of the body. In every test made, the d'Arsonval current raised the average temperature of a given mass 24 F. higher than the Percy cautery irons did, in just one half the time consumed by the latter.

Georgia Medical Association Journal, Augusta

June, VI, No. 2, pp. 17-39

- 45 By Example as Well as by Precept. E. R. Park, Atlanta.
- 46 Plea for Regulating Advertising and Sale of Patent Medicines. J. O. Elrod, Forsyth.
- 47 How We Expect Ellis Public Health Bill to Benefit Floyd County. M. M. McCord, Rome.
- 48 Management of Diphtheria Epidemics. E. E. Murphey, Augusta.
- 49 Diagnosis of Gastric Ulcer and Carcinoma by Roentgen Ray. W. A. Cole, Savannah.

Illinois Medical Journal, Chicago

June, XXIX, No. 6, pp. 401-472

- 50 Physician and Public Health. C. W. Lillie, East St. Louis.
- 51 Medical Mechanism for War in United States. W. B. Banister, Chicago.
- 52 Recurrence of Symptoms After Operation for Gallstone Disease. J. B. Deaver, Philadelphia.
- 53 Study of Physiomechanical Function of Faucial Tonsil. E. L. Kenyon and W. T. Kradwell, Chicago.
- 54 Military Surgery—What Is it? G. M. Blech, Chicago.
- 55 Toxic Delirium and Its Management. H. D. Singer, Kankakee.
- 56 Diagnosis of Sterility. V. D. Lespinasse, Chicago.
- 57 Schick Reaction, Its Practical Value. A. Sprenger, Peoria.
- 58 Diagnosis and Treatment of Tuberculosis of Third Cervical Vertebra. J. Ridlon, Chicago.
- 59 Treatment of Obesity by Electrotherapy. E. A. Miller, Chicago.

Journal of Abnormal Psychology, Boston

April-May, XI, No. 1, pp. 1-72

- 60 Subconscious Settings of Ideas in Relation to Pathology of Psychoneuroses. M. Prince.
- 61 Obsessions of Normal Minds. C. S. Berry, Ann Arbor, Mich.
- 62 Psychopathology of Everyday Life. M. Solomon, Chicago.
- 63 Apparent Inversion of Time in Dreams. L. H. Horton.

Journal of Biological Chemistry, Baltimore

June, XXV, No. 2, pp. 177-350

- 64 Quantitative Determination of Total Protein and Nonprotein Substances of Muscle. N. W. Janney, New York.
- 65 Protein Content of Muscle. N. W. Janney, New York.
- 66 Partition of Phosphorus in Thymus Nucleic Acid. H. C. Germann, Baltimore.
- 67 Determination of Creatin in Muscle. L. Baumann and T. Ingvaldsen, Iowa City, Iowa.
- 68 Is Autolysis an Autocatalytic Phenomenon? H. C. Bradley, Madison, Wis.
- 69 *New Salt (Zinc Urate) of Uric Acid and Its Application to Analysis of Uric Acid and Phenol. J. L. Morris, St. Louis.
- 70 *Chemical and Physical Analysis of Blood in Thirty Normal Cases. A. O. Gettler and W. Baker, New York.
- 71 Tetany of Parathyroidectomized Dogs. I. Greenwald, New York.
- 72 Formation of Specific Proteolytic Ferments in Response to Introduction of Placenta. F. Hulton, Philadelphia.
- 73 Colorimetric Method for Estimation of Free Formaldehyd and Hexamethylenamin. R. J. Collins and P. J. Hanzlik, Cleveland.
- 74 Nutritive Deficiencies of Wheat and Grain Mixtures and Pathologic Conditions Produced in Swine by Their Use. E. B. Hart, W. S. Miller and E. V. McCollum, Madison, Wis.

- 75 Studies of Autolysis. Effect of Reaction on Liver Autolysis. H. C. Bradley and J. Taylor, Madison, Wis.
- 76 Studies in Bence-Jones Proteinuria. A. E. Taylor and C. W. Miller, Philadelphia.
- 77 Urease Content of Certain Beans, With Special Reference to Jack Bean. J. G. Mateer and E. K. Marshall, Jr., Baltimore.
- 78 *Nutrition Investigations on Cottonseed Meal. A. E. Richardson and H. S. Green, Austin, Texas.
- 79 Ninhydrin Reaction With Amino-Acids and Ammonium Salts. V. J. Harding and F. H. S. Warnford, Montreal.
- 80 Ninhydrin Reaction With Amins and Amids. V. J. Harding and R. M. MacLean, Montreal.

69. **New Salt (Zinc Urate) of Uric Acid.**—Since the separation of the zinc urate is very complete and practically instantaneous even from solutions of low concentration of uric acid, and room temperature serves equally as well as higher temperatures, it has seemed probable to Morris that the precipitation may prove useful in determining uric acid in urine and blood. This is now being investigated by him.

70. **Analysis of Human Blood.**—The blood of thirty normal individuals (males and females of ages ranging from 17 to 60) was analyzed by Gettler and Baker for the various chemical constituents and physical constants, using the modern micromethods, thus giving a fairly complete picture of blood in health. Twenty-eight determinations were made on each sample, requiring in all only 70 c.c. of blood. Among the values found, the following are especially mentioned: (a) the values for nonprotein nitrogen tend toward a higher level (30 to 45 mg.) than those given by previous workers; (b) the normal range of urea nitrogen should also be considered higher (15 to 25 mg.) than previously reported by many workers; (c) uric acid may reach as high as 3.0 mg. in 100 c.c. of blood in many normal individuals; (d) surprisingly low figures were consistently obtained for creatin (0.1 mg. or less in 100 c.c. of blood). Any value above 1.0 mg. should be considered as possibly indicating a pathologic condition; (e) cholesterol values of normal blood were obtained with a microcolorimetric method.

78. **Nutrition Investigations on Cottonseed Meal.**—Briefly, the authors' results indicate that cottonseed meal does not contain sufficient minerals for growth, is not actively toxic, contains efficient protein and perhaps fat soluble growth promoting substances, similar to those of butter fat, but in less adequate quantities.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

June, VIII, No. 6, pp. 273-337

- 81 *Influence of Salicylate on Metabolism in Man. W. Denis and J. H. Means, Boston.
- 82 *Explanation of Laxative Action of White Mustard Seed. E. C. van Leersum.
- 83 Reactions of Blood Vessels to Certain Chemicals. I. Adler, New York.
- 84 *Action of Atropin Sulphate on Isolated Stomach and Bowel of Dog. E. Zunz and J. Tysebaert.

81. **Influence of Salicylate on Metabolism.**—The results obtained in a study of three men on whom Denis and Means made observations concerning the effects produced by the ingestion of sodium salicylate on the urine, feces, blood and on the respiratory exchange. In the case of two normal men the administration of large doses of sodium salicylate (up to 6.6 gm. per day) produced an increase in the excretion of nitrogen, phosphates and uric acid. In one case, this increased nitrogenous metabolism was accompanied by an increase in the basal metabolism and symptoms of salicylate intoxication (such as ringing in the ears). In the other case, a much greater increase in the urinary excretion of nitrogen (which extended throughout the after period) was observed but there was no increase in the basal metabolism and no symptoms of intoxication. In one mildly septic individual results similar to those secured with the second normal man were obtained. No change in the respiratory quotient occurred in any of these subjects.

82. **Laxative Action of White Mustard Seed.**—Van Leersum shows that this is due to the formation of hydrogen sulphid from the white mustard seed.

84. **Action of Atropin Sulphate on Stomach and Bowel.**—The experiments made by Zunz and Tysebaert showed that the stomach and intestine of the dog isolated half an hour

after a hypodermic injection of 1 mg. atropin per kilo only contract weakly and with diminishing strength. The tone falls rapidly. The same is true for the stomach. These effects persist as a general rule for five or six hours or longer, at any rate in the intestine. The same depressant action may be obtained after 0.1 mg. or 0.005 mg., while after 0.001 mg. the movement is normal though the tone falls rapidly. The production of the substance which excites movement and the reaction of the intestine to this substance did not seem to be influenced by the previous injection of atropin. The extract of the stomach or of the intestine has no influence on the contraction or tonus of the isolated stomach.

Kentucky Medical Journal, Bowling Green

June, XIV, No. 6, pp. 291-354

- 85 General Plan for Schedule of Medical Fees. J. N. McCormack, Bowling Green.
- 86 Surgery in Mountains of Kentucky. M. C. Kash, Salyersville.
- 87 Courteous Physician. W. B. Salen, Stamping Ground.
- 88 Anaphylaxis. W. R. Thompson, Mt. Sterling.
- 89 Local Anesthesia. C. C. Howard, Glasgow.
- 90 Influenza; Etiology and Pathology. R. T. Hocker, Arlington.
- 91 Symptoms and Diagnosis of Influenza. J. F. Dunn, Arlington.
- 92 Complications and Sequelae of Influenza. T. J. Marshall, Bardwell.
- 93 Treatment of Influenza. W. Z. Jackson, Arlington.
- 94 Breast Tumors. J. B. Lukins, Louisville.
- 95 Present Status of Diagnosis and Surgical Treatment of Gastric and Duodenal Ulcers. J. R. Wathen, Louisville.
- 96 Nuclein. W. Sanders, Louisville.
- 97 Medical Inspection of Schoolchildren. C. J. Rosenham, Louisville.
- 98 Active and Passive Immunization; Essential Difference Between Vaccine and Serum Therapy. J. D. Allen, Louisville.
- 99 Abscess of Mesentery With Gangrene of Small Intestine. E. S. Allen, Louisville.
- 100 Treatment of Syphilis; Report of Cases. C. W. Jefferson, Louisville.
- 101 Case of Bacillus Aerogenes Capsulatus Infection With Recovery. G. H. Day, Louisville.
- 102 Country Obstetrics. R. N. Filiatreau, Sorgho.
- 103 Postoperative Ileus. A. H. Barkley, Lexington.
- 104 Resection of Stomach for Calloused, Saddle Ulcer of Lesser Curvature. I. Abell, Louisville.
- 105 Contagion and How To Combat It. J. W. Crenshaw, Cadiz.
- 106 Therapeutic Measures Other Than Drugs. C. Pope, Louisville.
- 107 Treatment of Carbuncle. D. W. Gaddie, Hodgenville.

Medical Record, New York

June 17, LXXXIX, No. 25, pp. 1071-1126

- 108 Some of Larger Problems of Medical Profession. R. Blue, Washington, D. C.
- 109 Nauheim Method. S. Baruch, New York.
- 110 Scheme of State Control for Dependent Infants. H. D. Chapin, New York.
- 111 Case of Angioma of Larynx. E. Mayer, New York.
- 112 Four Cases of Duodenal Ulcer, Mistaken for Chronic Appendicitis. R. Lewisohn, New York.
- 113 Dyspnea: Brief Review of Its Occurrence and Significance. J. W. Smith, Jr., Brooklyn.

June 24, No. 26, pp. 1127-1176

- 114 What Is Position Today as to Value of Blood and Cerebrospinal Fluid Examinations in Diagnosis of Syphilis of Nervous System? E. D. Fisher, New York.
- 115 Medical Treatment of Gastric and Duodenal Ulcer. F. B. Turck, New York.
- 116 Fermented Milk in Infant Feeding. A. E. Mucklow, Brooklyn.
- 117 Fetal Dystocia and Cesarean Section. H. Grad, New York.
- 118 Vomiting in Infancy. J. Epstein, New York.
- 119 Methods and Mydriatics in Refraction. E. A. Pond, Brooklyn.

Military Surgeon, Washington, D. C.

June, XXXVIII, No. 6, pp. 601-718

- 120 Operations for Craniocerebral Wounds of Modern Warfare. H. Cushing, Boston.
- 121 Sanitary Problems of Trench Warfare. F. R. Keefer, U. S. Army.
- 122 Base Hospital Work in Russia. H. H. Snively, N. G. Ohio.
- 123 Relation of United States Public Health Service to First Aid. W. C. Rucker, Washington, D. C.
- 124 Proper Functions of Medical Department in Relation to General Staff Work. E. L. Munson, Washington, D. C.
- 125 Occurrence of Hydrophobia in Foxes of Alaska. T. L. Ferenbaugh, U. S. Army.
- 126 New Field Belt for Medical Officers. R. B. Miller, U. S. Army.

Modern Hospital, St. Louis

June, VI, No. 6, pp. 393-472

- 127 Convalescent Field—Its New and Changing Border Lines. F. Brush, New York.
- 128 Heating Systems for Hospitals of Various Sizes. F. Sutton, New York.

- 129 New Wesley Hospital, Kansas City, Mo. L. B. Simpson and R. E. Castelow, Kansas City, Mo.
- 130 Some Glaring Faults in Hospital Construction. C. F. Neergaard, Brooklyn.
- 131 Municipal Receiving Hospital for Detroit. J. Scott, Detroit.
- 132 Small Community Hospital—Its Creation. (To be continued.) J. A. Hornsby, Chicago.
- 133 Compulsory State Wide Health Insurance and Its Relation to Medical Service. E. R. Hayhurst, Columbus.
- 134 Boiler and Engine Room Economics. O. E. Goldschmidt, New York.
- 135 Vast Welfare Activities Under Way. L. A. Coolidge.

New Orleans Medical and Surgical Journal

June, LXVIII, No. 12, pp. 765-824

- 136 Centrifuge Concentration of Malaria Plasmodia for Diagnostic Purposes. F. M. Johns, New Orleans.
- 137 Intracapsular Fractures of Femur. J. T. Nix, Jr., New Orleans.
- 138 Control of Diphtheria in Public Schools and Cultural Survey of Newcomb College. E. Moss, New Orleans.
- 139 Cultural Survey of Tulane University. W. A. Love, New Orleans.
- 140 Clinical Aspects of Diphtheria. R. C. Lynch, New Orleans.
- 141 Acidosis. O. W. Cosby, Monroe.
- 142 Causes and Treatment of Dyspnea in Circulatory Disease. J. T. Halsey, New Orleans.
- 143 Cases of Pneumococcus Arthritis and Very Unusual Type of Bronchopneumonia. A. L. Levin, New Orleans.
- 144 Abdominal Pain, Especially When Associated With Abnormal Temperature, Indication for Caution in Use of Purgatives. J. Smyth, New Orleans.

New York Medical Journal

June 24, CIII, No. 26, 1209-1248

- 145 Value of Autoserum Injections in Skin Diseases. W. S. Gottheil, New York.
- 146 Tracheobronchial Syphilis. H. Arrowsmith, New York.
- 147 Nephritis in Aged. I. L. Nascher, New York.
- 148 Nonsurgical Treatment of Colonic Stasis. G. H. Evans, San Francisco.
- 149 Notes From First Surgical Division of Sea View Hospital. A. Nicoll and M. J. Horan, New York.
- 150 Case of Adenocarcinoma of Colon. S. R. Crothers and R. Kilduffe, Jr., Chester, Pa.
- 151 Plea for Male Nurses. P. S. Stout, Philadelphia.
- 152 Pathologic Conditions in Hematuria and Pyuria. A. S. Sanders, New York.

Northwest Medicine, Seattle, Wash.

June, XV, No. 6, pp. 183-216

- 153 Some Late Manifestations of Syphilis as Shown by Clinical Observation or Wassermann Tests. G. S. Whiteside, Portland, Ore.
- 154 Some Indefinite Nervous Conditions Due to Latent Syphilis of Brain or Cord. G. Baar, Portland, Ore.
- 155 Improper Management of Ordinary Acute Case of Gonorrhea and Review of Few Practical Points in Diagnosis and Therapeutics, Important but Commonly Neglected. F. L. Ashton, Seattle.
- 156 Nonspecific Posterior Urethritis Factor in Urinary Diagnosis and Treatment. H. W. Howard, Portland, Ore.
- 157 Infection of Urinary Tract With Colon Bacillus and Treatment of Condition. A. C. Behle, Salt Lake City.
- 158 Modern Cystoscope. L. Thompson, Hot Springs, Ark.
- 159 Rules Governing Commitment of Persons to State Mental Hospital. D. H. Calder, Provo, Utah.
- 160 Pathology of Insanity. J. W. Givens, Orofino, Ida.
- 161 Attitude of Hospitals in Operations on Unruptured Ectopic Pregnancy. B. H. Foreman, Tacoma, Wash.

Ohio State Medical Journal, Columbus

June, XII, No. 6, pp. 377-472

- 162 Restoration of Vision in Amblyopic Eyes by Intensive Methods. I. G. Clark, Columbus.
- 163 Comment on Methods. C. F. Clark, Columbus.
- 164 Question of Curability and Duration of Treatment in Syphilis. L. A. Levison, Toledo.
- 165 Extra-Uterine Pregnancy. F. F. Lawrence, Columbus.
- 166 Problem of Delinquency. A. F. Shepherd, Columbus.
- 167 Military Medicine or "Medical Preparedness." W. S. Keller, Cincinnati.
- 168 Case of Pellagra. T. H. Infield, Zanesville.
- 169 Pelvic Rest, Designed By. D. V. Courtright, Circleville.

Oklahoma State Medical Association Journal, Muskogee

June, IX, No. 6, pp. 137-184

- 170 Hospitals. J. S. Hartford, Oklahoma City.
- 171 Physician—Some of His Duties and Responsibilities. J. S. Fulton, Atoka.
- 172 Value of Healthy Childhood. C. Puckett, Pryor.
- 173 Oklahoma Workmen's Compensation Law. A. A. McDonald, Oklahoma City.

Tennessee State Medical Association Journal, Nashville

June, IX, No. 2, pp. 69-110

- 174 *What Results Have Newer Tests for Kidney Function Brought Internist? J. B. McElroy, Memphis.
- 175 Treatment of Syphilis. P. Bromberg, Nashville.

- 176 Public Health Situation as Portrayed by Mortality Records. H. H. Shoulders, Nashville.
- 177 *Simplified Technic in Application of Schick's Reaction for Testing Immunity to Diphtheria. W. Litterer, Nashville.

174 and 177. Abstracted in THE JOURNAL, April 22, pp. 1347 and 1349.

Texas State Journal of Medicine, Fort Worth

June, XII, No. 2, pp. 55-120

- 178 Mental Health. G. H. Moody, San Antonio.

West Virginia Medical Journal, Huntington

June, X, No. 12, pp. 339-434

- 179 Some Medical Problems and Remedy. A. P. Butt, Davis.
- 180 Accessory Sinusitis. E. D. Wells, Hinton.
- 181 Report of Medical Inspection in West Virginia State Schools. H. B. Jones, Glendale.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

June, XXI, No. 1, pp. 1-40

- 1 Roentgenography in Diagnosis of Diseases of Accessory Nasal Sinuses. H. M. Berry.
- 2 Movements of Foreign Bodies in Brain. G. Vilvandr  and J. D. Morgan.

British Journal of Children's Diseases, London

June, XIII, No. 150, pp. 161-192

- 3 Fainting Attacks in Children. R. Hutchison.
- 4 Case of Epidemic Catarrhal Jaundice; Meningism; Death. J. A. Procter and G. Ward.
- 5 *Two Cases of Intestinal Obstruction in Children. T. J. Wood.

5. Intestinal Obstruction in Children.—One of the cases cited by Wood was a tuberculous tumor of the mesentery and intestine; the other was a case of cyst of the mesentery causing volvulus.

British Medical Journal, London

June 3, I, No. 2892, pp. 777-808

- 6 Influence of Antiseptics on Activities of Leukocytes and on Healing of Wounds. C. J. Bond.
- 7 Soldier's Foot and Treatment of Common Deformities of Foot. R. Jones.
- 8 *Louse Problem at Western Front. A. D. Peacock.
- 9 Pediculus Humanus (Vestimenti) and Pediculus Capitis. A. Bacot.
- 10 *Best Methods of Destroying Lice and Other Body Vermin. J. P. Kinloch.
- 11 Treatment of Infected Wounds by Physiologic Methods. A. E. Wright.

8. Method of Killing Lice.—The best killing agent for lice, Peacock says, is a mixture consisting of naphthalene 96 per cent., creosote 2 per cent., and iodoform 2 per cent.

10. Destruction of Lice and Other Body Vermin.—According to Kinloch the efficiency of naphthalene, creosote and iodoform mixture would not suffer in any material degree if magnesium silicate were substituted for iodoform, and because of the high price of iodoform such a substitution is of great advantage. In a series of experiments powders were prepared, with magnesium silicate as a basis, and containing various actively insecticidal liquids, such as trichlorethylene and creosote, and were compared with powders containing similar liquids, but with naphthalene as the basis. In every case the greater efficiency of naphthalene as a basis for the powders was substantiated. Experiments were also made for the purpose of ascertaining whether the creosote could be advantageously replaced by another insecticide. These experiments showed that when all conditions are taken into account, creosote is the most valuable of the actively insecticidal liquids for admixture with naphthalene in an insecticidal powder.

Glasgow Medical Journal

June, LXXXV, No. 6, pp. 377-436

- 12 Etiology and Treatment of Gastric Ulcer. (To be continued.) H. Morton.
- 13 *Rupture of Pregnant Diverticulum of Uterus. A. N. McLellan.
- 14 Eight Hundred Cases of Anesthesia With Vernon Harcourt Chloroform Inhaler. H. P. Fairlie.

13. Rupture of Pregnant Diverticulum of Uterus.—In the case cited by McLellan the pregnant sac was perfectly smooth and uniform on its surface, except at one point, where it was united by a thick, fleshy pedicle to the lower part of the body of the uterus in front. It had no attachment to tube or ovary and an apparently normal uterus, with normal adnexa, lay behind it. McLellan, therefore, came to the conclusion that he was dealing with a pregnancy in a diverticulum of the uterus. The patient, 23 years of age, was admitted to the infirmary in a state of collapse. For over five months before the date of admission her menstrual periods had been in abeyance, and she believed herself to be pregnant. For fourteen days before admission she had felt occasional sharp pains in the left iliac region. On the evening of the day of admission she was seized with a sudden severe pain in the left side, as if she had received a blow; this was followed by collapse. No detailed examination was made on account of the patient's precarious condition; but the outlines of a fetus could easily be made out lying immediately beneath the anterior abdominal wall. An hour later the abdomen was opened by a subumbilical median incision. Its cavity was full of blood, partly fluid, partly clotted; and a fetus of about six months could be felt lying free in it. The cord was ligatured and the fetus removed. After the blood had been mopped up the cord was traced to the placenta, which projected to the extent of half its volume from a muscular sac. Posteriorly, and near its lower border, the sac was attached by a fleshy pedicle, about the thickness of the thumb, to the front of the uterus a little above the level of the bladder. The pedicle was tied and the sac was removed. A slightly enlarged and softened uterus, with normally situated tubes and ovaries was then revealed. There was no indication of a duplex or bicornuate condition of the uterus. The patient made an easy recovery.

Journal of Laryngology, Rhinology and Otology, London

June, XXXI, No. 6, pp. 225-272

- 15 Dacryocystorhinostomy; Its Indications and After-Treatment. J. B. Horgan.
- 16 Atrophic Rhinitis (Ozena) and Tuberculosis. J. Mackeith.
- 17 Reports for Year 1915 From Ear and Throat Department of Royal Infirmary, Edinburgh. A. L. Turner.

Journal of Tropical Medicine and Hygiene, London

June 1, XIX, No. 11, pp. 129-140

- 18 Experiments on Polyneuritis in Pigeons. A. Breinl.
- 19 Ankylostomiasis; Diagnosis and Treatment. R. D. Keith.

Lancet, London

June 3, I, No. 4840, pp. 1111-1156

- 20 Typhus in Serbia. (To be continued.) R. O. Moon.
- 21 Case of Acute Diabetes. W. G. Smith.
- 22 *Treatment of Septic Wounds, With Special Reference to Use of Salicylic Acid. L. G. Anderson, H. Chambers and M. Lacey.
- 23 Ill-Treatment of Genital Prolapse. W. E. Fothergill.
- 24 Factor in Treatment of Head Injuries and Allied Conditions. T. E. Harwood.
- 25 Spinal Anesthesia. S. B. Gadgil.
- 26 *Function of Medullary Nerve Sheath. C. E. H. Milner.
- 27 Rupture of Bladder Due to Retroverted Gravid Uterus. J. E. G. Calverley.
- 28 Anesthetization of Two Cases of Patent Ductus Arteriosus. H. R. Phillips.
- 29 Cockroach; Its Destruction and Dispersal. J. J. H. Holt.
- June 10, No. 4841, pp. 1157-1202
- 30 Typhus in Serbia. R. O. Moon.
- 31 Cases of Intestinal Disorders Arising From Protozoal Infection. B. R. G. Russell.
- 32 Cases of Lambli  Intestinalis Infections From Gallipoli. A. M. Kennedy and D. D. Rosewarne.
- 33 Nature and Distribution of Parasites Observed in Stools of One Thousand Three Hundred and Five Dysenteric Patients. H. B. Fantham.
- 34 Cysts of Giardia (Lambli ) Intestinalis in Human Dysenteric Feces. A. Porter.
- 35 Spinal Anesthesia. H. M. Page.
- 36 Treatment of Anaphylaxis. A. S. Leyton and H. G. Leyton.
- 37 Prevention of Fly Breeding in Horse-Manure. S. M. Copeman.

22. Septic Wounds Treated With Salicylic Acid.—The conclusions drawn by the authors from their observation of 1,000 cases are: 1. The bactericidal action of many of the so-called antiseptics when applied to septic wounds is negligible. 2. The majority of wounds heal without the applica-

tion of an antiseptic, provided free drainage is supplied and dressings are changed frequently. Hypertonic saline, in so far as it aids physiologic processes, is preferable to many so-called antiseptics. 3. A strong antiseptic can sterilize the surface of a wound with which it comes in contact, and, if applied continuously, gives excellent results. 4. Salicylic acid applied in a suitable form can often save cases when other methods have failed. It is particularly useful when dressings cannot be repeated at frequent intervals. The method has been to keep a saturated solution of salicylic acid in alcohol and to add a little of this to the last funnelful of saline solution with which the wound is irrigated in a proportion of 2 to 3 drams to a pint. If applied in this way suspended in saline solution the crystals can be deposited over the surface and reach every part of the wound. They pass into solution slowly and exert a continuous bactericidal action. This method has the advantage that drainage tubes can be used and free exit for discharge maintained. Dusting the wound with the dry powder has the disadvantage that the crystals float and do not reach deep crevices. If the crystalline deposit reaches all parts of the wound in cases in which exudation is being discharged an immediate diminution occurs in the number of living bacteria on the surface of the wound. A thick paste of salicylic acid in sterile saline (1 gm. acid, 9 c.c. saline) has been used for the cut surfaces of long bones in septic amputations. In some cases the stumps have healed by first intention. In others slight sepsis occurred in the muscular flaps. In every case no infection of the bone marrow occurred.

26. **Function of Medullary Nerve Sheath.**—Apart from its action as a protective buffer against injury to the nerve fibers, there has always existed some doubt as to the function of the medullary nerve sheath, and physiologists have from time to time held different views. The fact that in two cases of nerve trauma there was in one a loss of voluntary physiologic excitability in a muscle without loss of faradic reaction and in the other a return of voluntary physiologic excitability without return of faradic reaction, leads Milner to believe that the medullary sheath acts as a conductor for the electric current; while its existence is unnecessary for the transmission of physiologic impulses, which are dependent solely on the continuity of the axis cylinders. In a case quoted of division of the spinal accessory nerve, it was noted that the physiologic impulse failed from the outset to reach its destination, whereas the electric impulse persisted until the eighth day.

Medical Journal of Australia, Sydney

May 13, I, No. 20, pp. 393-410

- 38 Temperament. R. T. Michell.
39 Cyst of Pancreas; Resection of Body and Tail; Recovery. E. Meyer.

Bulletin de l'Académie de Médecine, Paris

May 23, LXXV, No. 21, pp. 607-646

- 40 *Inherited Syphilis Predisposes to Intestinal Diseases. (L'intestin des hérédo-syphilitiques.) Gaucher.
41 *Association of Colors With Certain Figures and Words. (De l'encéphalopsie chromatique.) R. Blanchard.
42 *Transplantation of Cartilage in Surgical Repair. H. Morestin.
43 Cerebrospinal Meningitis; Fifty-Six Cases. Rubinrot.

40. **Inherited Syphilis as Predisposing to Intestinal Disease.**—Gaucher's thirty years of experience have convinced him that the enterocolitis of young infants is particularly frequent on a basis of inherited syphilis. No one thinks of syphilis as being responsible for the persisting bowel trouble in the young infant; the food is incriminated, and one change made after the other, all to no avail. He says that these are the children that develop appendicitis later, and that Segond told him, a few weeks before his death, that he had found signs of syphilis in all his operative cases of appendicitis, confirming Gaucher's statement in 1904 in regard to the syphilitic origin of appendicitis. In any event, he declares, treatment for the syphilis should be commenced at once, to supplement the usual measures.

41. **Association of Colors with Figures and Words.**—Blanchard devotes twenty-five pages to a comprehensive

study of what he calls "chromatic encephalopsia," with bibliography. His attention was attracted to the subject by two cases personally observed. The two young women had the internal perception of certain colors, one when she heard, read or thought of certain figures; the phenomenon occurred with the days of the week in the other case. In both it dated from childhood, but it finally gradually subsided in the first case but persists unmodified in the other. He compares with these the various cases of psycho-chromesthesia on record, and emphasizes that the phenomena are all in the psychologic sphere. They are exceptional, but not abnormal in the pathologic sense of the word.

42. **Cartilage Flaps for Surgical Repair.**—Morestin expatiates on the various advantages of a cartilage transplant for repairing a breach in the skull, repairing the orbit, lower jaw and other joints where a stiff and durable substance is required. He has found the costal cartilages best adapted for the purpose, especially the sixth, seventh and eighth costal cartilages from the same or another person. He fills the breach with scraps of cartilage or the cartilage entire, sometimes leaving arms to project beyond. No suturing is required; the suturing of the soft parts above holds all in place. The perichondrium surface is turned inward as this side is apt to curve. The fragments blend and grow together and grow solidly to the adjoining tissues. By the end of a few days the gap is thus filled with a solid mass, and the skull or other bone seems regular and solid. Morestin thinks that the cartilage persists as such, as he has seen no evidence of ossification. His experience in the repair of war wounds has confirmed his assertions during the last two years that cartilage is the easiest of all tissues to transplant, and the best of all for purposes of repair where a light skeleton is sufficient.

Paris Médical

May 27, VI, No. 22, pp. 489-504

- 44 *Vaccination Against Typhoid in the Japanese Army. M. Yagisawa.
45 Devices for Working Appliances After Amputation of the Hand. (Mains de travail pour les amputés.) Boureau.
46 Trophic Disturbances in the Fingers Consecutive to Superficial Shell Wounds. A. Mouchet and P. Delpech.
47 *Acute Meningitis During Course of Acute Articular Rheumatism: Cerebral Rheumatism. (Contribution à l'étude du rhumatisme cérébral.) J. Colombe.

June 3, No. 23, pp. 505-548

- 48 Modifications of the Psychomotor and Emotional Reactions After Trephining. (Les réactions psychomotrices et émotives des trépanés.) J. Camus and Nepper.
49 *Alcohol Blocking of Nerve to Arrest Muscular Contracture. (L'alcoolisation tronculaire au cours des acromyotonies rebelles du membre supérieur.) J.-A. Sicard.
50 Cortical Anesthesia After Injury of the Skull. (Les anesthésies corticales à topographie atypique dans les traumatismes crâniens.) M. Villaret and M. F. Beaulieu.
51 Disturbance in Equilibration After Concussion of the Brain. (Les troubles de l'équilibre dans les commotions crâniennes.) Cestan, P. Descomps and R. Sauvage.
52 Traumatic Hysteria Persisting for Fifteen Years. (Cas d'hystéro-traumatisme revu 15 ans après les accidents initiaux.) P. Chavigny and L. Spillmann.
53 Hemianopsia of Cortical Origin. F. Terrien and Vinsonneau.
54 Case of Almost Pure Organic Hemi-Anesthesia. (A propos de l'hystérie: sur un cas d'hémi-anesthésie organique presque pure.) A. Léri.
55 Cicatricial Localized Paresthesias. (Topoparesthésies cicatricielles. Examen des troncs nerveux et des cicatrices dans les blessures des nerfs.) A. Thomas.
56 *Aphasia With Left Hemiplegia From Ligation of Right Common Carotid. J. Ferrand.
57 Latent Wounds of Vessels and Their Nerves. (Les blessures latentes des paquets vasculo-nerveux dans une formation de l'avant.) M. Stassen and J. Voncken.
58 Electric Tests of Conducting Power of Nerve Under Compression. (Des réactions électriques du nerf dans la compression nerveuse.) G. Battez and R. Desplats.

44 **Vaccination Against Typhoid in the Japanese Army.**—Yagisawa gives tabulated statistics which demonstrate anew the advantages of vaccination against typhoid. It not only reduced the morbidity but had a marked attenuating influence on the disease when it occurred. During the period between the war with China and the war with Russia (1897 to 1903), the morbidity averaged 5 per thousand of the average force of 125,629 troops, with a mortality of 1 per thousand. Then

the morbidity increased to 8 and the mortality to 1.3 per thousand. Antityphoid vaccination was then introduced, in 1908, and the morbidity dropped to 0.7 and the mortality to 0.08 per thousand among those vaccinated more than once while the figures remained at the same height among the nonvaccinated and the civilian population. Other tables compare the course of the disease in the 412 vaccinated who developed it and in the 2,533 nonvaccinated, showing the comparative mildness in the former. One table lists the interval between the vaccinations and the onset of the disease. In 69 the interval approached or surpassed one year. Intestinal hemorrhage occurred in only 6 per cent. of the 266 vaccinated typhoid patients and in 16.4 per cent. of the 122 nonvaccinated. Those vaccinated only once are listed with the nonvaccinated.

47. Acute Meningitis in Acute Articular Rheumatism.—In the case reported, tuberculosis and syphilis could probably be excluded and drugs had not been given in amounts sufficient to explain the meningeal irritation. Hence Colombe is inclined to accept it as a case of the rheumatism virus acting on the meninges as well as on the joints. The joint symptoms became attenuated as the meningitis developed. The lumbar puncture fluid was apparently sterile, with polynuclears and lymphocytes in abnormal numbers and with abnormal outlines.

49. Alcohol Blocking of Trunk Nerve for Paradoxical Contracture after War Wounds.—This number of the *Paris Médical* is devoted entirely to the neurologic aspect of gunshot and shell wounds. Sicard's further experience has confirmed the instructive findings when a tourniquet is applied high up on the arm. As the circulation is arrested, the contracture yields while contraction from retraction of tissues persists unmodified. As soon as the Esmarch band is removed the contracture returns as before. This reflex contracture is primarily an effort of defense against pain but it soon assumes a permanent character, absolutely rebellious to all ordinary measures and rendering the hand totally useless as a rule. In old rebellious cases of this kind Sicard has succeeded in restoring normal conditions by injecting alcohol directly into the trunk nerve, which is exposed for the purpose. He injected usually under local anesthesia 1 c.c. of a 20 per cent. solution of alcohol (*alcool à 20°*). This blocks the nerve enough for the purpose, while permitting complete recuperation later. Almost immediately the contracture relaxes and the pain subsides. The fingers are straightened, cotton pads placed between them and the hand wrapped in cotton and a plaster dressing. The plaster is removed in from one to three weeks and the fingers gently exercised and kept in a good position. Eleven of the twenty-three patients given this treatment immeasurably improved in the course of two or three months. But the after-treatment, to maintain what has been gained, must be systematic and persevering. Better results were obtained with flexion contracture than with contractures in extension.

56. Aphasia and Hemiplegia after Ligation of Common Carotid.—Six days after a bullet had entered the neck on the right side it was found protruding from the common carotid which it had severed for three fourths of its diameter. The impacted bullet was all that had prevented fatal hemorrhage. It was necessary to ligate the artery above and below the injury, and the wound soon healed. The man was unconscious for two days. When he roused his left side was paralyzed and there was total aphasia. Although he had been a skilled accountant, all knowledge of figures had vanished. The aphasia was more of the type of an intellectual deficit than of disturbance in speech. The derangement in the circulation in the right hemisphere was probably responsible for it. Ferrand calls attention to this case as further testimony to the assumption that the mental faculties are not connected with certain narrow localizations.

Presse Médicale, Paris

June 1, XXIV, No. 31, pp. 241-248

- 59 *Treatment of Painful Neuritis From War Wounds by Direct Injection of Alcohol Into the Nerve. (Traitement des causalgies par l'alcoolisation nerveuse locale.) J.-A. Sicard.

- 60 *Tenon and Mortise Joint to Restore Shape and Strength to Bone After Limited Resection. (Sur un procédé de coaptation osseuse par tenon et mortaise supprimant le greffon et la suture métallique.) J. Calvé.

June 5, No. 32, pp. 249-256

- 61 Possible Complications of Gonorrhea and Soft Chancre. (A propos de la prophylaxie des maladies vénériennes autres que la syphilis.) A. Renault.
62 *Coma in Diabetic Drunkard. (Le coma éthylo-diabétique.) E. Schulmann.

59. Alcohol Blocking of Nerve in Treatment of Causalgia from War Wounds.—Sicard reports that in twenty-one cases painful neuritis rebellious to all other measures has been successfully combated by injection of alcohol directly into the nerve trunk. Others have had similar experiences so that he now knows of forty-three cases of relief by this means of the persisting paroxysms of pain. All the nerve trunks tributary to the pain must be blocked. The alcohol must be 60 or 80 per cent. (*alcool à 60 degrés*); weaker than this it fails of its purpose. The fear of motor disturbance is negligible in comparison to the agonizing suffering from the causalgia, especially as the nerve recuperates from the alcohol in eight or ten months so that any damage from it is only temporary. He has repeatedly found that the electric reaction of degeneration, complete at first after the injection of alcohol at 70 degrees into the nerve, had subsided entirely by the end of the fourth to the eighth month, the electric response then being quite normal. Some of the results obtained in these painful neuritis cases were bafflingly favorable. In some cases partial paralysis retrogressed as the pain disappeared after the nerve blocking. One soldier with intensely painful median paralysis from a wound on the inner aspect of the arm had had two operations to expose the nerve but without benefit. After six months of suffering the injection of alcohol not only banished the pain but restored the complete use of the hand, some ability to bend the fingers returning by the next day. Results like these can be explained only by assuming that the sensory fibers are more sensitive than the motor fibers to the action of alcohol, or else that the intense pain had inhibited the motor function, and it returned as the neuralgia subsided. There has been but one failure in the forty-three cases that he has compiled. In this case the alcohol had been injected at the site of the lesion, instead of above it, the customary technic. The interval since the nerve blocking has been over a year in a number, and the cure has been complete to date. Motor functioning has been regained in nearly every case when the wound was not so extensive as to debar this permanently.

60. Mortise Joint after Resection of Long Bone.—Calvé gives an illustration of a method of cutting the stumps so they will dovetail into each other, a regular tenon and mortise joint. This coaptates the stumps so that they hold firm and strong, restoring the shaft complete except for the resected portion. The method is applicable only when a short segment was resected, but the special interlocking as illustrated prevents any displacement in any direction, without the use of any foreign body.

62. Diabetic Coma in Delirium Tremens.—These two conditions seemed to be superposed in the two cases reported. Both the diabetic coma and the delirium tremens retained their characteristics, but the combination proved fatal in each case.

Revue Médicale de la Suisse Romande, Geneva

May, XXXVI, No. 5, pp. 273-344

- 63 Modern Treatment of Malignant Tumors. Berdez.
64 Valves of the Navicular Fossa in the Urethra. (Note sur les valvules de la fosse naviculaire du canal de l'urètre chez l'homme.) N. Loewenthal.
65 Research on Alkaloid From the Bark of the Pomegranate. (Etude pharmacodynamique sur la pelletière.) Loup.

Correspondenz-Blatt für Schweizer Aerzte, Basel

May 27, XLVI, No. 22, pp. 673-704

- 66 *A Year of Military Surgery. (Quelques remarques sur la chirurgie de guerre.) Julliard.
67 Atropin Poisoning. Two Cases. Belladonna Root Sold by Wholesale House in Place of Inula Root. (Eine Vergiftung mit Radix Belladonnae.) H. Hunziker.

66. A Year of Military Surgery.—Julliard reviews his experiences as chief of a Red Cross hospital at Lyons. They

confirm the assumption that persisting suppuration invariably indicates the presence of some foreign body or sequester. Any operation on such a patient is followed by high fever, but it is generally transient. The operation, however, is liable to rouse some latent infection. He had one case of tetanus, fatal in eight days, which developed during the afebrile healing of a wound of the ilium. The projectile had been extracted one month after the injury, and the tetanus made its clinical appearance a month later. It had been preceded by a recrudescence of the suppuration without appreciable cause. This tardy tetanus from liberation of latent spores by some operative intervention has been reported by a number of surgeons. He says that in his efforts to keep from amputating he went to the opposite extreme and not only lost precious time but obtained poorer functional results than when he amputated in other cases. Another point he learned, which is important in managing industrial accidents, is that the flaps left after an amputation must never be sutured, as this is liable to hold back secretions and entail severe infectious phenomena. He noted also that men wounded in the head seldom recovered when diffuse brain symptoms became manifest. But those with localized symptoms usually recovered when the wound was treated promptly. Wounds of the skull, he reiterates, should be examined and operative measures applied without delay and the men should be kept on the spot until out of danger—no attempt should be made to transfer those wounded in the skull.

Policlinico, Rome

May 21, XXIII, No. 21, pp. 645-676

- 68 Stereoscopic Roentgenography. (Note di radiostereoscopia.) P. Allessandrini.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

May 20, I, No. 21, pp. 1773-1864

- 69 *The So-Called Congenital Megacolon. (Ziekte van Hirschsprung.) R. de J. de Jong.
70 *Chronic Articular Rheumatism. (Het chronisch reumatisch gewrichtslijden in Nederland.) J. van Breemen. Concluded in No. 22.

May 27, No. 22, pp. 1925-2012

- 71 Experimental Research on Vaccinal Allergy. II. R. P. Van de Kastele.
72 Treatment of Tuberculous Peritonitis. (De heilkundige behandeling der tuberculeuse buikvliesontsteking.) P. H. Van Rooijen.
73 Permanent Paralysis of the Superior Oblique Muscle After Killian's Operation for Frontal Sinusitis. (Een geval van blijvende verlamming van den M. Obliquus superior na een operatie volgens Killian.) G. Ten Doesschate and A. De Kleyn.

69. **Hirschsprung's Disease.**—De Jong has found a valve formation in the bowel responsible for certain cases of megacolon. The colon was not abnormally large to start with, but the obstruction from the valve soon entailed the clinical picture of Hirschsprung's disease. He found that no fluid passed into the rectum when injected into the colon of the cadaver of one 3-months-old child who had succumbed to inability to void feces. The colon was injected with formaldehyd in situ, and this showed up plainly the two or three folds in the mucosa acting like a valve to close the outlet. Neither the colon, the flexure nor the mesentery seemed to be naturally excessively large. The valve-like folds were responsible for the stoppage of the feces. He insists that the findings in this and other similar cases demonstrate that the term megacolon congenitum is a misnomer. In a recent case of similar disturbances the first signs of trouble, pain and constipation, developed at the age of 44, finally presenting the picture of complete ileus. The giant sigmoid flexure was resected and there has been no further trouble since. There was nothing like a valve formation in this case, but the flexure and its mesentery probably had been naturally abnormally large and a long period of constipation resulted in the filling and stretching of the flexure. Probably many cases of this kind have been classed as true Hirschsprung's disease, and yet in reality they have nothing in common with it except the large sigmoid flexure.

70. **Chronic Rheumatic Joint Affections in the Netherlands.**—Van Breemen discusses in turn what he calls the seven types of chronic rheumatic joint disease: deforming arthritis,

fibrous rheumatism, deforming arthritis of a single large joint, chronic arthritis of the vertebrae, pseudorheumatism, and subchronic and chronic articular rheumatism, the latter including also the joint troubles of the arthritic diathesis and of "rheumatoid tuberculosis." This classification is a guide to treatment. He has never known of a case of deforming arthritis, including that of the vertebrae, in which a cure was realized. But even although the joint may be badly deformed, systematic courses of physical measures may ward off crippling. The main reliance in deforming arthritis is on massage, rubbing and kneading, to get rid of the infiltrations which interfere with the use of the joint. General measures, steam and dry heat do little good, and the massage has to be done by an expert.

Exercise is an important factor in treatment of chronic rheumatism but the ordinary use of the joint is too strenuous exercise as a rule.

It is important to realize that with a tendency to rheumatism the limit of tolerance for exercise and for rest is abnormally low. The use of the joint must be restricted. Under "pseudorheuma" he reviews the joint troubles associated with exophthalmic goiter, heart disease, gonorrhea, etc. With gonorrheal arthritis Bier's hyperemia treatment should be given a trial. Every year he encounters cases of syphilitic joint troubles long treated for supposed rheumatism; the involvement of the periosteum and the location of the trouble should aid in differentiating. Tuberculous joint troubles in the aged are often mistaken for true rheumatism.

With a chronic rheumatic affection of the hip joint or other large joint in the aged, much benefit can be derived from cautious exercise. Diathermia is almost the only means to apply heat to the hip joint and it often proves useful. Fibrous rheumatism is secondary, and potassium iodid may help. During the progressing stage no attitude should be allowed that will compromise functioning later. The subchronic stage into which acute articular rheumatism may pass is often improved by steam baths and electric light baths, with massage, watching over the heart.

The arthritis of rheumatism never suppurates. The irritation starting it may be of bacterial, toxic or autotoxic origin.

The joint troubles with the arthritic diathesis are milder than most others, and they are liable to alternate in the course of years with neuralgia and muscular rheumatism, and to change about. So far as the diet is concerned, these patients should be treated as for gout. This is the only form of chronic rheumatic arthritis in which dietetic measures have displayed any efficacy in his experience.

Hospitalstidende, Copenhagen

May 24, LIX, No. 21, pp. 489-516

- 74 *Pregnancy Polyneuritis; Four Cases. V. Albeck.
75 *Support for Patients With Heart Disease So They Can Sleep Comfortably Sitting Up. (Et Hjartebord.) K. Schroeder.

74. **Pregnancy Polyneuritis.**—Albeck describes four typical cases of this affection, all with brain symptoms accompanied by more or less loss of memory. The paresis, neuralgia and anesthesia were restricted to the legs in two cases; in the others the arms were involved, and one patient had in addition optic neuritis. The polyneuritis terminated fatally in three cases on record but Albeck's four patients recovered. The onset with uncontrollable vomiting, the tendency to delirium, the complete loss of memory for a few weeks or months, the scanty diuresis—all indicated toxic action as responsible for the polyneuritis. In one of his cases the polyneuritis symptoms and amnesia persisted from the third month nearly to the end of the pregnancy, and two years later the woman was under treatment for encephalitis. Two of the women were primiparae. In one woman of 32 the tendency to delirium and the amnesia persisted after delivery at term and contractures developed requiring tenotomy. The clinical picture of pregnancy polyneuritis is so grave and is liable to entail such serious disturbance that Albeck in his latest case interrupted the pregnancy, and benefit was apparent at once. The pains and paralysis subsided in the course of two weeks but the legs were still numb.

75. **A Support for Patients with Dyspnea.**—A broad pad in the shape of a wide horseshoe is mounted on a stout iron frame which straddles the bed or chair. As the patient sits up, he rests his arms on the soft horseshoe pad on a level with the diaphragm and leans his forehead against an adjustable soft head-rest mounted at the deepest point of the horseshoe pad. Patients who can get no rest otherwise sleep soundly with this contrivance without the aid of morphin. It is a great relief to have the weight of the arms lifted away from the body. Three illustrations are given.

Hygiea, Stockholm

LXXVIII, No. 9, pp. 529-608

76 *Fermentative Intestinal Indigestion. (Några ord om den intestinala jäsningsdyspepsien—Schmidt.) L. Wolff.

77 *Syphilis of the Bladder. (Bidrag till kännedomen om syfilis i blåsan.) G. Nilson.

76. **Fermentative Intestinal Indigestion.**—Wolff expatiates on the necessity for exact differentiation of the factors inducing abnormal conditions in the intestines; the treatment required for one may be the opposite of what is required for another. He emphasizes the importance of ascertaining the way in which cellulose is digested as the guide to treatment. Where stomach and bowel are functioning to excess, cellulose is digested so completely that not enough residue is left to keep the bowels moving properly, and chronic constipation is liable to result. When stomach and bowel are functioning inadequately, the cellulose does not get digested enough, and the carbohydrates enclosed in the cellulose ferment. Certain persons seem to have a limit for digesting cellulose and above this limit they cannot go. The less constitutional this limitation, the easier it is to influence by diet and training. When the individual limit at the time is surpassed, the stools soon present the fermentation type, with diarrhea, and symptoms of dyspepsia and neurasthenia.

"Gastrogenous" and "nervous" diarrhea do not present the fermentation type of stools. The fermentative type is semi-fluid or fluid, light yellow, foamy and full of gas, highly offensive with an odor of acetic and butyric acid. When mixed with water, the naked eye readily recognizes the remains of undigested potatoes as round lumps like grains of sago. In contrast to this, as a rule, there is very little mucus, and the microscope shows that there is remarkably little muscle residue or soaps. Wolff has encountered in the last two years ten cases of this fermentative diarrhea from inability of the intestines to digest cellulose. In some there was subacidity in the stomach, in others superacidity, and in some the stomach seemed to be functioning normally. In treatment the intestines must be guarded against being burdened with cellulose and substances that ferment readily. Farinaceous food of all kinds must be used very scantily, and these restrictions must be kept up for a long time. He advises to refrain from everything of the kind for a few days, living on well cooked meat, fish and gelatin preparations, eggs, bouillon, milk, tea, light wines and a little more sugar than usual. With this as the standard diet, variety can be obtained with a little honey, infants' artificial dextrinated foods, fine wheat flour dishes and tapioca. Later toast and biscuits may be allowed; then purées of fresh young green vegetables, stewed fruits and preserves. The diet is thus regulated by the proportion of cellulose and easy digestibility, guided by the character of the stools. The tolerance for cellulose may increase, but potatoes, uncooked vegetables and uncooked fruits must be avoided in every case for a long time or relapses may follow. He was impressed with the benefit derived in cases of deficient gastric secretion from the systematic administration of hydrochloric acid and pepsin. This aids not only in gastric digestion but in the digestion going on in the bowels. Even better results were obtained in some cases by supplementing this with pancreas ferment. A mild antiseptic for the bowels was also found useful, guaiacol carbonate plus nux vomica in small doses (0.05 gm. and 0.1 gm., respectively). He generally concludes the treatment with a course of natural iron mineral waters combined with some saline mineral water. This aids in toning up the general health and com-

bating the anemia and nervousness which often accompany this type of "intestinal dyspepsia."

77. **Syphilis of the Bladder.**—In both the two cases reported by Nilson treatment for syphilis cured the bladder trouble completely. In the first case a man of 44 had recurring hematuria for five years without any subjective symptoms. The cystoscope then revealed numerous ulcerations in the bladder and cicatricial changes which suggested tertiary syphilis. The man failed to complete the course of treatment advised, and although normal conditions in the bladder were soon restored, he succumbed three years later to aneurysm of the aorta. In the other case, some small ulcerations in the bladder had been ascribed to tuberculosis, but they were evidently lesions of secondary syphilis, as they subsided under treatment for syphilitic lesions elsewhere. With bladder syphilis there is comparatively little subjective disturbance, and no tubercle bacilli can be detected. Syphilitic lesions elsewhere may yield the clue to the diagnosis, or the history of the case and the Wassermann reaction. Another point which suggests the syphilitic origin of the trouble is the failure of all other measures to cure the cystitis and the prompt response to treatment as for syphilis.

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May 18, LXXVIII, No. 20, pp. 785-830

78 *Drug Tests of Nerve Functioning. (Om farmakologiske Funktionsprøver særligt med Hensyn til Neurastenien.) A. Faber and H. J. Schou.

79 *Vaginism. (Et ejendommeligt Tilfælde af Vaginisme.) A. Neermann.

80 A Masked Knife for Opening Abscesses in Mouth or Throat. (En kacheret Kniv til Aabning af Abscesser i Mund og Svælg.) C. Mailand.

78. **Drug Tests of Nerve Functioning.**—Faber and Schou have been testing the response of the vagus and sympathetic nervous systems to injections of epinephrin, atropin or pilocarpin. They recapitulate the whole theory of vagotomy and the experiments and clinical experiences in this line that have been published, and tabulate the findings with pilocarpin, epinephrin and atropin as obtained in turn in twenty patients with various affections, including a number with neurasthenia. No antagonistic action, such as Eppinger and Hess postulate, could be discovered between the different drugs. Sixteen responded with equal promptness to pilocarpin and to epinephrin; the response to both was weak in one; in the others the response was somewhat more lively to one than to the other, but in all the reactions to both paralleled each other more or less completely, regardless of the individual pathologic condition. Another table gives the findings in the stomach content after an Ewald test meal followed by injection of epinephrin and of pilocarpin. The secretion of saliva and of gastric juice was much increased after each, and nothing was observed that might be utilized to distinguish vagotomy from sympathicotony. Table 4 gives the findings of the blood pressure after subcutaneous injections of epinephrin in 41 persons. The blood pressure increased from 35 to 47 per cent. in 19 men and from 9 to 43 per cent. in 20 women, but the increase averaged only 8 per cent. in 2 men with cirrhosis of the liver and ascites, which fact is cited as significant. The sugar content of the blood increased after subcutaneous injections of 0.7 mg. epinephrin much the same as with alimentary hyperglycemia; the charts of averages of each are practically identical, both in normal persons and in those with signs and symptoms of vagotomy or sympathicotony. Only in the four diabetics and the two patients with cirrhosis of the liver, the increase in the blood sugar content seemed to be less regular and to occur later than in the others.

79. **Vaginism.**—Neerman teaches patients with vaginism to combat it by straining as at stool. This brings antagonistic muscles into play and there is little if any further pain. By this means also it is possible to make an examination without the necessity for general anesthesia, which Veit regards as indispensable. In a case described in detail the woman had a right hydronephrosis which possibly may have contributed to the pains.

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PITYRIASIS LICHENOIDES CHRONICA

A CLINICAL AND MICROSCOPIC STUDY OF A CASE
MISTAKEN FOR LICHEN PLANUS *

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Few diseases offer to the student of dermatology a topic of more absorbing interest than the various cutaneous eruptions which today are included under the term "parapsoriasis." The great diversity in the design and morphology of their efflorescences, their remarkable chronicity and stubborn resistance to treatment, the striking absence of etiologic factors, the surprising resemblances which some eruptions bear to divers other dermatoses, but, above all, the consistent uniformity of the chief histopathologic changes displayed by totally different types of eruptions are some of the features of more than ordinary interest which characterize the parapsoriasis group. The vagaries of nomenclature which this group of affections has undergone in the twenty-five years of its existence is a suggestive index of the many angles from which different authors have viewed the whole subject.

BRIEF REVIEW OF THE LITERATURE

Beginning with the report of two cases of parakeratosis variegata, by Unna, Santi and Pollitzer,¹ in 1890, a large number of monographs dealing with related dermatoses, but under many disguises and a great variety of titles, soon appeared in the literature. Unna's cases occurred in young adult men, who presented an eruption consisting chiefly of flat, slightly elevated papules and plaques, many of which coalesced into bands and circinate lesions, forming an irregular network, in the meshes of which little islands of healthy skin remained. Some of the papules were capped by a thickened horny layer, presenting the glistening appearance of lichen planus papules, while others bore fine scales. The color varied in different localities, from pink to reddish-brown and violet. The eruptions were chronic and progressive, without remissions and exacerbations, appearing on the trunk and extremities. Subjective symptoms were lacking. Treatment was unavailing. The pathologic changes were limited to the papillary layer and the epidermis, the deeper layers of the skin, as well as

the follicles and glands, remaining intact. The papillary layer exhibited a moderate grade of edema, and dilatation of the blood vessels, with slight perivascular infiltration. The epidermis was somewhat edematous, the prickle cells swollen; the transitional layers were normal in appearance, while the horny layer was thickened, showing, here and there, nucleated horn cells. The reticulated appearance of the eruption, together with the presence of parakeratosis, induced these writers to name this eruption parakeratosis variegata.

Following this report Jadassohn,² in 1894, demonstrated an eruption which consisted mainly of reddish, discrete and disseminated papules on the trunk and lower extremities of a male adult. The papules varied in size from a pinhead to a lentil, were round and oval in shape, showing fine scales. Histologic examination revealed a moderate perivascular, round cell infiltration in the papillary layer, with some proliferation of the prickle cells in the epidermis. The granular layer was unchanged, while the stratum corneum presented evidences of parakeratosis. Jadassohn gave to this eruption the name "psoriasiform and lichenoid exanthem," and later,³ in 1900, called it "dermatitis psoriasiformis nodularis." Between 1896 and 1898, similar cases were reported by Neisser,⁴ Juliusberg,⁵ Pinkus,⁶ and Rôna.⁷

In 1897, Brocq⁸ described a third type, differing from those of Unna and Jadassohn, and characterized by the presence of very slightly infiltrated, sharply circumscribed, large and small plaques, covered with fine scales, and presenting a reddish or pink color. Microscopically, there was a moderate infiltration in the papillary layer, a normal prickle cell layer and an absence of parakeratosis. Brocq gave to this type the cognomen "érythrodermie pityriasique en plaques disséminées."

In 1899, Juliusberg⁹ reviewed the literature of the day and reported two cases of the type first reported by Jadassohn, under the title "pityriasis lichenoides chronica."

Two years later, Crocker¹⁰ described two instances of the disease, under the name of "lichen variegatus," by virtue of the resemblance of the eruptions to lichen planus. In 1901, Fox and MacLeod¹¹ published a paper in which they suggested the name "resistant maculopapular scaly erythrodermia" to the entire

2. Jadassohn: Verhandl. d. deutsch. dermat. Gesellsch., IV Kongr., Breslau, 1894, p. 524.

3. Jadassohn: Festschr. Kaposi, Arch. f. Dermat. u. Syph., 1900, p. 880.

4. Neisser: Verhandl. d. deutsch. dermat. Gesellsch., IV Kongr., 1894, p. 495.

5. Juliusberg: Arch. f. Dermat. u. Syph., 1897, xli, 257.

6. Pinkus: Arch. f. Dermat. u. Syph., 1898, xlv, 77.

7. Rôna: Arch. f. Dermat. u. Syph., 1898, xlv, 147.

8. Brocq: Rev. gén. de clin. et de therap., September, 1897, No. 37.

9. Juliusberg: Arch. f. Dermat. u. Syph., 1899, I, 359.

10. Crocker: Brit. Jour. Dermat., 1900, xii, 443.

11. Fox and MacLeod: Brit. Jour. Dermat., 1901, xiii, 319.

* Read before the Section on Dermatology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Unna, Santi and Pollitzer: Monatsh. f. prakt. Dermat., 1890, x, Nos. 9 and 10.

group, while Török,¹² in the following year, included the various types of eruption under the title, "scaling erythrodermia, appearing in disseminated spots."

In 1902, Brocq¹³ again studied the subject and decided that the various types of eruption which had been reported under different names presented many points in common, representing merely varieties of the same dermatosis. He labeled the entire group with the term "parapsoriasis," and described three types:

1. Parapsoriasis en gouttes. In this the eruption resembles psoriasis and is characterized by the presence of small, isolated, macular and papular, barely infiltrated, scaly lesions, leaving bleeding points if scratched. In this group he included the cases described by Jadassohn and Juliusberg.

2. Parapsoriasis lichenoidé. This is a subvariety clinically resembling both psoriasis and lichen planus, in which there are small papular elements, some of them flattened and glistening, others atrophic in appearance, with a tendency toward confluence of the lesions and the formation of a fine meshed reticulum

Civatte,¹⁶ in 1906, reported two cases clinically resembling pityriasis lichenoides chronica, in which microscopic examination revealed the structure of a tuberculous granuloma in the upper layers of the corium. This observer, together with Milian and Pinard,¹⁷ believed that some cases represent a transition or connecting link between parapsoriasis and certain forms of cutaneous tuberculosis—an opinion which, as far as I know, has not been substantiated by other investigators.

Although Brocq's classification has been subjected to considerable adverse criticism, more especially by Arndt,¹⁸ it seems to have answered its purpose and has been accepted by the majority of writers on the subject of parapsoriasis, abroad and in this country. Among American authors, Brocq's classification is recognized in the publications of Corlett and Schultz,¹⁹ J. C. White,²⁰ C. J. White,²¹ Trimble,²² Sutton,²³ and others. That this classification into three separate subdivisions is a purely arbitrary one, however, has been

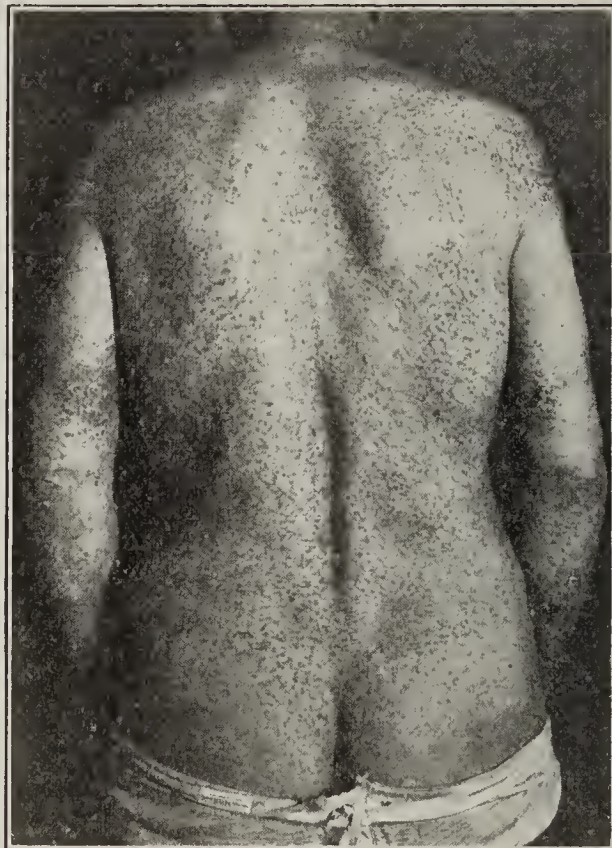
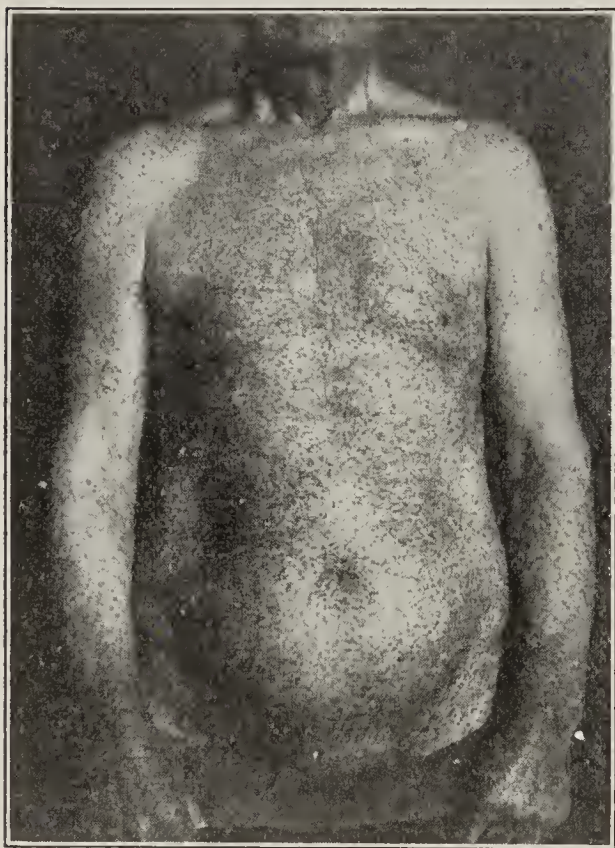


Fig. 1.—Pityriasis lichenoides chronica, front view.

Fig. 2.—Pityriasis lichenoides chronica, rear view.

or of variously sized patches, giving to the whole a variegated and marmorated appearance. In this group are included the parakeratosis variegata of Unna, Santi and Pollitzer and the lichen variegatus of Crocker.

3. Parapsoriasis en plaques. In this the eruption consists of large, sharply defined patches, either slightly desquamating or entirely free of scales, and resembling both psoriasis and dermatitis seborrhoeica. This variety was previously described as érythrodermie pityriasique en plaques disséminées. Many examples of the last type resemble the early stages of mycosis fungoides.¹⁴

Under the term "xanthoerythrodermia perstans," Crocker,¹⁵ in 1905, described a subvariety of parapsoriasis en plaques, characterized, as the name indicates, by a more pronounced yellowness than usually obtains.

which different types of parapsoriasis obtained in the same patient, at the same time, or at different times. It is enough to say, in this connection, that both Csillag²⁴ and Klausner²⁵ had observed patients who at one time exhibited an eruption corresponding to pityriasis lichenoides chronica and who, under further observation, developed an eruption resembling parakeratosis variegata. To cap the climax, Werther²⁶ recently published the report of a patient whose skin exhibited the three varieties of parapsoriasis at the same time, thus going far to support the contention that Brocq's classification is chiefly one of convenience.

The recent American literature has been enriched by two excellent contributions to the subject of para-

psoriasis; one, by Heimann,²⁷ dealing with the histopathology of the group as a whole, the other, by Stokes,²⁸ who has taken up the subject of experimental therapy and intradermal sensitization reactions in relation to his case of pityriasis lichenoides chronica.

In the past few years I have had occasion to study eight examples of various types of the disease and have been fortunate in obtaining biopsy material from all of them. Five of these eight cases corresponded to Brocq's parapsoriasis en plaques, the other three, to

16. Civatte: Les parapsoriasis de Brocq, Paris, 1906.

17. Milian and Pinard: Bull. et mém. Soc. méd. d. hôp. de Paris, April 26, 1907.

18. Arndt: Arch. f. Dermat. u. Syph., 1900, c, 7.

19. Corlett and Schultz: Jour. Cutan. Dis., February, 1909, p. 49.

20. White, J. C.: Jour. Cutan. Dis., 1900, xviii, 536.

21. White, C. J.: Jour. Cutan. Dis., 1903, xxi, 153.

22. Trimble, W. B.: The Chronic Scaly Erythrodermias, THE JOURNAL A. M. A., July 24, 1909, p. 264.

23. Sutton: Jour. Missouri State Med. Assn., December, 1913.

24. Csillag: Arch. f. Dermat. u. Syph., 1905, lxxvi, 3.

25. Klausner: Dermat. Wehnschr., 1913, lvi, 469.

26. Werther: Dermat. Ztschr., 1915, xxii, 320.

27. Heimann: Jour. Cutan. Dis., 1916, xxxiv, 203.

28. Stokes: Jour. Cutan. Dis., 1916, xxxiv, 343.

12. Török: Mracek's Handb. d. Hautkrankh., 1905.

13. Brocq: Ann. de dermat. et de syph., 1902, p. 443.

14. Wise and Rosen: Jour. Cutan. Dis., 1916, xxxiv, 95.

15. Crocker: Brit. Jour. Dermat., 1905, xvii, 112.

pityriasis lichenoides chronica. Of the latter, one has been incorporated in a previous report,²⁹ while the second forms the subject of the present paper.

From the clinical point of view, the interesting features in these eruptions are manifested by the many variations in the types of lesions occurring in different cases, and in their remarkable resemblances to other, nonrelated dermatoses, demanding the consideration of the most careful diagnostic differentiation. From the histologic side, the uniformity of the morbid changes depicted in sections derived from totally different types of gross lesions seems to be a very important feature of the entire group. In all of these sections, the microscopic changes conformed in all essential details to those so often described in the different forms of parapsoriasis. One of the moot points in the histopathology is the question of the presence or absence of parakeratosis. In all but one of the cases mentioned above, nucleated horn cells were easily demonstrated, occurring to the same extent in the patchy variety of the disease as they did in the guttate form. Both Brocq and Arndt state that parakeratosis was absent in the sections of parapsoriasis in patches, which they had examined; while Civatte, as Heimann points out, emphasized its occurrence in that type. It is probable that parakeratosis forms a part of the minute changes in the different varieties of the affection, but that its occurrence is not always readily demonstrable.

REPORT OF CASE

The following brief report concerns a case of the lichenoid type of parapsoriasis, presenting an unusually widespread eruption. The patient, from Dr. Fordyce's service at the Vanderbilt Clinic, was presented before the New York Dermatological Society at its October, 1915, meeting, where the majority of the members who examined the patient's skin considered the eruption to be one of lichen planus:

History.—J. C., man, aged 58, a native of this country, was married and had always been in the best of health, with the exception of an attack of rheumatism, three years before. Under the administration of salicylates and potassium iodid, the rheumatic pains promptly disappeared and have not returned since. There is no history of a drug rash following the ingestion of these medicines. The family and personal histories have no bearing on the present eruption. Ten years ago, an epithelioma was removed from the left temple by

Dr. Gottheil, the operation leaving a smooth, white scar. There are no evidences of syphilitic disease.

Examination.—The patient is well nourished and apparently in good health. Physical examination reveals no abnormalities. The Wassermann test is negative and the urine is normal. The cutaneous sensibilities are everywhere undisturbed.

Skin: The eruption made its appearance about two and a half years ago, on the anterior surfaces of the forearms, in the form of small, red, round and oval papules which itched slightly. Shortly after, similar lesions developed on all parts of the body, with the exception of the neck, face and scalp, and the palms and soles. The mucous membranes remained free. Since the onset of the trouble, none of the lesions have shown any tendency toward retrogression. With the spread of the disease, pruritus has become a serious symptom, often depriving the patient of sleep. Scratch marks, however, are not present.

With the exception of the areas mentioned above, the entire integument, including that of the genitals, is involved. The

lesions consist of innumerable macules and papules, varying in size from a pinhead to a lentil. These elements are round and oval, of a dull red, smooth, free of scales, their surfaces somewhat burnished when viewed at an angle. The lesions are everywhere closely crowded, more so on the arms and legs than elsewhere. A distinct grouping of the macules and papules occurs on the forearms, anteriorly, and on the skin overlying the shins. Similar grouped elements are also seen on the abdomen and flanks. On various parts of the upper and lower extremities, a number of the lesions have coalesced so as to form patches with irregular borders, sharply defined against the surrounding normal skin. These patches vary in diameter from a quarter of an inch to an inch and a half.

Their surfaces are reddish-pink on the forearms, somewhat violaceous on the legs, smooth and glistening in appearance. On the anterior portions of the forearms, several areas present a linear arrangement of the papules, forming curved lines, from 1 to 2 inches in length, and running parallel with the long axis of the arm. The papular lesions predominate in all parts of the eruption, being especially marked on the extremities and trunk; most of them are flat topped, sharply outlined, but not angular or polygonal; in various parts of the body, closer scrutiny reveals the presence of scattered papules which possess an umbilicated center. The macular elements are most numerous on the backs of the hands, the upper part of the chest and on the genitals. Many of the lesions appear to be in the transitional stage, from macule to papule. Neither pigmentation nor scaling forms a part of the eruption.

Forcible scratching of a papule with a curet results in a brisk oozing of blood.

Treatment and Result.—Prolonged administration of Fowler's solution, at the hands of other physicians, proved

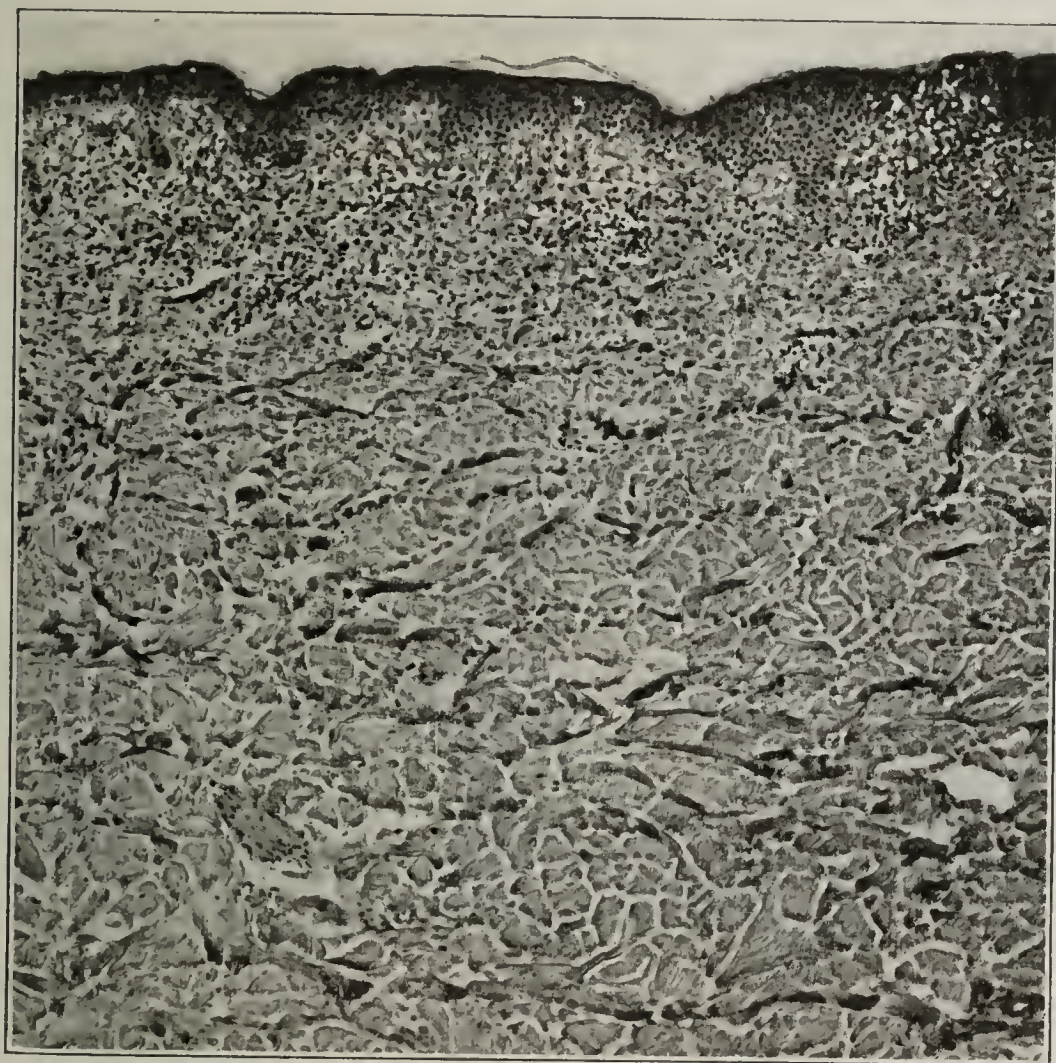


Fig. 3.—Microscopic section of papule (low power), showing edema of epidermis and upper corium, with moderate cellular infiltration.

29. Wise, Fred: New York Med. Jour., Nov. 20, 1915.

unavailing in effecting a retrogression of the lesions, or in stopping the progress of the disease. Three autogenous serum injections had no effect on the pruritus, nor did they effect any change in the skin lesions. The Kromayer light was applied to the skin of the abdomen in six weekly exposures, resulting in a partial fading of the papules, for the time being; as soon as the last traces of irritation from the ultraviolet rays had subsided, the skin assumed the same appearance as that of the untreated areas.

Histopathology.—A lentil sized papule, including the adjacent normal integument, was removed with a cutaneous punch, from the skin between the shoulder blades, and prepared for microscopic study.

The main pathologic changes consisted of a rather well defined cellular infiltration, located chiefly in the papillary and subpapillary portions of the corium; a pronounced edema, with minute vesicle formation in the subepidermal portions of the skin; marked vascular dilatation in this region, with granular degeneration of the collagenous tissue; in the deeper parts of the corium the collagen was edematous, the walls of the blood vessels were thickened and the glandular structures showed signs of degeneration. In the epidermis, edema of varying intensity prevailed.

The horny layer was thin and adherent. Nucleated horn cells were present in only one very minute portion of this stratum, corresponding to only two or three adjacent papillae, the rest of the epidermal surface presenting no signs of parakeratosis. The stratum lucidum was absent. The granular layer was attenuated, for the most part consisting of a single layer of cells with well preserved cell bodies and nuclei. The stratum spinosum appeared to be normal in some areas, moderately increased in others. In the latter, evidences of intercellular and intracellular edema were pronounced, the nuclei being distorted and crowded to one side, or completely surrounded by a clear protoplasmic zone, while the intercellular spaces were widened and

bridged by prominent prickles. In several areas a beginning intra-epidermal vesicle formation was apparent, the contents of the little vesicles consisting of scattered, fine granules and cell detritus. The basal cell layer varied greatly in its appearance in different parts of the section; while some portions presented a normal appearance of the palisade cells, sharply defined against the corium, other portions exhibited a complete disorganization of these cells, resulting in an obliteration of the boundary between epidermis and corium.

The rete pegs were flattened and distorted by the subjacent edematous changes in the corium. A few mitotic figures were seen here and there. Wandering cells in the epidermis were not observed, nor were pigment granules.

In the pars papillaris an advanced grade of edema of the papillary bodies was present. The papillae were flattened and disorganized, their summits being displaced by a reticulum of vacuoles and small vesicles, separating them from the overlying epidermis, and resulting in an edematous meshwork which involved the papillary and subpapillary portions of the corium to a high degree. The blood vessels and lymphatics were increased and markedly dilated, the vascular endothelial lining being distinctly swollen. A moderate peri-

vascular infiltration of small round cells was present in the papillary bodies; deeper down, the infiltration was more pronounced, the cells being more numerous and closely packed about the vessels and lymph spaces; the cell masses appeared in elongated bands as well as scattered aggregations, independent of vessels. The infiltration, taken as a whole, was rather well defined at its lower boundary. The elements consisted almost wholly of small round cells with well stained nuclei, together with a small number of fibroblasts. Plasma cells and mast cells, as also pigment granules, were not observed. The collagenous tissue of the pars papillaris was degenerated, most of it being edematous and granular in appearance. The section contained a hair follicle, surrounded by a sleeve of infiltrating cells and a few fibroblasts. The pars reticularis presented a moderate grade of edema, with, here and there, areas of granular degeneration of the collagen. The coil glands, arrectores muscles, and blood vessels all presented evidences of degeneration, the walls of the vessels being markedly increased in thickness. The elastic tissue was diminished and somewhat fragmented in the upper corium, but lower down it appeared to be unaffected.

SUMMARY

As has been stated, the eruption exhibited by this patient so closely resembled a widespread lichen planus that a number of eminent dermatologists even after careful scrutiny, held the opinion that it was, indeed, an unusual example of that dermatosis. The localization and distribution of the lesions, their color, consistence, burnished surface, configuration, occasional grouping and linear arrangement, together with the fact that the patient complained of considerable itching of the affected skin, were determining factors in the diagnosis. There were, however, certain points of departure from the typical picture presented by a

disseminated eruption of lichen planus. The papules, instead of being predominantly polygonal, were for the most part oval and round in outline; umbilication was seen in only a small proportion of the lesions, most of them presenting a smooth, glistening surface, without a trace of delling; the fine, whitish, adherent linear scaling—Wickham's striae—so characteristic of lichen planus papules, was lacking. Finally, the absence of lingual and buccal mucous membrane lesions, in a case presenting an eruption so extensive in its distribution, contributed an added element of doubt to the diagnosis of lichen planus. (In Werther's case, however, the buccal mucosae were affected by the disease.)

From the histologic standpoint, the minute structure was seen at a glance to be quite different from the characteristic picture of lichen planus, and to conform to that which, when correlated with the clinical appearances, left no other diagnosis open for consideration than that of parapsoriasis. It is well known that the

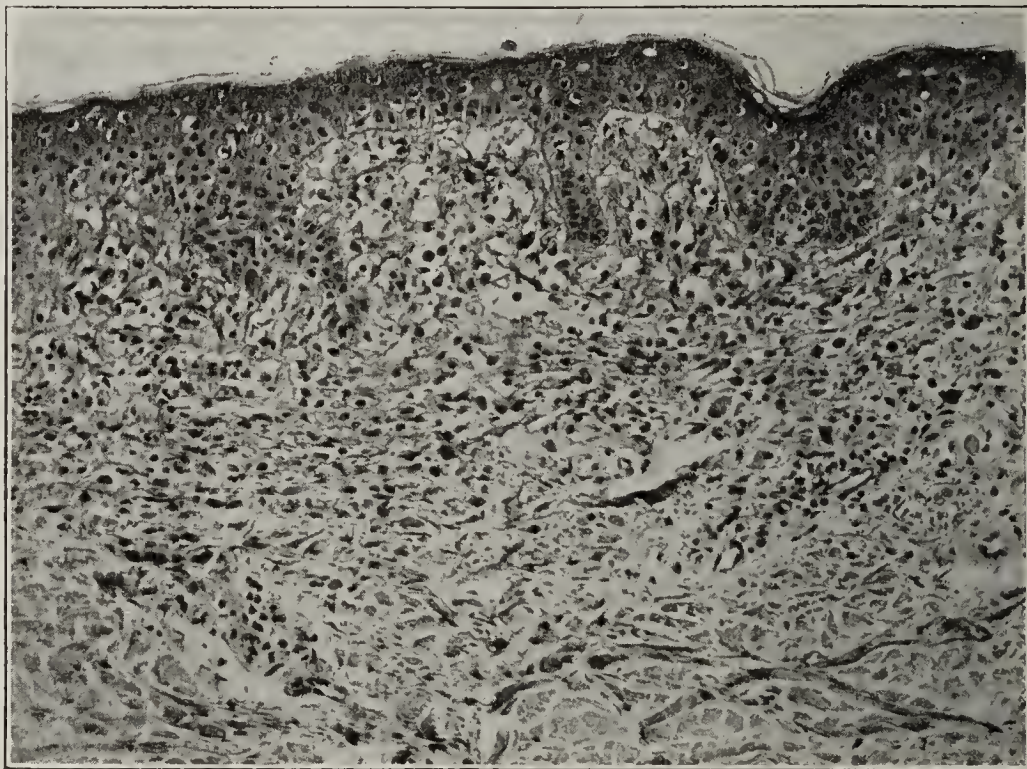


Fig. 4.—Microscopic section of papule (high power), showing edema of epidermis, subepidermal vesiculation, edema of corium, infiltration of round cells in upper part of corium, areas of collagenous degeneration and perivascular infiltration.

microscopic changes in this group of affections is by no means pathognomonic, in the same sense that the histopathology of lichen planus is pathognomonic, for the various pathologic alterations peculiar to parapsoriasis may also obtain in many other cutaneous diseases, or may at least play a minor part in the general morbid process of other dermatoses. A diagnosis of parapsoriasis based on the microscopic findings alone is considered to be, as pointed out by Arndt, a rather uncertain procedure, and should be made with circumspection. Such a diagnosis is fully justified, however, when the clinical and histologic data are considered side by side and are correlated to one another, as was done in the present instance.

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ABSTRACT OF DISCUSSION

DR. OLIVER S. ORMSBY, Chicago: I have seen a number of these cases and think the classification of Brocq is correct from a clinical standpoint. We see cases with small lesions and others of the large, flat variety, and while it seems rather odd that lesions apparently so different should be classed together, yet, as Dr. Wise pointed out, they are histologically the same. In one of my cases three distinct classes of lesions were present. They are very difficult to clear up. Occasionally a patient gets well. We had such a case. That patient had a parapsoriasis and the lesions cleared up within two days after the use of salvarsan. In another case treated with chrysarobin which Dr. Schamberg furnished the lesions cleared up almost entirely; then the patient disappeared for some time and when he came back the lesions had recurred, but he gave a history of having had the eruption a number of years and that he had never received any benefit from any treatment except the chrysarobin.

TRAUMATIC PULSATING EXOPHTHALMOS *

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Although comparatively a rare condition, traumatic pulsating exophthalmos is of so serious and distressing a nature that the report of additional cases in which operation was performed cannot but be of interest and value. Notwithstanding that after a thorough study and analysis of the surgical procedures and therapeutic measures employed in the cases reported in literature and in their own practices, prior to July 1907, de Schweinitz and Holloway¹ were of the opinion that in view of the uniformly successful results attending operations on the superior ophthalmic vein "it would seem that this procedure should be considered before ligation of the carotid, and certainly should precede ligation of the second carotid provided the first operation has failed to produce the desired result," a review of the literature that has appeared since this was written shows that for the alleviation of the symptoms of the traumatic type, at least, the operation earlier introduced, ligation of the common carotid, is the one still usually performed.

There can be little doubt that in the majority of cases of traumatic origin the lesion is a rupture of the internal carotid in the cavernous sinus, and that the dilatation of the ophthalmic veins and of the nasofrontal

and angular veins is the result of the venous stasis thus created. It therefore seems logical to seek to prevent the stasis rather than to remove the end-result, and this has no doubt been the thought of those who have preferred to operate on the vessels of the neck. Another reason why others have been deterred from operating on the ophthalmic vein is that temporary unfavorable symptoms developed in three of the seven cases, reports of which were collected by de Schweinitz and Holloway, and that there has since been one fatal result² or they have foreseen the danger of thrombosis of the basal sinuses, the possibility of which was emphasized by these authors. Another reason that the orbital operation has not more often been performed has doubtless been that, owing to the gravity of the condition, the general surgeon has been usually consulted, and the topography of the triangles of the neck is more familiar to him than is that of the region pre-empted by the ophthalmic surgeon.

Following are the notes of my own cases:

CASE 1.—While A. M., Italian, aged 26 years, admitted to Wills Hospital, March 27, 1906, was seated at home, Nov. 21, 1905, the left eye suddenly bulged forward accompanied by a noise in the temporal region and in the left ear. About one month before this date, while assisting three other men to carry a heavy beam, he severely strained himself in an effort to hold it after the others had let go their hold. Two weeks later he began to suffer from headaches. There had been little change in the appearance of the eye since it became prominent. There was nothing in either the personal or family history bearing on the present condition.

L. E. proptosed 8 mm. straight forward. All movements are abolished except inward and downward, both of which are restricted. There is congestion of the lids and of the conjunctiva. There is neither orbital venous tumor nor pulsation. Faint bruit. Pupil 5 mm. in diameter; prompt to light. V. R. E. $\frac{6}{6}$; L. E. $\frac{30}{30}$.

The ophthalmoscope shows: R. E. Numerous retinal hemorrhages. Veins engorged. Papilla swollen. L. E. Small striated hemorrhages at the upper margin of the papilla. Veins engorged and retina hazy.

Otologic, rhinologic and neurologic examination negative.

May 1, 1906, the left common carotid was ligated by Dr. G. G. Davis. There were no cerebral symptoms, and the patient was discharged ten days after the operation. At that time the neuritis in the right eye had increased, and the veins were very much engorged. There was no change in the proptosis or in the movements of the globe. No subjective bruit.

One month after the operation the proptosis and movements of the globe remained unchanged, and there was no return of the bruit. In the right eye the neuritis had almost subsided. V. R. E. $\frac{6}{6}$; L. E. $\frac{20}{20}$.

CASE 2.—D. L., American, aged 21, miner, admitted to Wills Hospital, Jan. 15, 1916, was struck in the right occipital region by a mine car, July 7, 1915. He remained unconscious for 5 days. No operation was performed. On regaining consciousness the right eye was prominent and there was a buzzing noise in the right ear "which kept time with his heart." There was no diplopia, headache or pain. The left side of the face was paralyzed. There had been amnesia lasting about one month. For the facial paralysis he had vibratory massage and electricity, and to this he attributes the improvement that has taken place in this symptom. The left eye has been at no time involved.

R. E. Proptosed 10 mm. The superior orbital sulcus is pushed forward by a soft mass in the orbit above the globe; ordinarily more prominent to the temporal side, but when the lids are closed more marked, especially to the nasal side, and a thrill can then be detected over the mass. There is a loud swishing bruit synchronous with the heart systole. The bruit

* Read before the Section on Ophthalmology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. De Schweinitz and Holloway: Pulsating Exophthalmos, Philadelphia, W. B. Saunders Co., 1908.

2. Mentioned by de Schweinitz in discussions of Wilder's paper (Footnote 9).

can also be heard over the carotid near the angle of the jaw, and also over the temporal bone and inferior orbital margin. Pressure on the carotid causes both the objective and subjective noises entirely to disappear. The bulbar conjunctival vessels are greatly distended, one large vessel extending from canthus to canthus. The external rectus muscle is paralyzed. The right pupil is 3.5 mm. and prompt to light; L. pupil 2.5 mm. and prompt to light. R. E. $20/20$; L. E. $20/15$. Ophthalmoscopic examination: R. E. Veins and arteries enlarged and somewhat tortuous, more particularly in the nasal branches. The venous blood current is very dark.

The patient was transferred to the Pennsylvania Hospital under the care of Dr. G. S. Crampton, where he was further studied with a view of determining the proper surgical procedure. Dr. Crampton has kindly supplied the following notes: Roentgenoscopy revealed no evidence of a fracture of the skull nor any evidence of any bone change, as, for instance, from pressure of an aneurysm. Neurologic examination: Slight fine tremor of hands. Hands are clammy and show slight capillary stasis. Knee jerks apparently exaggerated. Plantar reflex active. No Babinski or ankle clonus. Slight Graefe lid sign on left side. Distinct weakness of the muscles of the left face involving both upper and lower branches of the seventh nerve. The tongue, however, is protruded straight and the eye can be closed. Definite loss of taste to sugar and salt on anterior two thirds of tongue. Auditory nerves are equally active on both sides. Urinalysis: Specific gravity 1.023. No albumin, sugar or casts.

Digital pressure was made on the right carotid for fifteen minutes at a time to accustom the patient to diminished cerebral blood supply. This caused a tingling sensation in the hands, and the proptosis diminished slightly.

February 23, Dr. Francis T. Stewart ligated the right common carotid. A $\frac{3}{8}$ inch ribbon of fascia lata $\frac{1}{8}$ inch thick was passed around the artery as a collar and tightened with silk sutures until a definite thrill could be felt in the vessel, and the temporal pulse had disappeared. A single turn of a silk ligature was made around the fascia, and the long ends were tucked in the wound for use in tightening the ligature later. At the end of the operation the temporal pulse was not palpable, but the bruit in the temporal region could still be heard in diminished degree. No thrill over the globe. Next day the fundus showed no change. February 29, stitches removed. A catgut ligature was fastened to the old silk ligature and pulled through. Complete ligation was done. For about one minute after ligation the temporal pulse on the right side could not be felt, but after that it reappeared, but quite small, as though collateral circulation had been established.

March 3, the eye looked remarkably better. Only slight proptosis and no thrill or bruit. The patient was discharged March 8. There was a slight increase in the proptosis, and pulsation could again be felt in the internal angular vein, when compression was made below. March 13, the patient returned to the hospital with edema of the extremities, right chest and abdomen. Urine: Specific gravity 1.030. Cloud of albumin. Granular and hyalin casts. No sugar.

March 24, proptosis fully as marked as before operation. Some edema of the conjunctiva and corneal haze. Retinal veins no longer engorged or tortuous. Papilla slightly pale. No fundus lesions. Bulbar movements full except limitation of outward excursion. Pupil normal. No subjective noise. No thrill. Bruit faint and confined to the orbital region.

March 28, patient still confined to bed with nephritis.

The following brief notes of a case of spontaneous pulsating exophthalmos reported by Dr. Frederick Krauss are added because the case illustrates one of the dangers of ligation of the orbital veins and because of the method of operating.

F., aged 59 years. No history of trauma. Family history negative. Pronounced right sided exophthalmos with a loud bruit heard over the face, loudest over the anterior portion of the temporal bone. No ocular pulsation. V. $\frac{5}{15}$. Wassermann negative. Blood pressure: Systolic 215 mm. Under internal medication and carotid compression gradual subsidence of the symptoms took place for a time, but this was followed by sudden severe pain in the right eye followed by intense proptosis and very pronounced pulsation. The left eye also became markedly proptosed. Pressure on the right carotid caused a disappearance of the subjective and objective noises, but had no effect on the exophthalmos. The movements of the right eye were abolished. A large pulsating vessel was found on the nasal side of the eye ball within the orbit. There was enormous dilatation of the retinal veins with retinal and choroidal hemorrhages and a low grade uveitis.

Operation: An incision was made directly over the eyebrow from the outer orbital line to the root of the nose and then curving down to the canthus. The periosteum was separated from the orbit, dislocating the contents of the orbit within its folds. The pulsating vessel being readily felt, an incision was made near it through the periosteum, disclosing enormously dilated vessels throughout. A pedicle needle with a catgut ligature was passed around the largest pulsating vessel and tied. The pulsation and subjective bruit ceased. Several weeks later, pulsation returned near the upper-inner orbital margin, where a small sinus remained. Deep massage three weeks after the operation caused a tremendous hemorrhage, which was immediately controlled by pressure against the bony orbit. Several days later there was a spontaneous recurrence of the bleeding for which, an assistant failing to control, the common carotid was tied with the result of causing a cessation of pulsation and an immediate healing of the sinus. Four weeks

later the proptosis was still pronounced and there was a return of intermittent pulsation.

Krauss states that he is convinced that in tying off the orbital vessels more than one strong ligature should be used.

The reference in literature to pulsating exophthalmos were brought down to the year 1907 by de Schweinitz and Holloway, and Bedell³ in 1914 gave an abstract of the cases of traumatic origin that he was able to find in the literature covering the period between the foregoing dates. Following are, in abstract, additional cases of traumatic form reported during the foregoing period, and cases since reported. The brief abstracts of the first six cases are taken from an inaugural dissertation by Johannes Eysen.⁴

Reported by Wagenmann (1900). Shot in the right temple. R. E. exophthalmos. Pulsation. Bruit. Paralysis of the external rectus and of the oculomotor nerve. Ptosis. Distention and tortuosity of the conjunctival vessels. L. E. proptosis and pulsation. Compression of carotid without

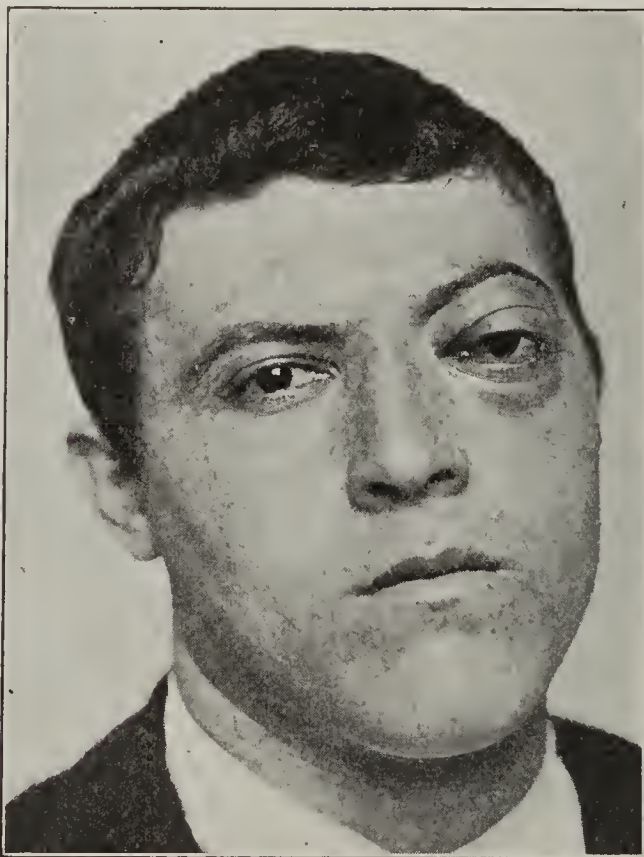


Fig. 1 (Case 1).—Traumatic pulsating exophthalmos.

3. Bedell: Arch. Ophth., 1915, xliv, No. 2.

4. Eysen, Johannes: Inaug. Diss., Berlin, 1908.

result. Ligation of the right common carotid. Transient effect. One year after operation R. exophthalmos very marked. Cornea hazy. Blind.

Reported by Nettleship (1901). Bilateral typical pulsating exophthalmos following injury. Ligation of common carotid. Cure. Optic nerve atrophy.

Reported by Bossalinow (1901). R. pulsating exophthalmos following fall on the right temple. Potassium iodid. Compression of the carotid. Cure.

Reported by Reuchlin-Schlüpmann (1902). Bilateral exophthalmos following a fall against an iron pillar. Orbital pulsating tumor. Eyes practically immobile. Chemosis. Ptosis. R. pupil sluggish; left normal. Bruit. Compression resulted in improvement. R. common carotid ligated. Cure except for slight abducens paresis.

Reported by Golowin (1903). R. pulsating exophthalmos following a gunshot wound. Central corneal opacity. Anesthesia of conjunctiva and cornea. Optic atrophy. Temporary resection of the outer wall of the orbit. Ligation of the ophthalmic vein. Disappearance of the exophthalmos. During healing, purulent keratitis with hypopyon. Paralysis of inward and outward movements.

Reported by Geiszler (1907). L. pulsating exophthalmos following injury. Bruit. Chemosis. All movements of the eyeball restricted but no paralysis of the abducens. L. pupil smaller than right. $V. = \frac{5}{20}$. Papilla congested. Retinal veins markedly congested and tortuous. Compression of common carotid. Result?

Reported by Thierry⁵ (1908). O. D. M., 24. Shot in the right temple. Ball passed through brain and lodged beneath the temporal muscle immediately opposite. Typical symptoms of arteriovenous aneurysm in the cavernous sinus. No treatment. Ligation of common carotid contemplated.

Reported by Bettremieux⁶ (1909). O. D. M., 25. Blow on the head. Pulsating exophthalmos developed six months after the accident. Objective and subjective bruit; the latter like a jet of escaping steam. $V. = \frac{1}{3}$. Papilla congested. Retinal arteries slightly contracted. Veins dilated. Compression of carotid; diminished bruit and pressure on the angular vein at the upper-inner margin of the orbit completely arrested it. Diagnosis, arterial

compression at the apex of the orbit or a small arterial aneurysm in same situation. He believes that the arrest of the bruit by pressure on the orbital vein excludes arteriovenous aneurysm. He thinks that this phenomenon is perhaps more common than is supposed.

Reported by Natanson⁷ (1909). Bilateral. M. Blow on head. Extensive ectasia of the superior ophthalmic vein at the upper inner orbital margin of both orbits. Cyanosis of the area of the anterior facial vein due to anastomosis with the superior ophthalmic vein. Bruit synchronous with systole of heart. Patient would not submit to operation. Diagnosis, arteriovenous aneurysm with rupture of the internal carotid in the cavernous sinus.

Reported by Dodd⁸ (1911). O. D. M. Patient slugged and rendered unconscious. Following day facial palsy. Panophthalmitis developed. Eye enucleated. Swelling of the conjunctiva continued two weeks, when proptosis of the right eye with distinct bruit developed. Ligation of right common carotid. Complete cure.

Reported by Wilder⁹ (1911). R. E. M., 42. Rendered unconscious by a blow over the right eye. On recovery, severe pain, roaring in right ear, diplopia. Right eye began to protrude. Marked distention of the angular veins at the superior border of the orbit. Only slight abduction preserved. Marked bruit most intense with carotid systole over right side of head and eye; also at times faintly on the left side. Roaring tinnitus. No pulsation of orbital contents. On compression of carotid, bruit and subjective noise ceased. Diagnosis, aneurysm of the intracranial portion of the internal carotid. Right common carotid tied. Bruit objective and subjective ceased at once. Exophthalmos and pain gradually subsided, and movements of globe gradually restored. In five weeks, vision had risen from $\frac{20}{60}$ to $\frac{20}{30}$. Revised diagnosis, aneurysm of the cavernous portion of the carotid which did not communicate directly with the sinus.

Reported by Wilder⁹ (1911). R. E. M., 38. Fracture in parieto-occipital region, with insertion of a silver plate five or six months before exophthalmos developed. Three months later struck in back of head with iron bar and rendered unconscious. After seven weeks, right eye protruded, followed in three weeks by pain and watering of eye. Marked proptosis; eye divergent; pupil immobile and dilated. T. +.

Pain in right side of head. High pitched bruit heard all over head synchronous with heart beat. $V. = \frac{20}{40}$. Retinal vessels distended. Ligation of right common carotid. Bruit ceased at once; exophthalmos diminished. Almost complete recovery from third nerve palsy. Nine weeks later, return of subjective bruit, and still later of the objective bruit. Four months after operation, increase in exophthalmos. Internal carotid and facial vein tied. Three days after operation complete paralysis of the left forearm and hand with difficulty in speech. No amnesia. When last seen, still some muscular weakness; exophthalmos very slight; motility good; veins less prominent. $V. = \frac{20}{50}$.

Reported by Ipsen¹⁰ (1912). O. D. M. Severe injury to head. Two months later, typical pulsating exophthalmos. Intense pain in the head. Bruit. Intra-ocular tension with Schiötz 45 mm. Retinal vessels dilated. Ligation of common carotid. Cure.

Reported by Balbuena¹¹ (1913). O. S. Male. Shot in the middle of the forehead. Same day loss of vision, proptosis of eyeball and lids. Pulsation synchronous with radial pulse. Bruit marked at the upper-inner angle of orbit. Papilla atrophic. Diagnosis, aneurysm in orbital vessels anterior to sphenoid fissure. Twenty-one subcutaneous injections of 4 per cent. gelatin without improvement. Six intravenous injections at intervals of from eight to ten days effected a cure.

Reported by Feruglio¹² (1913). O. S. Male. Injury at the internal third of left lower lid, resulting in exophthalmos, headache, vomiting. Vision normal, but cerebral symptoms recurred. Pulsation of globe synchronous with arterial pulse. Loud murmur over closed lids and cranium. Slight hyperemia and edema of retina. Left common carotid tied, causing reduction of exophthalmos and restoration of movements of globe. Fifteen days later, return of symptoms. Right common carotid tied without result. Author emphasizes importance of a centrifugal venous pulse in establishing the diagnosis of arteriovenous aneurysm in a case of exophthalmos.

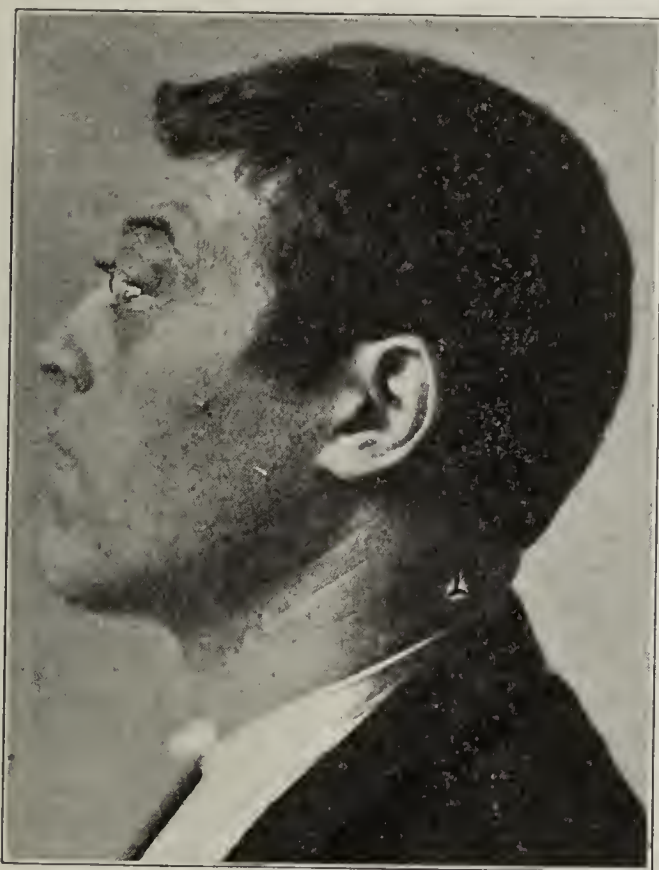


Fig. 2 (Case 1).—Traumatic pulsating exophthalmos.

5. Thierry: *Rec. d'opht.*, October, 1908, p. 469.

6. Bettremieux: *Ann. d'ocul.*, Brussels, 1909, cxlii, 33.

7. Natanson: *Ztschr. f. Augenh.*, 1909, xxii, 81.

8. Dodd: *Tr. Chicago Ophth. Soc.*, March 20, 1911.

9. Wilder: *Tr. Am. Ophth. Soc.*, 1911, xii, 832.

10. Ipsen: *Hospitalstidende*, Sept. 11, 1912.

11. Balbuena: *Arch. de oftal.*, 1913, xiii, 72.

12. Feruglio: *Ann. di Ottal.*, Pavia, 1913, xliii, 287.

Reported by Rubel¹³ (1913). O. S. Male. After a blow on the head there was loss of vision in O. S., and deafness on both sides. Three and a half years later, typical left sided pulsating exophthalmos. Papilla atrophic. Retinal veins dilated. Arteries normal. No edema of the retina, but numerous bright to light yellow dots extending to the extreme periphery of the fundus. The veins were in places obscured. Ligation of the common carotid. Eight and one half months later, the spots had disappeared. They were the result of venous congestion, but their nature was not determined. Result improved.

Reported by Märtens¹⁴ (1913). Unilateral pulsating exophthalmos three months after gunshot wound of temple. Roentgenoscopy revealed four shots within the cranium, one of which was in the cavernous sinus. No further details.

Reported by Sym and Miles¹⁵ (1914). O. S. Male, 46. Thrown from a trap on the crown of his head. Symptoms of fracture of the middle fossa of the base of skull. On regaining consciousness, had buzzing in both ears. A few days later, rapid development of pulsating exophthalmos of right eye. Blood oozing from conjunctival points. Failure to control hemorrhage led to enucleation of the eye. Eight weeks later, fellow eye began to proptose. V. = $\frac{6}{18}$. Retinal veins congested. Globe almost fixed; small degree of lateral movements. Blowing murmur over eye and temple synchronous with heart. Diagnosis, traumatic arteriovenous aneurysm on the right side, pressure telling back on circular sinus of left side. Right common carotid tied. Immediate cessation of buzzing. Three weeks after operation, V. = $\frac{6}{18}$. Full rotation of the globe. No exophthalmos. No subjective symptoms. Five months later, complete recovery.

Reported by Weil¹⁶ (1914). M. O. S. Thrown from bicycle, striking left side of head. Rapid development of typical aneurysm in the cavernous sinus. Paralysis of abducens and accommodation. V. normal. Marked engorgement of the anterior ciliary veins and of the vessels of the papilla. One month after accident, left common carotid tied with only slight benefit. The exophthalmos only slightly improved—in five weeks, 2 mm. out of 5 mm.

Reported by Bedell¹⁷ (1914). Bilateral. M., 39. Thrown from car, striking head against a tree. Fracture of base. Dizziness and headache followed appearance of orbital mass having pulsation and bruit. Symptoms of pulsating exophthalmos. Outward movement of globe limited. Retinal vessels overfull. No visible pulsation of globe. V. = $\frac{2}{30}$. Left eye, large mass of tortuous dilated blood vessels in upper lid. A large vessel at upper-inner angle of the orbit. Abducent paralysis. Bruit and blowing murmur heard over supra-orbital ridge and entire head. Retinal veins engorged. Occasional pulsation of the retinal arteries. Hearing on left side much reduced. Roentgenoscopy revealed separation through the frontal bone, extending from deep in the orbit to the vertex between the parietals. Carotid pressure, or pressure on the ophthalmic vein deep in the left orbit, stops pulsation and bruit. Patient refused operation.

Reported, in discussion, by Oertel¹⁷ (1914). Bilateral. M., 39. Fracture of the base of the skull. Two days later proptosis of left eye and one month later of the right eye. Intense pain. Pupils dilated, globes fixed. Distinct pulsation of both globes. Small pulsating vessel extended across the bridge of the nose. V. = fingers at 2 feet. Under administration of potassium iodid, sedatives and local scarification, return to normal in two and a half months. Author strongly advises conservative treatment.

Reported by Silvan¹⁸ (1914). O. D. M., 16. Fall on head. Typical pulsating exophthalmos. Globe immobile, pupil dilated. Paralysis of left facial. Preservation of the function of the eighth, ninth, tenth, eleventh and twelfth nerves. Papilla over capillary, veins turgid. V. = l. p. Pulsation and bruit. Ligation of right common carotid. Marked reduction in exophthalmos. V. = $\frac{3}{10}$.

Reported by Cantonnet¹⁹ (1914). O. D. Soldier. Severe hemorrhage of the internal maxillary artery. Seven months later exophthalmos, varicose veins in lids. Pulsatile tumor. Mechanical ptosis. Only slight adduction remaining. Retinal veins and arteries show pulsation. Arteries contracted, veins dilated. Papilla pale. Eye blind. To be treated with gelatin injection.

Reported by Posey²⁰ (1915). Bilateral. M., 66. Fall on head with fracture of skull. Vision began to fail shortly after the accident. Roentgenoscopy three years after accident, negative. Mass of veins, which pulsate and convey a thrill on palpation, felt under upper rim of orbits. O. D. V. = fingers at 12 inches; O. S. $\frac{1}{60}$. Low grade optic atrophy. Retinal veins much distended and tortuous. Eyes nearly immobile. Also symptoms indicating cerebellar involvement from a destructive lesion occasioned at the time of accident. Rapid disappearance of symptoms after ligation of right common carotid and resection of the orbital veins. V. =. O. D. $\frac{1}{60}$; O. S. $\frac{6}{60}$.

Reported by Ruata²¹ (1915). O. D. M., 16. Six months after the accident, marked exophthalmos with pulsation synchronous with radial. Visible pulsation. Pressure on the carotid diminishes the exophthalmos. Movements of the globe full. Pupil dilated and fixed. V. = l. p. Papilla over capillary and margins diffuse. Veins extraordinarily tortuous and engorged. Arteries reduced, pallid and fusiform. Paralysis of the left facial with lagophthalmos. Retinal veins dilated and tortuous. V. = 0.4. Small temporal field. Ligation of the right common carotid. Result, exophthalmos and venous engorgement of orbit persisted. White plaques appeared between papilla and macula. O. S. Lagophthalmos persisted. Eye otherwise normal. V. and field normal. Final result, exophthalmos lessened. V. = 001.

Reported by Brazeau²² (1915). Unilateral. O. S. M., 39. Blow on left side of face four years previously. Two days after injury, roaring noise preventing sleep. Three months later, proptosis, dizziness and diplopia. Enlargement of supra-orbital veins. Paresis of external rectus. V. = counting fingers. Distinct bruit over eyeball. Retinal vessels markedly dilated. Optic neuritis. Neff clamp applied to the common carotid. Pulsation and bruit disappeared in four days. Six months later, still some exophthalmos. V. = $\frac{6}{15}$. Final result two years later, V. = $\frac{4}{10}$. All phenomena disappeared, and there were no untoward cerebral symptoms. The author considers that this procedure meets the requirements of occlusion, for it prevents danger of secondary hemorrhage which attends sudden stoppage of blood current, and prevents cerebral ischemia and late cerebral softening, resulting in 50 per cent. in death. It also shortens the period of recovery; in this particular case the patient returned to work within thirty days of the operation, and two years later there were no untoward results.

Reported by de Schweinitz and Holloway²³ (1916). O. S. M. Fracture of skull from motorcycle accident. On regaining consciousness patient noted that the vision of O. S. was affected. One week after accident, left temporal decompression was done. Five days later some exophthalmos; limitation in all rotations of the globe except downward. Temporal half of papilla pale, retinal veins full-sized. Fingers at 1 m. Hand field full. One year later all the symptoms of pulsating exophthalmos. At upper-inner region of orbital margin, large venous ectasia with thrill and pulsation. Smaller one in lower lid. Disseminated retinal hemorrhages. Veins full and tortuous. Rotations of globe full except for slight limitation of outward rotation. V. = $\frac{6}{22}$. A precautionary ligature was thrown about the carotid but not tied previous to cutting down on the orbital ectasia. The dilated vein was ligated and excised. Two months later there was return of pain and pulsation on deep pressure in the inner-upper portion of the orbit. Displacement of globe same as before the operation. On lying down there was an intermittent bruit de pialement.

13. Rubel: *Klin. Monatsbl. f. Augenh.*, July, 1913, p. 62.

14. Märtens: *Klin. Monatsbl. f. Augenh.*, 1913, p. 523.

15. Sym and Miles: *Edinburgh Med. Jour.*, 1914, xiii, No. 5.

16. Weil: *Klin. Monatsbl. f. Augenh.*, January, 1914, p. 119.

17. Oertel: *Tr. Acad. Ophth.*, Boston, October, 1914.

18. Silvan: *Riv. ven. d. sc. med.*, 1914, lxi, 51.

19. Cantonnet: *Arch. d'ophth.*, 1914, xxxiv, 583.

20. Posey: *Ann. Ophth.*, 1915, xxiv, 203.

21. Ruata: *Arch. di Ottal.*, Pavia, 1915, xxii, 307.

22. Brazeau: *California State Jour. Med.*, 1915, xiii, 307.

23. *Tr. College of Phys. of Philadelphia*, January, 1916.

SUMMARY AND CONCLUSIONS

An analysis of the twenty-nine cases collected in this paper shows that:

The common carotid was ligated sixteen times, resulting in a cure in seven, improvement in five and failure in four.

Combined ligation of the common carotid and the ophthalmic vein was done once, resulting in a cure.

Combined ligation of the internal carotid and the facial vein was done once, resulting in a cure.

Ligation of the orbital veins was done once, resulting in slight improvement.

Slow ligation of the carotid was done twice, resulting in one cure and one slight improvement.

Ligation of both carotids was done once, resulting in failure.

Compression of the carotid and internal treatment was followed in four cases, resulting in cure in two, improvement in one, and result unknown in one.

Gelatin injections were used in one case, resulting in a cure.

There was no treatment in six cases.

Combining these cases with those analyzed in Bedell's paper,³ we find that the common carotid artery was tied thirty-two times with cure in twelve, or 37.5 per cent., improvement in twelve, or 37.5 per cent., and failure in eight, or 25 per cent.

The orbital operation, ligation of the ophthalmic vein, was done in six cases (including the case mentioned by de Schweinitz in discussion), with cure in three, or 50 per cent., improvement in one, or 16 per cent., and failure in two (one fatality), or 33 per cent.

Gelatin injections were used in four cases with cure in two, or 50 per cent., improvement in one, or 25 per cent., and failure in one, or 25 per cent.

It is to be particularly noted that in this combined series there are thirty-two cases of ligation of the common carotid without a fatality. Just how frequently late cerebral softening results, it is difficult to say; but if this complication can be averted, as is claimed, by slow ligation, it would seem that inasmuch as death may result from simple ligation of the ophthalmic vein and that late serious hemorrhage into the orbit necessitating ligation of the carotid artery has occurred, and that finally, in traumatic pulsating exophthalmos the lesion is usually an aneurysm of the internal carotid in the cavernous sinus, the order of surgical procedure indicated is slow ligation of the common carotid, followed by ligation of the ophthalmic vein in those cases in which the primary operation fails to effect a cure.

Inasmuch as the results with gelatin injections have been favorable in the few cases in which they have been tried, there can be no objections to their employment if the patient is seen early.

1819 Spruce Street.

ABSTRACT OF DISCUSSION

DR. FRANK E. BURCH, St. Paul, Minn: One is particularly impressed in this report with the freedom from serious trouble following carotid ligation. There were no fatalities. It would seem that any objections to carotid ligation would be met if preliminary digital or mechanical compression were employed, or if the artery was ligated gradually.

In 1910 Dr. Charles H. Mayo suggested the use of a strip of block tin, which is firm enough to remain set and can be compressed with the fingers. In a case of my own, ligation did not cure, and subsequent resection of the ophthalmic vein gave relief to the patient, although vision in the operated eye was lost.

In my case, as in one of Dr. Zentmayer's, carotid ligation failed to stop the bruit fully and completely, although the subjective and objective symptoms were relieved by each procedure. In Krauss' case the uveitis preceded, in mine it followed, ophthalmic ligation. It is a fact that the bruit persists in a very considerable proportion of the cases reported, treated either by ligation of the carotid or of the ophthalmic vein. I can conceive that preliminary compression of the vein and double ligation without resection might lessen the traumatism and venous stasis and I recommend that this be tried. Dr. de Schweinitz makes a distinction between arterial aneurysm within the cavernous sinus and arteriovenous aneurysm. It is not impossible that some of the reported cases of cure by carotid ligation alone were arterial aneurysms.

DR. W. H. WILDER, Chicago: Concerning the first case of the author, it is difficult to understand how a traumatism so slight as that resulting from strain while lifting, could, in a strong, healthy young man of 26, bring about a condition such as that believed to cause pulsating exophthalmos, without a previous diseased condition of the walls of the carotid artery. It would seem probable that this case belongs to the class of spontaneous exophthalmos. Furthermore, the absence of noticeable pulsation in this case would seem to indicate that the cause might have been an aneurysmal dilatation of the carotid artery in the sinus rather than a true arteriovenous aneurysm with rupture of the artery into the sinus. In such cases the pulsation may be very slight or entirely absent, as in Dr. Zentmayer's first case, although a bruit is obtainable over the orbit and on the side of the head. In 1897 I reported three cases of pulsating exophthalmos to the American Ophthalmological Society, one of which, in a man 39 years of age, was spontaneous, and the only etiology that could be determined was syphilis, which he had contracted fifteen years before. The presumption was that there was an aneurysm of the carotid in the sinus for pulsation was very distinct. Ligation of the carotid was repeatedly refused, as was also digital compression, and antisyphilitic treatment was administered for months with distinct reduction of the swelling. At the end of a year he passed from my observation with the condition still present. It seems to me important in any case in which there has been very slight traumatism or none at all to determine, if possible, the existence of syphilitic infection, for treatment directed toward this may have its effect, in view of the fact that a number of cases are known to have recovered spontaneously. Of the five cases that I have seen and recorded, four were caused by crushing injuries of the skull. Three of these were operated on and relieved: one by ligation of the right common carotid, followed three months later, because of recurrence, by ligation of the left carotid; one by ligation of the right common carotid; one by ligation of the right common carotid followed nine weeks later, because of return of the bruit, by ligation of the internal carotid of the same side.

DR. M. H. LEBENSOHN, Chicago: Dr. Zentmayer would have us believe that ligation of the common carotid is either a very simple or a safe procedure. I want to report a fatal case. About six years ago a man, aged 39, was kicked in the right eye and developed a pulsating exophthalmos shortly afterward. He came to the infirmary four or five days after the injury. Slow pressure for two months and medication gave relief at first. Ultimately it was decided to operate and Dr. Halsted operated, with a fatal result in three days. In another case ligation of the common carotid terminated fatally. So that it is not so simple or safe as Dr. Zentmayer would have us believe.

DR. HAROLD GIFFORD, Omaha: Besides the danger of death from cerebral thrombosis you must also remember the danger of blindness from thrombosis of the retinal vessels. I have seen one case in which after ligation for carcinoma of the tonsil the patient became blind in the eye on that side, with occlusion of the retinal artery. Sometimes we have all these symptoms of pulsating exophthalmos from aneurysmal varix in the neck. I had a case some years ago in which a man was knocked down by blows in the neck region; the

neck became swollen and black. The patient developed symptoms of pulsating exophthalmos which were not so bad that we were tempted to ligate the vessels. He established a sort of tolerance for the symptoms and retained them to a certain extent, so far as I know.

DR. T. B. HOLLOWAY, Philadelphia: I do not think that there is any doubt that cases of true pulsating exophthalmos have occurred spontaneously, and in the majority of these instances it is presupposed that there is some alteration in the artery, either through disease or previous trauma. As far as typical pulsating exophthalmos is concerned, I would not regard a case as such in the absence of a subjective or objective bruit. Probably the most interesting factor that concerns us at present is the treatment—shall we resort to ligation of the carotid or to the so-called orbital operation? Recently Brazeau, in referring to carotid ligation, stated that the method of slow ligation by the use of the Neff clamp will do away with 50 per cent. of deaths in these cases. Carotid ligation in pulsating exophthalmos never has and never will give rise to a 50 per cent. mortality. Ligation may have a mortality of 25 to 40 or even 50 per cent. when considered in reference to the various conditions for which this procedure may be done. If we take Reuchlin's series of 116 cases and the series of 32 cases reviewed by Dr. de Schweinitz and myself, the mortality for these 150 cases is 10 per cent. (fifteen deaths). If we include the thirty-two cases of Bedell and Zentmayer, the mortality is but 8.2 per cent. for 182 cases. If this be compared with Siegrist's mortality of 8.8 per cent. for 113 cases, there is a difference of but .6 per cent., so that I feel that the mortality for carotid ligation is pretty definitely established. Even in double ligation of the carotid, and there are some ten or eleven cases on record, the mortality among 303 cases was only 20 per cent. In our own series we found that the orbital veins had been ligated without fatality eight times. The series of six cases quoted by Dr. Zentmayer, if added to ours, gives a total of fourteen cases with one death. I admit the series is small but the mortality is only 7.1 per cent. If we include the other four cases of orbital operation referred to in our series, the mortality is still less, but 5.5 per cent. Much is said about the possible cerebral complications that may follow ligation of the orbital vessels. Cerebral complications also occur after carotid ligation, and I question whether the statistics are as accurate as those for ligation of the orbital veins. As far as we can tell, about 9 per cent. of the cases subjected to carotid ligation have been followed by cerebral complications. I am free to admit that slow ligation as advocated by Brazeau, Matas and others tends to eliminate certain prominent complications, such as secondary hemorrhage and possibly wound infection. In other words, if I had a pulsating exophthalmos today I would possibly want the common carotid ligated by gradual compression. I would insist on a ligation of the orbital vein before resorting to ligation of the other carotid. On the other hand, it must not be forgotten that in this condition much depends on the extent of the primary injury, the age of the patient, the presence and character of possible associated diseases. All are factors when it comes to selective treatment.

DR. WILLIAM ZENTMAYER, Philadelphia: There is no doubt that the case mentioned by Dr. Wilder is open to such criticism as he has made. That patient was seen before Wassermann tests were made, and the only way we could get the history was by interrogation, which is unsatisfactory in regard to syphilis. There may have been syphilitic disease of the artery as the underlying cause. I hope I did not leave the impression that ligation is a harmless procedure. I said there had been no fatalities in the cases I collected. If you will consult the monograph of Drs. Holloway and de Schweinitz you will find that there have been many fatalities, but I made the point that by the new method of ligating the carotid this might be avoided. I have been asked how this has been accomplished. There have been many plans. Matas uses aluminum plates which are slowly approximated until final occlusion. In my own case Dr. Stewart used fascia lata, with the expectation that the

shrinking of this tissue would bring about slow occlusion of the vessel. I believe it was not altogether successful. He subsequently reopened the wound and brought about the occlusion more rapidly. Another way is by the so-called Neff clamps in which the aluminum clamps are hinged and are gradually approached until occlusion is brought about.

SOME TECHNICAL FEATURES OF LAMINECTOMY FOR SPINAL DISEASE AND INJURY

BASED ON ONE HUNDRED AND FIFTY
SPINAL OPERATIONS *

CHARLES A. ELSEBERG, M.D.
NEW YORK

In our operations for spinal disease or injury, we have used different methods of approach (curved and straight incisions, hemilaminectomy and complete laminectomy) and various instruments, and I have arrived at the conclusion that the complete removal of the spinous processes and laminae is the simplest and most reliable method for the opening of the spinal canal. Complicated instruments are unnecessary. After the exposure of the spines and laminae by a straight incision and the separation of the muscles, the spines are removed at their bases with large rongeur forceps, and the laminae are bitten away with smaller rongeurs of various sizes and patterns. For the exploration of the spinal canal, a defect at least 1 cm. in width should be made, so that all sides of the cord can be investigated with the minimum amount of handling of the delicate cord tissues. If posterior roots are to be divided, the opening may be somewhat narrower than that for exploration; for decompressive purposes the opening should be at least 1.5 and usually 2 cm. in width (Figs. 1, 2 and 3).

Our experience has shown us that, unless the cord has been invaded (as in incision of the cord for the extrusion of intramedullary growths) marked exaggeration of the symptoms of a spinal disease should rarely follow a laminectomy. The exaggeration of symptoms is usually due to trauma to the cord from too much or too rough manipulation or from hemorrhage into the sac of the arachnoid. As our experience in spinal surgery increased, we found that a more than very temporary exaggeration of the symptoms for which the operation was performed became correspondingly less frequent. While all parts of the cord are very sensitive, the conus and origin of the nerves of the cauda equina are especially vulnerable, and after operations in this region, disturbances of the bladder and rectum and of the lower extremities are especially apt to occur.

DECOMPRESSIVE LAMINECTOMY

The benefits from spinal decompression in non-removable expanding lesions within the spinal canal (tumors, etc.), and in compression of the cord by diseased or dislocated bone, are fully as great as those from cerebral decompression in intracranial disease. The opening in the spinal canal should always be a wide one, so as to give plenty of space.

When a decompressive laminectomy for old or recent fracture of the spine is performed, the surgeon

* From the Surgical Services of the New York Neurological Institute and Mount Sinai Hospital.

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

must be sure to take away a sufficient number of spines and laminae. To remove the arches of the fractured or dislocated vertebrae so as to relieve the compressed cord, or to allow the angulated cord to bulge backward, is not enough. It is usually necessary to take away one or two arches above and below, so that the dural sac has sufficient room to bend backward in a gradual curve. In some cases of spondylitis, in which the intervertebral foramina are diminished in size so that the spinal nerve roots are compressed, it may be necessary to enlarge some of the intervertebral foramina with small rongeurs. In one instance I was able, by this procedure, to free several nerve roots from pressure, and thus relieve the patient of a severe root pain.

It is often advisable to cut a few slips of the dentate ligament at the affected level of the cord, so as to give the cord a greater freedom of movement. The division of a number of slips of the dentate ligament near their attachment to the dura does absolutely no harm, and will always allow a backward dislocation of the cord. Whenever a disease on the anterior surface of the cord (such as a growth) has to be exposed, the manipulations are made more easy by the division on each side of one or two slips of the dentate ligament. When the decompressive laminectomy is performed on account of disease of the dura, it may be necessary to excise a large piece of that membrane. This excision may have to extend on both sides down to and into the dural openings. Such a wide excision of the dura may be required in cases in which the root pains have been very severe. If the disease is confined to the outer surface of the dura, it may be possible to dissect off and excise the thick outer layer of the membrane. If this cannot be done, the dura must either be incised and left wide open, or the diseased part is excised. If the dura is left open, the cord should be covered by a piece of Cargile membrane, and the muscles and fasciae should be united with extreme care.

THE NORMAL AND PATHOLOGIC APPEARANCE OF THE CORD

Considerable experience is necessary before slight abnormalities of the brain tissue can be recognized as such. The same difficulties are encountered in spinal disease; in fact, we have as yet a very limited knowledge of the intravital macroscopic appearance of the spinal cord in a number of its diseases. I have made notes of the appearance of the cord and nerve roots in my spinal operations, and shall give an account of some of the pictures observed. The surgeon who does much spinal work should not only be able to recognize such gross abnormalities as tumors, pachymeningitis, etc., but he should also understand the finer changes that occur in spinal disease.

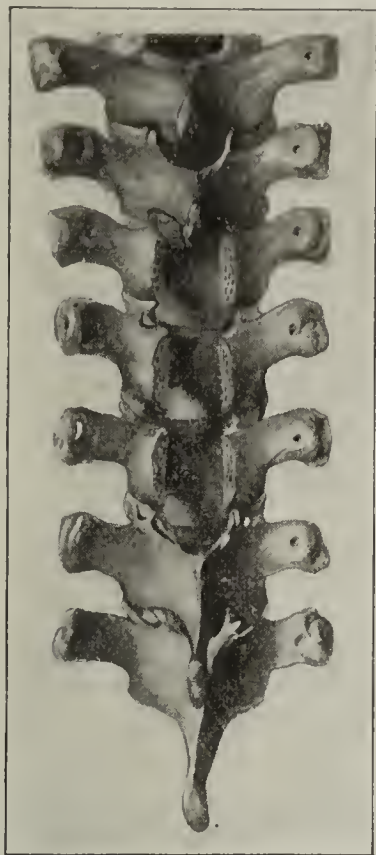


Fig. 1.—The amount of bone removed in the operation of laminectomy.

THE COLOR OF THE SPINAL CORD AND NERVE ROOTS

Normally the spinal cord and nerve roots are of a creamy white color, and the vessels on the posterior surface of the cord are fairly prominent and somewhat tortuous. The spinal cord in childhood is slightly more yellow, while in advanced age, its color is a more pure white.

While slight individual variations occur, a dead white of the cord is an evidence of medullary atrophy. In multiple sclerosis, it is often possible to recognize the location of a sclerotic patch by the whiteness of the cord at the affected level. A similar pallor of the tissue can sometimes be observed at or below the level of an old injury of the cord. Below an old transverse lesion, the cord is usually of a deeper yellow tint than normally, and I have observed the same yellowish color in transverse myelitis following the puerperium and in pernicious anemia.

The white cords are often flat, shrunken and irregular in consistency. They are sometimes so thin that they float on the cerebrospinal fluid, and undergo undulatory movements with the respiratory waves of the cerebrospinal fluid.

The spinal cord may appear congested in intramedullary disease (myelitis, acute softening), in meningitis, in disease of the dura or arachnoid, below the level of an extramedullary compression, or after a trauma. It is very important for the surgeon to have a clear idea of the differences in the appearance of a congested cord due to inflammatory disease and a cord in which the veins are distended following a compression above the level exposed. The inflamed or hyperemic cord has a pink color due to the dilatation of all the vessels in the pia-arachnoid. When the cord is compressed at some higher level, however (especially in spinal tumors) the return flow in the veins is interfered with, so that the veins stand out prominently as dark, tortuous vessels on the normal white background of the cord. This engorgement of the veins has, in a number of exploratory operations, led me to expose more of the cord at a higher level, and I have been enabled to find and remove tumors which would otherwise have been missed. In inflammatory diseases, the nerve roots are also congested, and often bluish-red; but below the level of a compression, the nerve roots are normal in appearance.

If the roots of the cauda equina are exposed soon (within twenty-four hours) after a lumbar puncture has been performed on the patient, it is not unusual to observe that a few of the nerves are reddish-blue. The changed roots usually lie near the median line, and the discoloration is probably due to slight injury from the lumbar puncture needle. A marked congestion of all the roots of the cauda equina is an evidence of a low grade inflammatory process in the roots. This



Fig. 2.—The amount of bone to be removed in a decompressive laminectomy.

occurs in syphilitic disease of the membranes, and in a disease described by Foster Kennedy and myself and by Oppenheim, which we have described as "neuritis of the cauda equina."

THE INJURY TO THE CORD BY THE PRESSURE
OF AN EXTRAMEDULLARY TUMOR;
TECHNICAL DETAILS IN THE
REMOVAL OF SPINAL
CORD TUMORS

The amount of compression of the cord by an extramedullary new growth depends on its duration and size. Large intraspinal tumors are usually much softer than small ones. The larger, softer growths cause a more diffuse pressure on the cord, while in the small hard ones the pressure is more concentrated. This is the explanation for the surprising fact that small tumors (on account of their consistency) are more apt to cause a complete and irremediable transverse lesion of the cord.

The amount of injury done to the spinal cord varies also with the location of the tumor. Tumors under a nerve root or under a slip of the dentate ligament are more apt to cause serious injury than growths on the posterior columns.

If, at an operation, a new growth is found which lies under a nerve root or a slip of the dentate ligament, the root or ligamentous band should be divided before the tumor is removed. It is generally inadvisable to make the attempt to free the growth and to pull it out from underneath these structures, for in the necessary manipulations, injury to the cord is apt to occur.

Properly to expose a spinal cord tumor, the arches of at least three vertebrae must be removed. If this does not completely expose the tumor, additional spines and laminae should be taken away, and the incision in the dura extended. The new growth may be adherent to the pia or may have originated beneath the pia, and serious trauma to the cord might follow if the growth was forcibly drawn out of its bed.

If the tumor is found to be very adherent to the cord, as occurs especially in subpial growths, it is often advisable to leave a small piece of capsule behind rather than to make the attempt to free the tumor from the cord. Most spinal growths are well encapsulated, grow very slowly, are clinically benign, and have very little tendency to recur. The danger of relapse if a small piece of capsule is left behind is small, and is

more than counterbalanced by the lessened danger of injury to the cord. Several patients, in my experience, in whom a small part of the tumor capsule was left behind at the operation, have remained well for many years.

Extramedullary growths on the anterior surface of the cord are rare; I have seen only one among twenty-eight cases. To remove a growth in that location without too much manipulation of the cord requires much dexterity and judgment (Fig. 4). If the growth is a small one, the division of a slip of the dentate ligament on one side may be all that is required for the rotation of the cord and the exposure of the growth. If the tumor is larger, however, the laminae on one side should be rongeured away until the approach to the anterior surface of the cord can be made without much dislocation of the cord itself.

THE MORTALITY OF LAMINECTOMY

The accompanying table gives my operative results in 150 spinal operations for disease and injury. The total operative mortality was fifteen, or 10 per cent. If the cases with a fatal outcome are examined, it will be found that in most of them the patients suffered from an irremediable and rapidly advancing disease. Thus, two patients died after an

operation for recent fracture of the cervical spine, with complete crushing of the cord; six patients died after periods of from one day to two weeks following an exploratory operation for acute softening; two patients died after an exploratory operation for hopeless sarcomatous disease of the vertebrae; one patient succumbed after an attempt to relieve a streptococcus sepsis due to acute osteomyelitis of the vertebrae. These eleven patients were all beyond the hope of surgical relief, and the operation must be considered only as a contributing cause of the fatality.

The four other deaths occurred in patients in whom life might have

been prolonged if no surgical interference had been undertaken. One patient succumbed from respiratory paralysis a few hours after the removal of a high cervical intramedullary growth. She had had respiratory and cardiac disturbances before the operation, and a quadriplegia. The second patient died two days after an exploratory operation for a high cervical intramedullary tumor, which was infiltrating and was continuous with another growth in the posterior cranial fossa. The third patient had a metas-

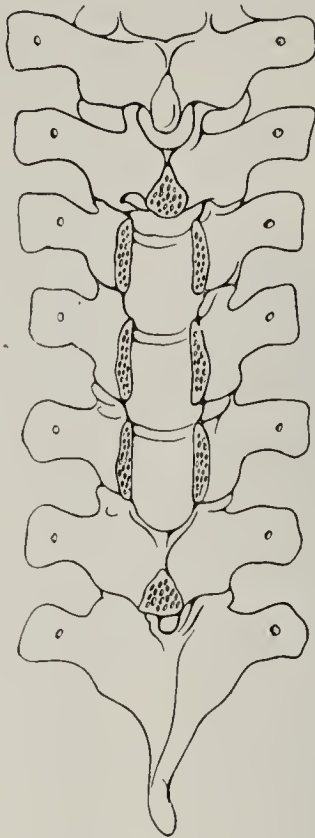


Fig. 3.—The amount of bone removed in a laminectomy, and the removal of the tips of two spinous processes.

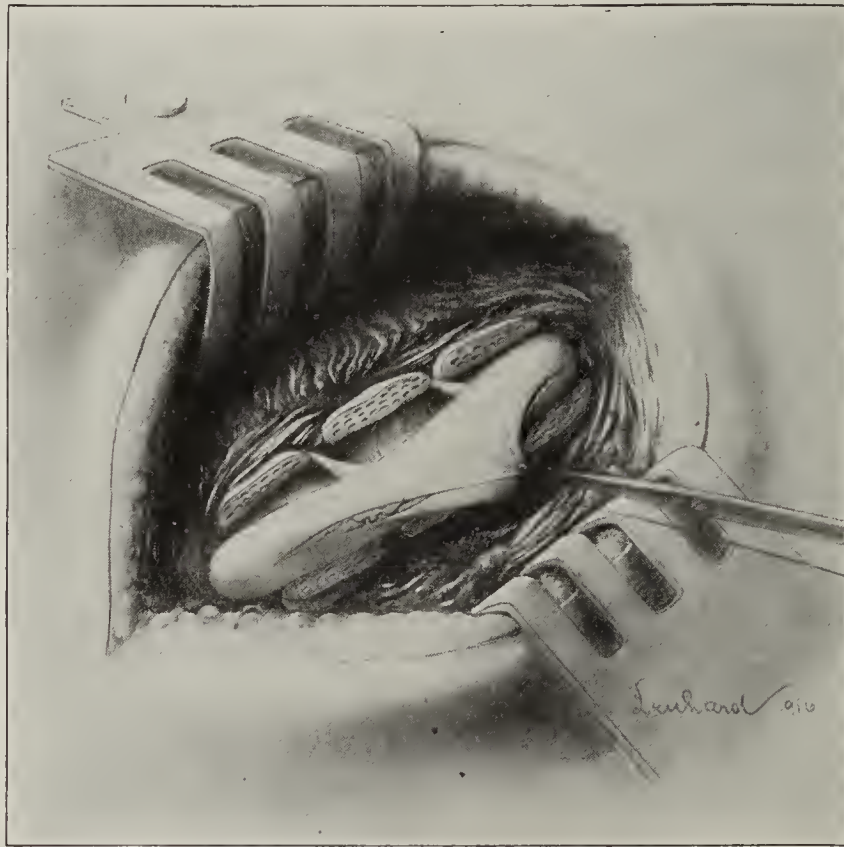


Fig. 4.—Method for the exposure of the posterior surface of the bodies of the vertebrae.

tatic growth of the ribs after the removal of carcinoma of the colon, and died three days after laminectomy and posterior root section done to relieve a distressing root pain. The fourth patient, finally, died from an acute ascending paralysis after the division of the anterolateral tracts for pain.

In order to obtain a fair idea of the dangers of a laminectomy in remediable diseases the eleven fatal cases in Group 1 can be fairly excluded as cases of hopeless and surely fatal disease. And a scrutiny of the four cases in Group 2 will show that several of the patients suffered from hopeless disease which would of itself have terminated their lives in a short time. If the cases of Group 1 were excluded, I should have had

RESULTS IN ONE HUNDRED AND FIFTY LAMINECTOMIES *

Laminectomy for:	Number of Cases	Recovered from Operation	Cured or Al-most Cured	Markedly Im-proved †	Little or no Improvement	Died	Died Within One Year	Total
Spina bifida occulta.....	2	2	..	2	..	..	..	2
Abnormal spinal vessels	3	3	..	3	..	..	..	3
Recent fracture of spine	3	1	..	1	..	3	..	3
Old fracture of spine....	7	7	3	4	..	..	..	7
Tumor, extradural re-moved.....	3	3	2	1	..	..	..	3
Tumor, extramedullary, removed.....	16	16	12	4	..	..	..	16
Tumor, intramedullary, removed.....	9	8	2	4	2	1	..	9
Tumor, intramedullary, not removed.....	8	7	..	2	5	1	3	8
Tumor of conus and cauda.....	5	5	..	3	2	..	2	5
Tumor, multiple sar-coma.....	1	1	..	..	1	..	1	1
Tumor, sarcoma of ver-tebrae.....	6	4	..	2	2	2	2	6
Tumor, metastatic.....	2	2	..	..	2	..	2	2
Aneurysm of spinal ves-sels.....	1	1	..	..	1	..	..	1
Exploration.....	15	15	..	5	7	..	3	15
Exploration, acute soft-ening.....	6	...	..	..	..	6	..	6
Syringomyelia, hemato-myelia.....	4	4	..	2	2	..	..	4
Neuritis of cauda equina	6	6	3	3	..	..	..	6
Pachymeningitis.....	4	4	1	3	..	..	..	4
Acute osteomyelitis.....	2	1	1	..	..	1	..	2
Osteoarthritis.....	1	1	1	..	..	..	..	1
Spinal decompression...	17	17	3	9	5	..	..	17
Spinal decompression, meningomyelitis.....	3	3	..	2	1	..	..	3
Division of posterior roots.....	22	21	..	15	5	1	3	22
Division of anterolat-eral tracts.....	2	1	..	1	..	1	1	2
Totals.....	150	135	30	66	35	15	17	150

* There were, in addition, ten secondary laminectomies.
† Many of these patients have recovered entirely.

139 operations with four deaths, or a mortality of 2.9 per cent. I believe that this is about the mortality that the operation of laminectomy should have in individuals who have not a spinal disease which will be rapidly fatal without operative interference.

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ABSTRACT OF DISCUSSION

DR. E. SACHS, St. Louis: The approach to the anterior surface of the spinal cord has always been a difficult problem on account of the important factor that one must not handle central nervous tissue any more than necessary and putting in the retractor to draw the cord to one side is a very dangerous procedure. Dr. Elsberg has pointed out that the different circulatory disturbances apparent as soon as the cord is exposed are of great diagnostic value in determining the character of the pathologic lesion. I am inclined to differ from him in one point, that is, that the congestion of the veins when the dura is opened is an evidence of a lesion

higher up. The mere opening of the dura and changing the intraspinal pressure is sufficient to produce congestion of the veins. Dr. Elsberg emphasized also the importance of a dry field. Nothing gives more postoperative trouble after laminectomy than allowing blood to get into the spinal canal. It has been my practice never to open the dura until the field is entirely dry. Then, in order to prevent any blood from getting in from the muscles on either side I make use of Frazier's method, putting in sponges on either side to exclude the muscles as well as the skin from the operative field so that nothing is exposed except the dura and the cord. I have never found it necessary to use a suction apparatus such as Dr. Elsberg illustrates. No doubt it might be of very great value. After the incision has reached the spinous processes he makes an incision through the muscles. That is the cause of considerable hemorrhage. I try never to cut the muscles and stick closely to the bone and peel back the periosteum, starting at the tips of the spinous processes. In that way you can get a very much drier field. His point about taking off a large amount of bone and a great many spinous processes, if necessary, I endorse heartily. As he said, the spinous processes in no way support the spinal column and five or six or seven spinous processes can be removed with impunity and the mobility of the back be as good as prior to that time. The method of hemilaminectomy, which Dr. Taylor of New York has used so extensively, has not been of any advantage in my hands. His emphasis of cutting the posterior roots in order to get more exposure for a tumor rather than trying to get a tumor out through a narrow opening is a method that should be used whenever necessary. Any method that will avoid trauma to the nervous tissue is to be recommended even though you may produce a small zone of anesthesia after cutting a posterior root.

DR. CHARLES ALBERT ELSBERG, New York: After the tips of the spines have been exposed, I formerly used the periosteal elevators to separate the periosteum from the spinous processes, but found that one did much more injury to the muscles than if they were separated by cutting close to the spines. With reference to congestion of the veins when the spinal cord is exposed: It is very true that within fifteen or twenty minutes, if the cord is exposed for that length of time, there is a reflex enlargement of the spinal veins; but the appearance in the conditions I demonstrated is entirely different. The moment one sees these large veins they mean obstruction to the return venous flow and compression of the cord above the level exposed. I am quite sure this enlargement is not reflex; it is a real pathologic condition which has significance and which has in a number of instances led us to look for and remove tumors which otherwise would not have been found.

Fly Extermination.—Hodge (1910) has approached the problem of fly extermination from another viewpoint. He believes that it is practical to trap flies out of doors during the preoviposition period, when they are sexually immature, and to destroy such numbers of them that the comparatively few which survive will not be able to lay eggs in sufficient numbers to make the next generation a nuisance. To the end of capturing them in enormous numbers he has devised traps to be fitted over garbage cans, into stable windows, and connected with the kitchen window screens. Under some conditions this method of attack has proved very satisfactory.

One of the most important measures for preventing the spread of disease by flies is the abolition of the common box privy. In villages and rural districts this is today almost the only type to be found. It is the chief factor in the spread of typhoid and other intestinal diseases, as well as intestinal parasites. Open and exposed to myriads of flies which not only breed there but which feed on the excrement, they furnish ideal conditions for spreading contamination. Even where efforts are made to cover the contents with dust, or ashes, or lime, flies may continue to breed unchecked. Stiles and Gardner have shown that house-flies buried in a screened standpipe forty-eight inches under sterile sand came to the surface.—Riley and Johannsen.

SOME BODILY CHANGES DURING
ANESTHESIA

AN EXPERIMENTAL STUDY *

FRANK C. MANN, M.D.

ROCHESTER, MINN.

In studying the bodily changes due to an anesthetic or occurring during the anesthetized state, it is necessary to differentiate carefully the effect of associated conditions. The preliminary excitement, struggling, asphyxia and other accompanying phenomena produce changes quite apart from the anesthetic itself. The compensating physiologic mechanism necessary in light anesthesia is probably not the same as when a deep anesthetized state is produced. A short or long period of anesthesia may differ only in degree, provided the anesthetic tension remains the same.

The present investigation deals mainly with a study of the blood of dogs under ether anesthesia. While the associated conditions, as asphyxia, etc., were also included in the study, in general only the results obtained while the animal was under surgical anesthesia will be emphasized.

The blood is the carrier of the anesthetic substance in every method of general anesthesia, and it is important to know definitely how it is affected by each anesthetic either directly or indirectly. This knowledge is of especial value in view of the fact that today more patients than ever before are being operated on under general anesthesia who have a lower hemoglobin content and more pathologic changes of other kinds.

While in the experiments herein reported the methods of etherizing differed, depending on the condition desired, the general procedure consisted in a preliminary etherization in a closed cabinet until the animal was completely relaxed, followed by the employment of the auto-inhalation method.¹ The latter consists in intubating in the same manner as for intratracheal insufflation. The intubation tube is connected through a valve tube with a double perforated ether can, which allows of a limited amount of rebreathing. With little effort, constant anesthesia can be maintained in this manner for long periods.

It was important to determine first whether the amount of circulating blood was diminished. This was estimated according to a method described in a previous publication,² which consisted in bleeding the animal from the femoral artery and from the right heart and then comparing the amount of blood obtained with the total amount present in the body, estimated on the basis

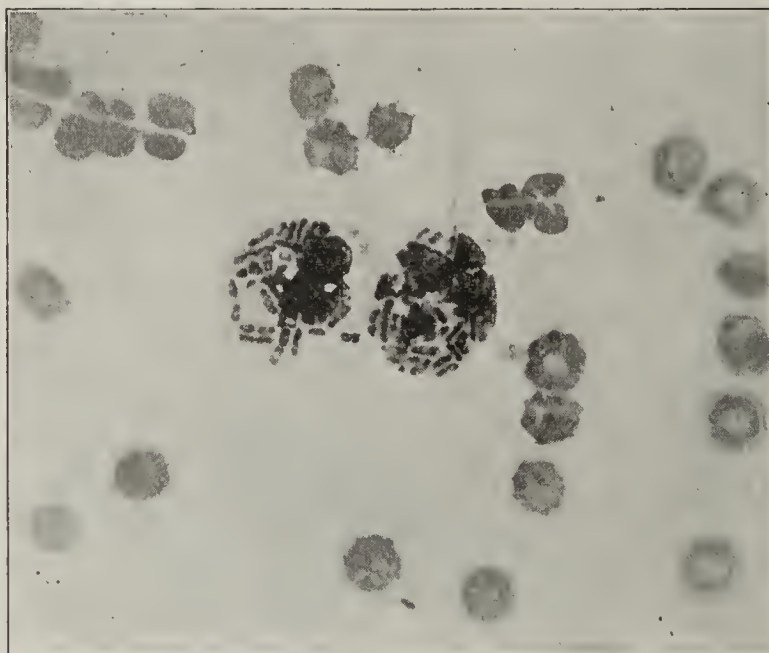
of 7.7 per cent. of the body weight. While this method gives only comparative results, it is accurate enough, when carefully controlled, to show gross changes. In a series of six normal animals which were bled immediately after being etherized, I was able to obtain an average of 76 per cent. of the estimated amount of blood. In a series of six animals which were bled after from six to nine hours of light etherization, only 64 per cent. of the estimated amount of blood was obtained. The decrease in the amount of circulatory fluid would probably have been much greater if deep anesthesia had been employed. The result is due undoubtedly to loss of muscle tone and venous stagnation, as explained by Gatch.³

The lipoids of the tissues seem to have the greatest affinity for the most common anesthetic substance. Of these lipoids, lecithin and cholesterin are the most important. The dissolving power of ether and chloroform for these two lipoids has formed the basis for the best known theory of anesthesia. As it has been shown that lecithin is greatly increased in the blood during anesthesia,⁴ it was desirable to know whether the

cholesterin content of the blood also underwent changes. Accordingly, determinations of the cholesterin value of the blood were made in one series of experiments. The method employed was that described by Bloor.⁵ The cholesterin was estimated just before anesthesia, immediately after a stage of prolonged excitement, and then at different intervals after etherization. In active dogs the cholesterin content of the blood does not seem to undergo any great changes during a period of time equal to that for which our dogs were kept under anesthesia. In the anesthetized dogs it was found to change

considerably, but the variations were not uniform enough to permit definite conclusions. In general, it seems that the cholesterin value increases during excitement, decreases below normal after an hour or so of anesthesia, and then gradually increases above normal on further etherization (Experiment 62).

Previous investigation has shown that the viscosity and specific gravity of the blood remain the same under light anesthesia, but both increase when the animal is deeply anesthetized.⁶ In several of these experiments the specific gravity was estimated by both the Hammerschlag and the Roy Jones methods, and the foregoing results were corroborated. Under light ether anesthesia the specific gravity of the blood does not change even though the etherization is maintained for as long a period as ten hours. However, when the animal is deeply etherized and respiration becomes



Photomicrograph of two phagocytes containing bacteria (Experiment 89). These cells had been subjected to five and one-half hours' etherization.

* From the Mayo Clinic.

* Read before the American Association of Anesthetists, Detroit, June 12, 1916.

1. McGrath, B. F.: *Anesthesia in Surgical Research*, Surg., Gynec. and Obst., 1914, xviii, 765.

2. Mann, F. C.: *Shock and Hemorrhage, an Experimental Study*, Surg., Gynec. and Obst., 1915, xxi, 430.

3. Gatch, W. D.: *The Effect of Laparotomy Upon the Circulation*, Tr. Am. Gynec. Soc., 1914, xxxix, 180; Am. Jour. Obst., 1914, lxx, 55.

4. Reicher, quoted by Hewitt, F. W.: *Anesthetics*, London, The Macmillan Company, 1912, p. 82.

5. Bloor, W. R.: *Studies on Blood Fat. II. Fat Absorption and the Blood Lipoids*, Jour. Biol. Chem., 1915, xxiii, 317.

6. Burton-Opitz, R.: *The Changes in the Viscosity of the Blood During Narcosis*, Jour. Physiol., 1905, xxxii, 385.

shallow, the specific gravity increases a few points in the fourth decimal, probably because of the asphyxia.

As ether and chloroform lake the blood, it has been thought that these anesthetics might have a deleterious effect on the red cells and hemoglobin. This possibility was tested in several experiments. A blood count and hemoglobin estimation were made before anesthesia and at different intervals after etherization. The ordinary hemocytometer and a Dare hemoglobinometer were used. As a rule, neither the hemoglobin nor the number of red cells underwent changes greater than the coefficient of error, even after ten hours' etherization. In some of the experiments there was an increase in both, but it was slight. In a few experiments the resistance of the red cells before and after etherization was determined by the fragility test of Ribierre.⁷ No change in the resistance of the erythrocytes to hypotonic salt solution was noted.

Leukocytosis occurs in a dog under ether anesthesia, provided the anesthetic is maintained long enough. Occasionally the white cells increase in number within

possibility that stagnation to dependent parts or reaction to external irritation were factors. Such leukocytosis occurs in animals in which a moderate leukocytosis is present already (Experiment 91). It resembles a leukocytosis of digestion. All of our experiments, however, were performed on dogs that had not had food from twelve to twenty-four hours. It differs from the leukocytosis produced by drugs, such as pilocarpin, in the fact that it is not a lymphocytosis and atropin does not prevent its occurrence (Experiment 77).

The spleen is not an important factor in its production, for it occurs also in animals that have been splenectomized. Its cause and site of action have not been definitely determined, but it would appear that it is a direct stimulation of the bone marrow.

Differential counts of the blood before and after ether show that there may be an actual increase in all of the forms of white cells, but that the polymorphonuclear cells are usually the only form showing also a relative increase. In only one experiment was a relative decrease of polymorphonuclear cells noted.

TABLE 1.—CHANGES IN THE NUMBER OF WHITE BLOOD CELLS UNDER ETHER AT DIFFERENT HOURS AFTER ANESTHESIA

No. of Exp.	Normal Count	First Half Hour	First Hour	Second Hour	Third Hour	Fourth Hour	Fifth Hour	Sixth Hour	Seventh Hour	Eighth Hour	Ninth Hour
51	.....	18,400	.....	.....	19,100	.....	.....	27,200	.....	.....	39,300
52	.....	10,920	.....	.....	14,470	.....	.....	14,510	.....	.....	15,400
53	.....	15,960	.....	.....	13,420	.....	.....	18,340	.....	.....	18,870
54	.....	13,200	.....	.....	14,400	.....	.....	29,900	.....	.....	29,900
60	7,000	.....	8,100	.....	.....	.....	15,000	15,800	.....	.....	.....
61	10,400	18,400	.....	20,250	.....	.....	39,900	.....	.....	.....	.....
69	12,150	13,700	.....	.....	.....	.....	24,000	.....	.....	19,000	.....
70	21,450	25,000	.....	.....	.....	.....	.....	32,750	.....	.....	.....
71	20,600	.....	.....	.....	.....	23,450	.....	.....	.....	.....	.....
72	33,850	44,550	.....	.....	.....	.....	.....	.....	50,450	.....	.....
73	19,800	.....	.....	.....	.....	.....	39,400	.....	46,100	.....	.....
74	13,300	13,950	.....	.....	.....	36,400	.....	.....	51,300	.....	.....
75a	20,000	24,800	.....	30,750	35,000	.....	.....	28,330	.....	.....	.....
75b	8,000	.....	10,000	14,000	17,000	23,830	25,230	25,000	27,000	29,000	.....
76	14,900	18,700	20,000	26,900	27,900	67,920	29,300	30,000	.....	.....	.....
77	18,050	.....	18,450	20,000	24,800	28,650	30,500	.....	35,800	.....	.....
78	21,450	.....	33,650	35,400	44,100	45,000	45,000	.....	.....	40,000	.....
79	14,000	.....	17,750	21,650	23,850	25,000	21,180	23,050	.....	.....	.....
81	12,000	18,000	19,250	18,000	21,650	23,300	.....	24,580	.....	.....	.....
82	26,000	.....	.....	.....	35,000	.....	.....	39,000	.....	.....	.....
83	25,000	.....	.....	.....	30,000	.....	.....	.....	.....	.....	.....
85	18,500	.....	.....	.....	20,100	.....	.....	.....	.....	27,100	.....
86	12,000	.....	.....	.....	.....	.....	19,452	.....	.....	.....	.....
87	17,000	.....	.....	.....	.....	.....	19,000	.....	.....	.....	.....
88	16,100	.....	.....	.....	.....	.....	25,400	.....	.....	.....	.....
89	15,100	.....	.....	.....	30,500	.....	.....	47,450	.....	.....	.....
90	11,800	.....	.....	.....	.....	.....	19,000	.....	.....	.....	.....
91	21,000	.....	.....	.....	.....	.....	.....	40,100	.....	.....	.....

the first hour of anesthesia, but frequently not until after four hours. The increase may be very slight, in some animals not above the coefficient of error, but usually by the end of the fourth hour of anesthesia the number of white cells has doubled. The leukocytosis is not always progressive. Frequently a maximum number is reached which more prolonged etherization does not change. Sometimes there has been a decrease before the end of anesthesia. Usually, however, the number of white cells does not begin to decrease for a few hours after the animal has recovered from the anesthetic, and is still above normal twenty-four hours after etherization (Table I).

The leukocytosis just described is practically a constant and general phenomenon. It is not limited to the peripheral circulation, for the white counts are usually the same in the blood from ear veins, femoral veins and mesenteric veins (Experiments 54 and 80). This fact, that the white cells are increased in the blood in widely separated parts of the body, also eliminated the

The large lymphocytes usually decrease relatively, while the small lymphocytes always decrease. The transitional cells usually show an increase. In one experiment the eosinophils increased greatly. The size and character of all the cells remain normal (Table 2).

Studies on phagocytosis have demonstrated that the phagocyte reacts to anesthetics in a manner similar to other unicellular organisms. Fat-dissolving substances, such as ether and chloroform, in weak solutions, stimulate phagocytic activity until a certain optimum strength of solution is reached. Any increase in the amount of anesthetic substance above this produces a decrease in phagocytosis and finally a paralysis of the cells.⁸

In previous studies, the white cells have usually been subjected to artificial environment. They were separated from the blood, suspended in salt solution and, after the addition of the substance with which they were to be tested, such as carbon particles, were incubated for definite periods of time.

7. Ribierre, P.: L'hémolyse et la mesure de la résistance globulaire; application à l'étude de la résistance globulaire dans l'ictère, Thèse de Paris, 1903, quoted by Sahli, H.: Diagnostic Methods, Philadelphia, W. B. Saunders, 1911, p. 769.

8. Hamburger, H. J.: Researches on Phagocytosis, Brit. Med. Jour., 1916, i, 37.

It was deemed of value to determine whether phagocytic activity was altered when the cells were subjected to concentration of the ether such as occurs in the blood under surgical anesthesia. In order to make conditions as nearly normal as possible, the following method was employed: Under local anesthesia one of the jugular veins was exposed, dissected entirely free from surrounding fascia and doubly ligated, a section about 10 cm. long being left between ligatures partially distended with blood. A suspension of *Bacillus coli* in salt solution was injected into this natural incubation tube, and after it was thoroughly mixed by rolling gently between the fingers, the skin was closed over the vessel. Under these conditions the blood does not coagulate, the phagocyte remains in its normal medium at approximately its normal temperature, and has access to the bacteria in approximately the natural way. After various intervals of time, an hour being found the most suitable, smears were made from the enclosed blood. Care was taken that the blood was thoroughly mixed before the smears were made. These slides were used as controls. After definite intervals of etherization, the process was repeated on the other jugular vein with exactly the same technic. The cells in the latter vein had been subjected for several hours to a concentration of ether strong enough to maintain the animal under surgical anesthesia.

TABLE 2.—CHANGES OCCURRING IN THE DIFFERENTIAL BLOOD COUNT BEFORE AND AFTER LONG PERIODS OF ANESTHESIA

Cells	Experiment 75		Experiment 76		Experiment 77		Experiment 79		Experiment 81		Experiment 89	
	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
Polymorphonuclears.....	64	86	76	81	78	89	66	86	79	90	76	93
Large lymphocytes.....	13	5	9	6	6	3	6	6	6	5	10	3
Small lymphocytes.....	17	2	10	7	7	2	20	2	7	0	5	1
Transitionals.....	3	6	5	6	6	5	1	3	2	3	4	2
Eosinophils.....	3	1	0	0	3	1	7	3	6	2	5	1

The blood smears were stained, and a count of the phagocytes containing bacteria and the phagocytes without bacteria was made. Usually 200 white cells were counted on a slide, and frequently counts were made on several slides from one vein. The average was taken as the final result. Only the polymorphonuclear cells were included in this count. The occasional large lymphocyte or eosinophil containing bac-

TABLE 3.—PHAGOCYTOSIS BEFORE AND AFTER ETHERIZATION

Exp. No.	Normal Count W. B. C.	Count of W. B. C. at Time Bacteria Were Injected After Etherization	Percentage of Cells of Normal Blood Containing Bacteria	Percentage of Cells of Etherized Blood Containing Bacteria	Number of Hours Etherized
87	17,000	19,000	73.5	87	5
88	16,100	25,400	21	36.5	5
89	15,100	47,450	45.5	57.5	5½
90	11,800	19,000	50	50	5
91	21,000	40,100	90	90	6

teria was ignored. It is obvious that there are chances for error in the method, but I do not believe the average error exceeds 10 per cent. The results show that phagocytes which have been subjected for from four to six hours to a concentration of ether which is capable of maintaining a dog under surgical anesthesia do not exhibit any marked changes in activity. In most of these experiments the greater number of cells containing bacteria was found

in the blood subjected to the ether, but the increase was not sufficient to be of positive significance. It can be definitely stated, however, that there was no decrease in the phagocytic power of the cells in the blood subjected to etherization (Table 3 and illustration).

TABLE 4.—FINDINGS IN EXPERIMENT 54

	Red Blood Cells	White Blood Cells	Specific Gravity	Hemoglobin	Blood Pressure
Blood taken from peripheral veins:					
Immediately after etherization.....	5,775,000	13,000	41	70	105
Three hours after etherization.....	5,437,000	14,400	41	..	80
Six hours after etherization..	5,675,000	29,900	41	..	75
Nine hours after etherization	6,020,000	29,900	42	71	60
Blood taken from portal circulation:					
Nine hours after etherization	6,050,000	25,700	42	72	..

SUMMARY

A study of the blood of dogs subjected to etherization demonstrated the following facts: The amount of circulatory blood is diminished about 10 per cent. after from six to nine hours of light etherization. There are variations in the cholesterin values, but the changes are not uniform. The specific gravity does not change under light etherization, and under deep

anesthesia increases only as asphyxia becomes a factor. The number of red corpuscles, the amount of hemoglobin, and the fragility of the red cells do not change. There is always a leukocytosis in ether anesthesia. The degree of leukocytosis varies from a very slight increase in the number of cells to more than double the normal number. The increase is usually present after from three to four hours of etherization, and is due mainly to cells of the polymorphonuclear form. The leukocytosis is not dependent on the spleen and is not prevented by atropin. It is probably the result of a direct action on the bone marrow. Phagocytic action is certainly not depressed by an etherization period of from five to six hours.

The following experiments are presented as typical of the series they represent:

EXPERIMENT 54.—July 27, 1915, a young adult female terrier, weighing 5 kg., at 7:55 a. m. was etherized and blood data were taken immediately. The apparatus was arranged to record the carotid blood pressure.

EXPERIMENT 62.—Feb. 19, 1916, female bull terrier in excellent health; weight 17.6 kg.

8:20 a. m.: Blood withdrawn from left jugular vein for cholesterin estimation. Animal very quiet. Cholesterin value, 0.266.

8:21 a. m.: Animal placed in etherizing cabinet and etherized very slowly.

8:50 a. m.: Animal intubated.

8:52 a. m.: Blood withdrawn; cholesterin value 0.312. Animal kept under surgical anesthesia.

9:55 a. m.: Blood withdrawn. Cholesterin value, 0.180.

Animal maintained under anesthesia until 3 p. m. when, after another test was taken, it was allowed to recover.

3 p. m.: Blood withdrawn, cholesterol value, 0.358.

EXPERIMENT 77.—April 1, 1916, male mongrel; animal very quiet; weight 15.1 kg.

8 a. m.: Animal was given $\frac{1}{6}$ grain morphin and $\frac{1}{100}$ grain atropin subcutaneously.

8:30 a. m.: Count of white blood cells was taken.

8:45 a. m.: Etherized quickly by Cone method. Animal maintained under surgical anesthesia until 4 p. m., when it was allowed to recover.

The counts of white blood cells were as follows:

8:30 a. m., 18,050

10:00 a. m., 18,450

11:00 a. m., 20,000

12:00 m., 24,800

1:00 p. m., 28,650

2:00 p. m., 30,500

4:00 p. m., 35,800

EXPERIMENT 89.—May 3, 1916, adult mongrel, male; weight 9 kg.

8:15 a. m.: Count of white blood cells taken from right ear vein and smears for differential count. Right jugular vein exposed under local anesthesia. Doubly ligated vein leaving it almost filled with blood. Length of vein, 8 cm. Total white cells, 15,100. Differential count: polymorphonuclears, 76; large lymphocytes, 10; small lymphocytes, 5; transitionals, 4; eosinophils, 5.

8:30 a. m.: Injected 1 c.c. suspension of *Bacillus coli* into vein. Vein markedly distended. Gently mixed by compression.

9 a. m.: Animal etherized.

9:30 a. m.: Smears taken from right jugular vein showed that 45.5 per cent. of the phagocytes contained bacteria and 54.5 per cent. did not contain bacteria.

11:30 a. m.: Took count of white blood cells from right ear vein; count 30,500.

2:25 p. m.: Took count of white blood cells and smears for differential count from abdominal vein. Total count of white cells from abdominal vein, 47,430. Differential count: polymorphonuclears, 93; large lymphocytes, 3; small lymphocytes, 1; transitionals, 2; eosinophils, 1.

2:30 p. m.: Exposed and ligated left jugular vein. Injected 1 c.c. of same suspension of *Bacillus coli*. Technic same as used on right vein.

3 p. m.: Count of white blood cells from mesenteric vein, 46,650.

3:30 p. m.: Smears made from blood of left jugular vein showed that 57.5 per cent. of the phagocytes contained bacteria and 42.5 per cent. did not.

EXPERIMENT 91.—May 11, 1916, young male, mongrel; had had distemper for about four days; weight 8.5 kg.

8:20 a. m.: Exposed left jugular vein.

8:44 a. m.: White blood cells, 21,000.

8:45 a. m.: Injected suspension *Bacillus coli* into ligated vein.

9 a. m.: Animal under ether.

9:45 a. m.: Made smears from left vein. Of the phagocytes 90 per cent. contained bacteria.

Animal maintained under surgical anesthesia.

3 p. m.: Exposed right jugular vein and injected bacteria.

3:02 p. m.: Count of white blood cells, 40,100.

4 p. m.: Made smears from right vein. Ninety per cent. of the phagocytes contained bacteria.

Speech Following Explosions.—After explosions it has been found that in some of the survivors speech is affected. In some instances speech is entirely lost, and only comes back after many days. In others there is great difficulty in forming the words, and as the patient's mind generally is slow and confused, there is a curious impression given to the observer of great effort in the attempts to speak. The patient often repeats himself, iterating and reiterating words or phrases. This affection of speech may and generally does last only for a few days, but in rarer cases it may be months before speech returns to normal.—Glaister.

NITROUS OXID-OXYGEN ANESTHESIA IN MAJOR SURGERY *

A. B. COOKE, A.M., M.D.

LOS ANGELES

To avoid misunderstanding, let me state at the outset that this paper is written from the point of view of the operator, not the anesthetist. No claim is made to special knowledge concerning the theory and technic of general anesthesia or the abstract merits of the several anesthetic agents, and no academic discussion along these lines will be attempted. My sole purpose is to present conclusions based on personal experience in operating under nitrous oxid-oxygen anesthesia, and to indicate some of the practical advantages it has seemed to afford in the field of major surgery.

It is fair to say at this point that no opinion as to the comparative value of anesthetics and methods of anesthesia is entitled to weight unless it is founded on the actual clinical experience of a competent and strictly impartial observer. Mere impressions are apt to be misleading; conjecture with reference to any scientific problem is always worse than useless. Desire to know the truth is the first essential. This established, the conditions of the investigation are quite certain to be safeguarded, and the final verdict to be a just one.

During the past three years I have performed approximately 300 major operations under nitrous oxid-oxygen anesthesia. Without stopping to enumerate them in detail, I may say that the list includes thyroidectomy, prostatectomy, the several procedures requiring preliminary dilatation of the sphincter ani, and excision of the rectum, as well as the various operations on the abdominal and pelvic viscera. In the great majority of these cases (certainly not less than 90 per cent.) not a drop of any other general anesthetic was used, though in practically all cases I employed local anesthesia in addition. I approve and advocate the addition of ether when it is indicated, in amount sufficient to secure the result desired; but from clinical observation I am of the opinion that, where this is necessary, it is because of some fault in the preparation of the patient, or, more rarely, due to some extraordinary complication of the operation itself. In such cases the amount of ether required is usually very small, not exceeding 1 or 2 drams as a rule, and a second occasion for its use rarely arises in the same operation.

In this connection it should be emphasized that local anesthesia is a most valuable adjunct to the successful employment of gas anesthesia. This is particularly true in abdominal cases in which muscular relaxation must be had to avoid undue traumatism. Here the result desired is readily accomplished by carefully infiltrating the nerve-bearing tissue of the abdominal wall with a weak solution of novocain (1:400) or cocain (1:1,000). The degree of relaxation secured is a true index to the thoroughness of the local infiltration.

The operative time in the 300 cases referred to varied from thirty minutes to two hours, averaging probably about one hour. I have not found it necessary in any case to suspend the work because the anesthetic was not well borne. In fact, as my confidence

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in the gas-oxygen method and in my anesthetist has increased, I have come to look with less and less anxiety on cases that heretofore seemed most formidable, and to find myself willing to offer the aid of surgery to patients whom I should formerly have advised against operation.

In the entire series there was no fatality in any way chargeable to the anesthetic. Further, there was not an instance in which danger from this source even threatened a patient. Dr. R. F. Hastreiter, who has administered the gas most often for me, tells me that he has now administered it for surgical anesthesia more than 500 times without a fatality and without unfavorable symptoms in a single case.

DISADVANTAGES

There are certain inherent difficulties and disadvantages in the use of nitrous oxid. The first and most important of these is the difficulty of finding anesthetists skilled in its administration. The prevalent idea that anybody, including student and nurse, can give the anesthetic emphatically does not apply to this agent. On the contrary, rare judgment and much experience are required for its safe and successful employment. Happily this difficulty is not insuperable, since competent men are taking up the work in every community as the demand for gas anesthesia increases.

Another disadvantage is the more or less cumbersome character of the apparatus required. The ingenuity of the manufacturers has done much to overcome this difficulty, simplified outfits, both hospital and portable, being now provided which, if given proper care, are quite satisfactory. Where one is so fortunate as to be able to concentrate all his work in a single perfectly equipped hospital, this disadvantage is readily eliminated.

A third disadvantage is the relatively high cost of the gas. This has been greatly reduced by the improved methods of manufacture and handling, and to an equal or greater extent by improved methods of administration. Strictly speaking, the matter of cost does not enter into the question. The real consideration concerns only the best interests of the patient.

One other difficulty should be mentioned, namely, that of securing nitrous oxid entirely free from impurities. When nitrous oxid first came into use as a general anesthetic, it was thought that a certain amount of cyanosis was necessary and inevitable in every case. We now understand that this condition is to be regarded as a danger signal, due for the most part to poisonous impurities in the gas, though it is, of course, true that the same effect may be produced by the unskilled anesthetist with gas of the purest quality. The valuable paper of Warner,¹ describing the experience of Lakeside Hospital, clearly establishes the facts that it is perfectly practicable to produce pure gas, and that with the impurities the dangers of this agent as an anesthetic virtually disappear. His observation that entire freedom from cyanosis may be maintained, while the patient is otherwise presenting symptoms of asphyxia, is deserving of special note.

LIMITATIONS

The applicability of nitrous oxid as an anesthetic embraces the entire field of surgery, so far as my experience goes, with a single exception. It is not satisfactory in major operations on the mouth, nose

and air passages. To maintain surgical anesthesia with this agent requires the complete exclusion of atmospheric air, and the effect is so evanescent that the mask cannot be removed even momentarily without the patient's arousing. Breathing tubes have been devised to overcome this difficulty, but with only partial success. In such cases the anesthesia may be induced by the gas and ether substituted before the operation proper is begun, the patient thus escaping the primary stage of irritation and excitement. With this exception I know of no limitations in the practical application of this method of anesthesia.

ADVANTAGES

The advantages of nitrous oxid are numerous and may well be considered under two heads: first, those which concern the patient, and second, those which concern more particularly the operator and the hospital.

The two most important considerations from the standpoint of the patient are, of course, safety and comfort. Given a pure gas and a competent anesthetist, I am fully convinced that nitrous oxid is at least equally as safe as ether and, when the possibility of postoperative complications attributable to the anesthetic is included, more so. No one will gainsay that no such marked depression is observed following the former as the latter. In explanation of this fact we have only to remember that ether lowers the blood pressure while nitrous oxid raises it; that free perspiration and the consequent dissipation of the body heat is the rule under ether, while such a phenomenon is rarely observed under nitrous oxid; that the effects of ether are persistent, lasting usually for twenty-four hours or longer, while the effects of nitrous oxid are by comparison decidedly transient. We further know that ether is one of the best of all lipid solvents and that, being so diffusible, it permeates practically every fat-bearing tissue of the body, necessitating increased elimination at a time when the patient's organs are least able to respond. Postoperative pneumonia and suppression of urine following ether anesthesia are by no means rare. It will probably never be definitely known just how often the lighting up of a latent tuberculous process or the inception of an ultimately fatal nephritis may be due to the same cause.

Many factors contribute to the comfort of the patient under nitrous oxid-oxygen anesthesia. Any fair-minded observer who will study and contrast the condition of the patient before, during and after the operation in two similar cases, or series of cases, in which gas and ether respectively are administered by equally competent anesthetists, cannot fail to be impressed with the comparative merits of the former in this regard. The disagreeable effects of ether anesthesia are common knowledge, and inspire no small part of the dread with which surgery is contemplated. With the proper assurance in advance, the patient approaches nitrous oxid anesthesia in a much more tranquil frame of mind—unquestionably a distinct gain. Nitrous oxid is nonodorous, nonirritating, and produces unconsciousness with the first few inhalations. No sensation of strangling, no talking or struggling, no nausea result. When the flow of gas is stopped, full consciousness is regained in a very few moments, and nausea and vomiting are chiefly notable for their rarity of occurrence. In the exceptional case in which emesis is seen, it is more in the nature of a simple regurgitation, usually occurs only once, and is

1. Warner, A. R.: Manufacture and Administration of Nitrous Oxid for Anesthesia, THE JOURNAL A. M. A., Dec. 4, 1915, p. 1973.

not accompanied by the deathly nausea and depression which result so commonly from ether. With respect to the several bodily functions, the normal is regained with striking rapidity. This is a matter of hours, not days, and convalescence from the operation, not from the operation plus the anesthesia, is much more promptly established, of shorter duration, and more comfortable in every way.

The gentleness of manipulation required, in operating under nitrous oxid, I regard as one of its most pronounced advantages. The anesthesia produced by this agent is never so deep and deathlike as that of ether. To operate successfully under nitrous oxid demands a studied respect for all tissues at every stage. By this means unnecessary traumatism is avoided, the amount of postoperative wound repair lessened, and the vitality of the patient conserved. The surgeon who regards the spectacular and his time record of supreme importance cannot hope to find this method of anesthesia entirely satisfactory.

I am convinced that nitrous oxid very appreciably broadens the field of surgery in that it makes it possible to extend its benefits to certain cases and conditions in which the administration of ether would involve too great danger. It is no small thing to be able to assure a weakened and suffering patient that he may have the chance of relief to which he is entitled without assuming undue risk from the anesthetic itself. Several times within my own experience, patients have been successfully operated on when, with ether as the dependence, I should have approached the cases with the utmost reluctance and apprehension, if, indeed, I could have persuaded myself to undertake them at all.

From the standpoint of the operator and the hospital there are several additional advantages in nitrous oxid anesthesia which, while of secondary importance, to be sure, are yet worthy of being mentioned. There is a considerable saving of time in the operating room because of the rapidity with which the gas acts and because, when the operation is over, the patient, conscious and quiet, may be returned to his bed without the usual delay. The few minutes thus saved in handling a single case might easily swell into an hour or more in the course of a busy day—an item of no little moment both to surgeon and operating-room force.

A further very decided advantage to the hospital develops in the postoperative care of gas patients. The time of every hospital employee has a definite money value. After ether anesthesia the more or less constant attention of a nurse is usually required for a period varying from a few hours to twenty-four hours or more, depending on the amount of depression and the persistence of nausea and vomiting. This costs money. The use of gas does away with the need for so-called recovery rooms, the patient, conscious and comfortable, being returned directly to his own bed in a ward or room. Thus the disturbance of other inmates is minimized and the natural apprehension of other patients approaching the ordeal of operation allayed, instead of increased.

CONCLUSION

There is no topic before the profession today commanding greater interest than that of anesthesia, and rightly so, for it is universally recognized that further progress in surgery is dependent in no small degree on advances along this line.

The ideal anesthetic for major surgery is the one capable of producing analgesia and unconsciousness without danger or discomfort to the patient. Any agent or method which furthers this ideal—which tends in any way to relieve surgery of its harshness, and to smooth down the rough places on a road to health that patients justly regard as both formidable and forbidding, should receive our most earnest and open-minded attention. My experience with nitrous oxid as an anesthetic would seem to warrant the conclusion that it is entitled to high rank in this beneficent class.

508 Hollingsworth Building.

ABSTRACT OF DISCUSSION

DR. W. I. TERRY, San Francisco: I am in full accord with Dr. Cooke's conclusions as to the use of nitrous oxid and oxygen in major surgery. I have used this method consistently for the past four years in about 1,200 major cases and I am convinced that from the standpoint of the patient himself it is the best and safest anesthetic we have, when supplemented by local anesthesia. The absence of odor, the rapidity of action, the minimized after-effects are all for the comfort of the patient. The absence of heart, kidney, liver, blood and lung conditions postoperatively are the factors of safety which do not apply to the same degree with other general anesthetics. It seems to me that there are two principal reasons why the method has not had a very extended use. First, the lack of thoroughly trained anesthetists, and second, the increased cost. Both these factors will prevail against it until they can be modified and ether will still remain the method of choice where nitrous oxid and oxygen are not obtainable under the right conditions. Another objection that has frequently been made is the lack of muscular relaxation, particularly in abdominal work. This, to me, is simply a matter of technic in the use of the local anesthetic. When the local anesthetic is employed properly muscular relaxation is obtained, provided always that the nitrous oxid is given properly and the patient is kept in the right condition. With alcoholics, however, and some athletes, it is often necessary to give a little ether in addition, but in a minimum amount. The total is very small, indeed, in these cases. Another objection is that more time must be taken to do these operations, but time should not be measured against safety.

DR. CHARLES K. TETER, Cleveland: Nitrous oxid oxygen in general surgery has been in practically constant use in at least two Cleveland hospitals for over ten years. Cleveland was, I think, the first city where a nitrous oxid plant for the manufacture of nitrous oxid was installed in a hospital. The plant was installed first in St. Luke's Hospital about nine years ago and a little over one year afterward another plant was established in Lakeside Hospital. These plants, with modifications, have been in use ever since. Constant use of nitrous oxid in major surgery has proved to us that this anesthetic has its limitations, and I do not think that we have been led so far in our enthusiasm as to claim that it is the anesthetic of choice in every case. In most cases of minor surgery nitrous oxid and oxygen will give sufficient depth of anesthesia so as not to interfere with the accomplishment of the operation. The physical properties of nitrous oxid are such that it must be given at least 80 to 95 per cent. pure in order to bring about surgical anesthesia. No oxygen is liberated during its sojourn in the organism. Therefore it is an asphyxiant as well as an anesthetic, so that when you withhold less than the normal amount of oxygen in atmospheric air you have a certain degree of interference with normal oxidation, and if you give as high as 20 per cent. of oxygen you will not have surgical anesthesia, as we understand it. You will have perfect unconsciousness but not relaxation of the musculature. Then it becomes necessary to add something to nitrous oxid. Our method is to use preanesthetic narcotics, as morphin, $\frac{1}{8}$ to $\frac{1}{4}$ grain, atropin, $\frac{1}{150}$ to $\frac{1}{100}$ grain;

then if relaxation cannot be had, a sufficient amount of ether vapor is added to the mixture. Some object and say, "If you must add ether what is the use of giving nitrous oxid at all?" I claim that if you can withhold even 2 ounces of ether in a major operation you have done a great favor to that patient. In most of the apparatus on the market you will find ether attachments and some of you have probably noticed that there is a considerable amount of ether used during an hour's anesthesia. For instance, there may be 4 ounces of ether taken up in the gas as it passes through it, but you must remember that the 4 ounces of ether does not all go to the patient. There is a considerable volume of the gas escaping through the exhalation valve and a lot of this ether is wasted.

STAB WOUNDS OF THE CHEST INVOLVING THE DIAPHRAGM

WITH DIAPHRAGMATIC HERNIA OR EVISCERATION *

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Although man has inhabited this world nearly 8,000 years and has possessed a temper since the time of Cain and Abel, and has had in his possession a knife or some kindred instrument, with which he has inflicted wounds in almost every portion of the human anatomy, yet not until recently have there appeared in literature any reports of stab wounds of the diaphragm, with diaphragmatic hernia, or evisceration.

The question then naturally arises, Is there an increase of this character of injuries, or are we becoming better diagnosticians and now recognize them, where they were previously overlooked?

The latter is the more logical conclusion, as there has been no change in the anatomy of man, and little or none in the character of cutlery used by him in settling his personal difficulties.

The term "hernia," as applied in these cases, is a misnomer, since hernia always has a sac, which in these cases is lacking. Consequently the term "evisceration," which is used entirely by the French writers, is the more correct.

Diaphragmatic hernia and evisceration are found on the right side in 8 per cent., and on the left side in 92 per cent. of all cases. The small percentage of cases found on the right side is due to the fact that the liver is situated on this side, and acts as a plug for almost any opening that may be made in this locality.

Quite recently, a great deal has been written on this subject, and the most comprehensive articles have been contributed by Wolf, Iselin, Suter and Magoula.

Magoula's article was published in 1910, and includes all cases previously reported by Wolf, Iselin and Suter, with some additional cases. Therefore, I invite attention to a brief review of this paper.

Magoula reviewed the whole subject of stab wounds of the chest in 1910, and reported 190 cases of injury to the diaphragm; but by no means did all of these have hernias.

Of the sixty-four cases reported by Suter, forty-four cases showed protrusion at the outer wound; five showed protrusion of the omentum into the pleura; ten showed only slight protrusion through the diaphragm, and five showed the stomach herniated through the diaphragm.

Of the thirteen cases reported by Wolf, five showed hernia.

Of sixty-one personal cases reported by Magoula, nine showed the omentum at the outer wound, and four showed protrusion through the diaphragm.

Of forty other cases collected by Magoula, twelve showed the omentum at the outer wound, and four showed the viscera through the diaphragm.

Hence, of the 190 cases reported by Magoula, ninety-eight, or nearly 52 per cent., showed hernia, or better, evisceration.

From this brief review it is seen that the total number of cases of wounds of the chest, involving the diaphragm, with a hernia, is ninety-eight, plus twenty-five others that have been reported since the publication of Magoula's paper, as follows: Bamberger, Frassi, Caffee, Gautier and Du Seutre, Fato, Gourevitch, Gougorlof, Klaggs and Krymholz, each one; McGuire, Negroni and Wiess, each two; Jobes three, and Davis seven, making a grand total of 123 cases which have been reported.

To this number I wish to add six cases which I treated at St. Joseph's Infirmary, Houston, Texas.

REPORT OF CASES

CASE 1.—Man, aged 28, white, married, was admitted to the hospital with a stab wound of the left chest just posterior to the midaxillary line, through which about 6 inches of omentum were protruding, at the ninth interspace. The wound was inflicted by his wife with a carving knife. He was immediately given $\frac{1}{2}$ grain of morphin and $\frac{1}{150}$ grain of atropin. He was taken to the operating room, and under anesthesia a median incision was made. A careful examination of the cavity showed that there were two incisions in the omentum, and a small incision in the stomach through all coats except the mucous membrane. The bleeding points were caught and ligated, and the incision in the stomach was closed with a fine catgut suture.

Further examination of the cavity disclosed the fact that there was an opening in the diaphragm, through which some of the viscera had escaped into the thoracic cavity. With one hand in the cavity I succeeded in replacing them, but they were immediately sucked back into the thorax, with a great deal of force and an audible, sucking sound. The abdomen was then closed, as we found it next to impossible to conclude the operation through this opening. We then enlarged the wound of entrance, excised a portion of the rib, and, on inspection, found that all of the transverse colon, and omentum, a portion of the descending colon and jejunum and stomach were in the thoracic cavity. After some difficulty, they were replaced into the abdominal cavity, and the edges of the rent in the diaphragm were caught up with forceps and sutured with No. 3 chromic catgut, and the outer wound was closed without drainage.

The patient was then taken to the ward and made an uneventful recovery. He left the hospital in twelve days, and today is in perfect health.

CASE 2.—Man, aged 32, white, married, was brought into the hospital with a stab wound of the left chest in the midaxillary line, at the seventh interspace, with 4 inches of omentum protruding. He was suffering from profound shock, but reacted nicely after the administration of $\frac{1}{2}$ grain of morphin and $\frac{1}{150}$ grain of atropin. He was then taken to the operating room and under ether anesthesia, a median incision was made. A portion of omentum and stomach was found in the thoracic cavity with a large rent in it, from which there was profuse hemorrhage. This point was picked up and ligated, and, no other injury being found, the abdomen was closed in the usual way. The wound of entrance was then enlarged, as in the first case, but we did not find it necessary to resect the rib. The stomach and omentum were returned into the abdominal cavity, the opening was closed as in Case 1, and the patient was sent to the

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

ward. This man had a stormy time, as he developed an acute dilatation of the stomach on the second day after the operation; but by free use of the stomach tube he recovered, and left the hospital on the fifteenth day and, when last heard of, was in good health.

CASE 3.—Man, aged 28, colored, married, was brought into the hospital markedly intoxicated, with a stab wound in the left chest about 1 inch posterior to the midaxillary line at the eighth interspace, with 3 or 4 inches of omentum protruding. He was profoundly shocked when admitted. He was given $\frac{1}{2}$ grain of morphin and $\frac{1}{150}$ grain of atropin. He was then taken to the operating room and under ether anesthesia, a median incision was made. The transverse colon and omentum were found in the chest cavity; a slit in the omentum, and a considerable amount of blood were found in the abdominal cavity. The bleeding point was caught up and ligated, and the abdomen closed, and the thoracotomy performed as in the previous case. The patient was sent to the ward and did fairly well for about fifteen hours, when he began to be very restless; his temperature began to rise, his kidneys became rather sluggish, and in spite of all we could do for him, he died about forty-eight hours after the operation, from what we diagnosed as acidosis.

CASE 4.—Man, aged 26, colored, single, was brought into the hospital with a stab wound of the left side at the seventh interspace, in the midaxillary line, with about 3 inches of omentum protruding through the external wound. This patient was so profoundly intoxicated that he could not stand up. He complained of very little pain, and that was near the sternum. His abdomen was opened and examined, and a large amount of omentum was found in the thorax; there was found in the transverse colon an opening about 2 inches long. This was closed and a drain left in the abdominal incision, as some feces were found in the cavity. The chest was opened, as in the previous case, and the opening in the diaphragm closed without any difficulty. The patient was sent to the ward and did very well for the first twenty-four hours, when he developed almost the same symptoms as those in the previous case, and died in thirty-six hours after the operation.

CASE 5.—Man, aged 26, white, single, was brought into the hospital with a stab wound of the left side at the tenth interspace about 3 inches posterior to the midaxillary line. He showed a fair amount of shock, and had 6 inches of omentum protruding through the external wound. The abdomen was opened in the usual way, and a portion of the stomach was found in the thorax; there was a wound in the gastrocolic omentum, which was bleeding rather freely. This bleeding point was ligated, and the chest opened in the usual way, after the abdomen had been closed without drainage. The patient was sent to the ward and given the usual treatment, namely, $\frac{1}{4}$ grain of morphin according to circumstances, water freely, and allowed change of position when desired. After forty-eight hours he was given a saline cathartic and the next day was given a light diet. He made an uneventful recovery and left the hospital on the tenth day; when last seen he was in the best of health.

CASE 6.—Man, aged 30, white, single, entered the hospital with two stab wounds of the left chest, one at the seventh interspace anterior to the midaxillary line, and the other at the ninth interspace 3 inches posterior to the midaxillary line. Being on the lookout for this class of cases, we at once thought of a stab wound of the diaphragm and decided to do an exploratory thoracotomy. We first enlarged the upper wound, but could not detect any injury to the diaphragm at this point; so we closed this opening and enlarged the lower wound, where we found a small opening in the diaphragm, with a portion of the omentum in the thoracic cavity. This opening was closed without drainage, but the abdomen was not explored, as the patient's condition was so good that we could not believe he had received any injury to any of the abdominal viscera. He was sent to the ward and made a very rapid recovery, being able to attend court on the eighth day. He has had no trouble, and now is doing hard work in Houston, apparently in the best of health.

COMMENT

From this report it is evident that the diagnosis was readily made before operation in every case except one, as the omentum was protruding through the external wound in all except the last case.

This is not always the case, however. In many instances, as substantiated by Magoula's report, the diagnosis is not made until months or years later, when the patient begins to show signs of obstruction, as the result of adhesions around the viscera, which have herniated through the opening in the diaphragm. This, in many cases, is not diagnosed except by the use of the Roentgen ray.

As the result of difficulty of diagnosis in most of these cases, we are confronted with questions such as these: First, What is the duty of the surgeon in such cases? Second, How far should he go, and how much time should he spend in attempting to arrive at a diagnosis before he is warranted in doing an exploratory thoracotomy?

The mortality in these cases is very high, both in the complicated and the uncomplicated. For instance, in the uncomplicated cases we find in Magoula's report a mortality of 20 per cent., and in the complicated, 64 per cent.

With such a high mortality, therefore, a surgeon should be very careful not to do anything that would increase the shock, yet he should not sit idly by and allow his patient to go into a profound state of shock before going to the rescue.

Consequently, in cases in which we cannot arrive at a diagnosis quickly, but have reason to believe that there is injury to the diaphragm, and probably to the abdominal viscera, I believe that it is not only the surgeon's privilege, but also his duty to resort to an exploratory thoracotomy. By this exploratory operation he will be able, not only to control any bleeding, or repair any damage that may have been done to the viscera, but also to close any opening that may have been made in the diaphragm, which, if not closed, may be the cause of a great deal of trouble, or death of the patient in later years.

In conclusion, let me make a plea for the more general use of exploratory thoracotomy in the treatment of these cases, since, if it is properly done, the dangers of the condition are not increased, and certainly many lives will be saved which otherwise would be lost.

ABSTRACT OF DISCUSSION

DR. JAMES E. MOORE, Minneapolis: What shall we do in cases of stab wound in the chest? Too often the tendency has been to wait for the patient to bleed to death before we see whether we could do anything. We were justified somewhat in our hesitation because until recently whenever we attempted to open the thorax we had staring us in the face the collapse of the lung. Then we got the cabinet of Sauerbruch. Fortunately we do not need that today, for we have the simple method of intratracheal insufflation. Giving the anesthetic in that way we can open the thorax with impunity so I would advise every man when he has a patient come to him with a stab wound of the chest, particularly if he knows that the instrument pointed downward, to make an exploratory operation. It is simple and safe and he will save many lives by so doing.

DR. CHARLES C. GREEN, Houston, Tex.: The main danger in thoracotomy is collapse of the lung. It is the principal cause of shock in these cases. In accident cases, such as I have reported, that condition already exists. By enlarging the opening and getting in there, it is a great deal easier to pick up the diaphragm from above and pull it up to the

opening in the chest than it is to work from below. After my first operation I found that by making a long intercostal incision it was not necessary even to resect a rib, but having assistants, using small powerful retractors it was easy enough to pull the ribs apart, pick up the diaphragm and suture it. Just as long as you can pick up the diaphragm and hold these edges together there is practically no danger of the viscera being forced up against the diaphragm and included in the suture. I do not see why there should be many deaths unless there is a great deal of shock or trauma.

THE FACTOR OF FEAR IN NERVOUS CASES*

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CHICAGO

In many cases of functional nervous disorder, the factor of fear is quite obvious. But in many cases, though equally important, it is not at once apparent. Of the latter, there are numerous varieties which may be divided into many groups. One group embraces patients known to have physical courage:

A few years ago there was referred to me the most noted pugilist of his day, a specimen of perfect physical manhood, known to be not only fearless in the ring but peculiarly care-free if not careless. He was suffering with what were considered rather vague and baffling nervous symptoms, principally insomnia, lack of interest, and moodiness. A careful analysis¹ soon revealed that some trifling symptoms due to high living and domestic friction had served to put the idea into his head that he was losing his mind. This phobia was his sickness, and the fear so possessed his soul that he was good for nothing until he got rid of it. Needless to say, the patient himself was quite unconscious of the nature of his trouble, and his physician had overlooked it.

A sheep rancher of Wyoming was referred to me because of insomnia, loss of appetite, abdominal distress, general nervousness and inability to look after his ranch. What really was the matter with him was fear of cancer of the stomach. This phobia completely unnerved him and caused him enormously to magnify every bodily sensation. But was he a nerveless coward? Decidedly not. There was a time when the cattlemen of the Far West made sheep raising a hazardous occupation. Through those dangerous years he lived without a tremor, though he never went to sleep without a rifle by his side. Once he was informed that three cattlemen had started out "to get him," and the information was correct. He mounted his horse and, properly armed, rode to meet them. As he expressed it, he "talked them out of it,"² and the three would-be assassins turned and rode away. In this encounter he was not in the least apprehensive or uncomfortable, and I learned of the incident only in casual conversation about his business.

A policeman, 49 years old, consulted me for intractable insomnia, head pressure, general nervousness and loss of weight. He was not a man to suspect of fear. For many years he had been on active service in one of the worst precincts of Chicago, and on account of his familiarity with criminals was frequently sent after the worst types. He had been in numerous "gun" fights. Once a notorious "gun" man standing beside him fired point blank at his head. All

this disturbed his equanimity not a whit. And yet his illness was the result of fear, pure and simple. It came about in this way: a malicious person had preferred against him charges of misconduct, and he was cited to appear before the trial board. This worried him greatly. Innocent, he keenly felt the disgrace of the accusation and feared that he might be suspended or even discharged. He trembled for his well earned good name and for his home, on which there was a mortgage. Naturally, he began to sleep poorly, to have queer feelings in his head, and then to feel uncertain of himself. At this juncture some friends sympathetically told him that one could go insane from worry. These were the steps: fear of disgrace, fear of financial collapse, fear of insanity. But did the patient know all this? Not he. He knew only that he was nervous, that he suffered, and that he did not feel sure of himself.

A lovable old general, who had gone into the Civil War a private and served throughout the conflict with the greatest distinction, was sent to me because he was quite a nervous wreck. Twenty-five years before he had strained or sprained his back. The next morning he fainted and then rapidly developed what was called "spinal irritation." From this he suffered for many years, but finally made a relative recovery under the skilful guidance of Dr. S. Weir Mitchell. About four months before he came to me a saddle had turned with him, giving him a rather severe but (physically) not serious jar. At once all the old trouble returned. He was nervous and sleepless, and complained of pain and great weakness in the back. He never went out without a queer-headed cane which he could use as a support for the spinal column the moment he stopped walking and had to stand. The whole trouble was fear, vague as to object but very definite as to intensity. At first I did not tell him he was scared sick because he would not have believed me and I should have lost his confidence. But a course of training with the temporary use of bromid rather rapidly put him on his feet and made him comfortable; and he left for his home about twelve hours away. Unfortunately he took a road he never had traveled on, a rough one. The jarring not only disturbed sleep but started little "fear thoughts" about its possible effect on his spine. These worries kept him awake the next night, and in a panic he hastened back to Chicago. Even then he was so far from knowing that he was afraid that I had to explain to him the steps by which he had become the victim of fear, and clinched it by saying, "In short, General, you were a d—d coward." And this was true, although addressed to as brave a soldier as ever led his men. In other words, that a man is as brave as a lion is no reason why he may not have a paralyzing fear. He may be utterly devoid of fear of many dangers and sick of fear of one other.

A mine manager from Mexico came to be injected for trifacial neuralgia. And he made a big fuss every time I introduced the needle. As he said, "That little needle 'gets my goat'." At this time there were serious labor troubles in Colorado, and I happened to ask him if his labor was organized. He said it was not, but that once three labor organizers walked into his office and announced that they were going to unionize the mine. "What did you do?" I asked. "Kicked them out so quick they didn't know what had happened." "But," I said, "they might have shot you up." "Shoot up h—l," was the reply. "They didn't have time." That is to say, the revolvers of three aggressive labor leaders didn't "get his goat" at all.

This case is analogous to the phobias and, like the four preceding, illustrates a rule applying to many of them. We fear the unfamiliar; the things of which we are ignorant. All his life my patient had been used to tough men with pistols but not to physicians' instruments. German students are timid about bare knuckles but not a bit afraid of the Schlager that hacks their faces to pieces. The boldest financier may be inexpressibly scared about his liver. The one almost universal fear of the human race is Hades, or what follows death—the one thing of which we all know absolutely nothing.

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1. This does not mean so-called psychoanalysis. In this paper the tenets and methods of the freudian school are not taken into consideration.

2. His explanation of "talking them out of it" is not devoid of psychologic interest, and also shows how undisturbed he was. Essentially it was as follows: "Well, you see, the longer a man talks the less apt he is to shoot, and I got them to talking. And then, of course, they knew I was a crack shot and that if they made a move I'd be pretty sure to get one of them and maybe two before they could get me. And each of 'em kind of hated to be the first one."

But to this rule there are notable exceptions: exceptions which show what a fundamental and powerful emotion fear is, what a primitive race we are and how we still are largely controlled by instincts and emotions: not by knowledge and judgment.

A physician I never had seen hurried into my consultation room gasping for breath in a peculiar way. His mouth was open and he was taking quick, very deep inspirations at not too frequent intervals. Often he placed his hand over the precordium. It was easy to see that he was not in pain and had no organic dyspnea. He asked me to examine his heart. I asked him who had already examined it. He named half a dozen men more competent than I to pass on it. All had pronounced it normal. I declined. The man himself proved to be a competent and intelligent practitioner. A few years before he had run at top speed about half a mile to catch a train. He just caught it, clambering onto the rear platform as the train gathered headway. Of course he was out of breath and his heart was beating violently. At that moment came the thought: "What if I should have an acute dilatation now and here with no possible help?" The thought was terrifying, and he was in acute distress until he reached his destination, a short distance away. That was the beginning of a series of periods when the fear of heart failure would get the better of him, and in many of the attacks he breathed as when I saw him, the feeling being that the air did not go deep enough, did not reach the right spot.³ There were times when every afternoon from 2 to 4, under one pretext or another, he would sit in a nearby drug store because he knew that then none of the physicians of the neighborhood had office hours; all were out making calls. And he just had to be where he could get quick assistance if necessary. If he were called to a house beyond the thickly settled districts he could not compel himself to cross the vacant spaces, but would turn about and go home, all because of the fear of sudden heart failure, his own knowledge and experience and the confident assurance of numerous heart experts to the contrary notwithstanding.

To state the thesis another way, intellectuality seems to be no effective protection against phobias. It is largely a question of temperament. The intellectual and cultivated are quite as susceptible as the stupid and ignorant.⁴ And regarding this temperament one may frequently make a most interesting observation of what at first sight looks like a psychologic paradox. Concerning these phobia patients one very often hears members of the family say, "She never gives up," "Nothing discourages him," "He's a hard fighter," "She's full of courage and patience," and the like. All of which is perfectly true, and yet this person is in the clutches of an overpowering fear. The explanation lies in the nature of the individual. They are the people dominated by an idea. The absolutely undaunted young football player, who plays a whole period after he has been so battered that he is practically unconscious, does so because he is possessed by the idea that he's got to win and he's going to. The same boy may be just as much in the grip of an idea that he is ruined by masturbation. The mother who is absolutely tireless and never loses courage in the nursing of her child, because she feels that she must and will save it, may be just as strongly possessed by the fear that she may suddenly lose control of herself and cut the child's throat. The born enthusiast makes a fine phobic. Had her obsession taken another direction, Joan of Arc would have made a beautiful case of *folie du doute* or of agoraphobia. Martyrs and pro-

found psychasthenics are often made of the same stuff.⁵

To insist that one should be careful not to confuse phobia with impulse, the fear of doing a thing with a sudden desire to do it, would seem to be a work of supererogation. But patients themselves frequently make this mistake, and physicians sometimes follow their example. One of the best English textbooks on insanity cites in some detail a typical case of phobias as one of homicidal impulse. Brief mention of a few cases will make the type clear:

A woman of 50 years habitually sat in a far corner of the room because she said she had an impulse to throw herself out of the window. I had the greatest possible difficulty in getting her to approach the window of my office (ninth floor) because of her overpowering fear that she might suddenly lose control of herself and jump out. She went toward the window haltingly with tense muscles and anxious countenance and clinging frantically to a heavy desk, as if some one were shoving her toward the window and she resisting.

A gentleman came to me in great distress of mind because he said he had an impulse to kill his two young sons. He had given away his revolver, had carried an ax about a mile away and thrown it into a river, and had disposed of the domestic clothesline in the same way, having had permanent wire put up in its place; all because the idea how easily he could kill the boys kept recurring with such intensity that he feared he might in some way suddenly do it.

A very devoted mother was in the same horribly distressing state of mind regarding her two little girls. She never went into the kitchen because the carving knives were there, had all meats carved in the kitchen, and persuaded her husband to take his razors out of the house—this because she was constantly in mortal terror for fear she might suddenly have an overpowering impulse to harm the children. What she came complaining of was nervousness and sleeplessness. Only after close questioning did she tearfully confess to an "impulse to kill the children."

A frequent fear, which the patient looks on as an impulse, is that of doing some mal apropos thing in public; of using obscene language or yelling or slapping someone or making a suggestive movement. Frequently such fears are really fear of insanity, of suddenly losing self-control. But the conception of the dreaded act recurs so constantly and forcibly that the patient gets the idea that he has a tendency to commit it, and the doctor takes his word for it. Needless to say, the diagnosis is vital for both prognosis and treatment, but is generally very easy. The patient at once acknowledges that he does not want to do the thing, never did want to do it, and has no reason for doing it, but fears that for some reason in some way he may suddenly have an abnormal impulse to do it, and will not be able to resist the impulse.

An interesting type of case, and one frequently misunderstood, is that in which the patient suffers from the physical results of the fear, but is quite unconscious that his trouble originated in fear and really still is a definite fear. As indicated before, these cases are very common. Sometimes it is easy to unearth the fear and its origin, sometimes difficult and occasionally impossible. An easy one was the following:

A young commercial traveler consulted me because of nervousness which came on in restaurants and hotel dining rooms. He dreaded to enter such a place because as soon as seated he became shaky and apprehensive, and had palpi-

3. This sensation is frequent in neuroses involving ideas of the heart, lungs and throat, and some others.

4. An intellectual and cultivated person may not be in the least "matter-of-fact." That he may be lacking in "common sense" is notorious.

5. I have recently seen a successful theological teacher and evangelist who was a missionary in darkest Africa where he heroically endured great hardships and undismayed faced manifold danger, yet now was suffering with an overwhelming fear of closed places.

tation, precordial distress, soon followed by nausea and cold perspiration. For three months he had been unable to take a meal in a public eating place, which meant that he had been unable to work for that length of time. Only a few minutes were needed to learn that some months before, in a restaurant, he had been taken violently ill with nausea and profuse emesis followed by active diarrhea and marked prostration; probably ptomain poisoning. This most disagreeable if not alarming catastrophe was unconsciously associated in his mind not with something he had eaten but with his presence at table in a restaurant, and it was fear of a recurrence of the thing in a public place, surrounded by people and no doctor near, that caused his symptoms. Although the patient had had no suspicion that he was afraid, he recognized the logic of the situation when it was presented to him, and made a rapid recovery.

Not quite so simple was the following:

A gynecologist sent to me a young married woman with vaginismus. She had been married many months, but coitus had not been completed. No cause was obvious. The introitus was normal and not especially sensitive. The patient had no prudish notions regarding intercourse, was deeply in love with her husband and anxious to fulfil her functions as wife and prospective mother. Detailed inquiry seemed to show that the trouble was not so much local pain as instinctive resistance and overpowering inability to endure the act. I further found that not only could she not endure to have the husband touch the pudenda, but even his touching the breasts caused a very disagreeable sensation with a strong feeling of defense. The cause of this great and greatly regretted repugnance was totally unknown to the patient. She never had been assaulted, nor had any such case impressed her. She never had had any disease or injury of the genital region or of the breasts, nor to her knowledge had any of her relatives or friends had any such trouble. The same applied to operations in these spheres. She did not remember reading anything along these lines, nor had any one told her disconcerting tales of the nuptial bed. But when finally I asked her if she had ever seen pictures that impressed her, she quickly recalled that when about 11 or 12 years old she had seen in a foreign gallery paintings depicting the breasts of women being slashed, the nipples seized with red hot pincers and the like. These had made a deep impression on her. And at just that time her mother had talked to her and her sister about the horrible consequences of masturbation; had commanded and besought them never under any circumstances to so much as touch the genitalia. Here lay the foundation of the hidden fear and repugnance; a fear which had existed for years, of which she was quite unconscious, but which still was effectively potent. Treatment was brief because recovery was rapid.

Of this type are many cases of agoraphobia or claustrophobia. The patient either does not know he has a fear or he knows only that he has an ill defined apprehension. What he complains of is simply that in certain places or kinds of places he is exceedingly nervous and has certain alarming sensations and physical signs. The principal ones are tremor (or a feeling of internal tremor), palpitation, precordial oppression, epigastric distress, great weakness, cold or hot perspiration, flushing of the face, "rush of blood to the head," and a feeling of dizziness and dyspnea (sometimes with tachypnea). Frequently great emphasis is laid on gastric or abdominal symptoms, and not infrequently the patient complains of uncertainty on the feet or staggering, which does not exist. Oftentimes such a patient when asked what he is afraid of promptly responds that he is not afraid of anything. Indeed, to deny fear seems to be almost as instinctive as that emotion itself. He may deny it with indignation, asserting that he is not afraid but that he is uncomfortable and sick. A couple of cases will illustrate.

A woman, aged about 60, complained of nervousness, palpitation of a peculiar dizziness or lightness in the head. She felt so uncertain of herself that she could not cross a large room unless some member of the family took her hand. Her most intimate friend lived just across the street, but she could not cross to see her. She had valiantly tried. She would hurry down her own front steps and start with a rush for the other side of the street, only to stop at the curb as at a stone wall, held by some force which she did not understand. She could walk along the curb to the corner, but the moment she tried to cross, she had a peculiar sensation in the head, precordial distress, became weak and trembling, and simply could not put her feet further. The thing was a mystery to her, but it did not take very long to ascertain that an attack of dizziness some weeks before, the sudden death of a friend from heart disease, and the cerebral apoplexy of another had combined to fill her with a fear that she might suddenly drop dead. The fear once definitely exposed, treatment was simple and quickly successful. Perhaps it is worth while to note the procedure. She was taken to a hospital, saw no visitors, first took short walks with a nurse beside her, and then with the nurse 20 or 30 feet ahead. Soon the nurse walked a short distance behind her, then on the opposite side of the street. Following this the nurse would stand on a corner while the patient walked to the next corner and back. When she could do this with complete ease and comfort, the nurse waited while the patient walked around the block. The rest was easy.

An active and successful business man was unable to cross the open space or common between Michigan Avenue and the station where he daily took train to go home. He always waited on the curb until other people were crossing. When he tried to walk the 150 yards or so alone, palpitation, precordial oppression, a queer feeling in the head, and great weakness stopped him. He knew that he was physically sound, and recognized his disability as irrational; he said he felt as if some one ought to give him "a good swift kick." But he had not definitely recognized his trouble as a fear that he would drop unconscious while crossing the open space, with no one near to help.

A few years ago I was asked to examine a man, aged about 40, with "paroxysmal tachycardia." I rather demurred, saying that heart cases were out of my line. But I did examine him and could find nothing abnormal. Nor did any amount of exercise through which I could put the patient cause tachycardia. Finally close questioning brought the statement that he could walk any distance at any gait without palpitation provided his wife were along, but that a leisurely stroll by himself would be sure to bring it on. At once I sent him out to try it, and he came back with a pulse of 140. Then for the first time I got at his fear which was the cause of the tachycardia.

Occasionally the physical manifestations are pronounced, although the patient knows perfectly well that a groundless fear is the cause. A good example is the following:

A woman, aged 42, well educated and unusually intelligent, had had since the age of 6 an overpowering fear of thunder storms. At that age she had suffered "a stroke of lightning." She was running home for shelter from the storm when just as she opened the door a bolt of lightning struck very near and she fell through the doorway onto the floor. Whether or not she received any electricity she could not tell me, but is said to have been temporarily paralyzed. In any event she received a great shock, possibly of fright alone. The timidity engendered by this occurrence was fostered by the parents, who allowed the child to take refuge in the cellar or in a dark closet whenever a storm approached. This astraphobia increased with the years. After a time a thunder storm caused not only a feeling of apprehension, oppression, tremor and palpitation, but also nausea and later violent vomiting and retching. In the meantime the patient had developed grave organic heart disease. When she came to me the situation was serious, inasmuch as the strain of each attack of vomiting and retching was more than the heart could

compensate. Here, then, was a case in which the physical effects of a phobia were actually dangerous to life, although the patient quite well understood the nature of her trouble. I may add that in this case the nervous symptoms, at least the nausea and vomiting, were entirely controlled by means of hypnotism.

As has already been intimated, properly to elucidate a case of phobia, manifest or latent, generally one must go back to the very first appearance of the symptoms and investigate the circumstances surrounding it. In most instances the mechanism is quite simple. The patient has had some distressing or peculiar sensation or some disability from adequate physical cause. This sensation he at once or (more often) subsequently correlates with some serious malady or calamity which in some way has been brought to his attention. It goes without saying that the patient has as prerequisite a hypersensitiveness or impressionability. Consequently, often a very small trauma suffices. From my cases I note as the initial disturbance: ptomain poisoning, tobacco poisoning (excessive smoking), dizziness or syncope from overheated and overcrowded rooms, alcohol poisoning, the weakness or trembling from typhoid or other acute illness or following confinement or an operation, heat stroke, discomfort from excessive eating, rheumatism, aural vertigo (quite a number), tinnitus, syphilis, nocturnal emissions, the shock and hemorrhage of initial coitus, cerebral thrombosis, migraine, the distress of hyperacidity or indigestion, uremic convulsions, night numbness or night palsy, and predormal shocks.

Some phobias are very like the antipathies harbored by many people (for instance, for cats), so well depicted by Weir Mitchell and others. Such phobias may be hard to account for, as are the antipathies, but some are relatively simple. The following case is unique in my experience:

A woman, aged 27, could not bear to look at the sun, moon or stars, and was most uncomfortable whenever she thought of them or heard them mentioned. She never went out of the house at night unless compelled to do so, and would not even look out of the window. On a bright day she preferred to stay in with the shades drawn. She had become so worried and nervous that life was a burden to her and she a burden to her friends. Whisky gave her some relief, and at times she indulged to excess. As may be supposed, she had always been sensitive and timid about many things. In addition, she had been a spoiled daughter until she married an indulgent husband. On this basis her trouble developed as follows: At the age of 10 she had been in a tornado which she thinks did not frighten her excessively but left her afraid of storms. A year later her mother in great agitation awakened her and told her to dress quickly as another tornado was coming. Apparently these events left her very timid as to Nature and afraid of the dark. At 22 she married and went to live on a ranch, the nearest neighbor being 15 miles away. Here she was lonesome and rather unhappy, evidently oppressed by the isolation, the vast stretches of lonely range and her own impotence. A year after marriage a man came along with a newspaper telling that Halley's comet was about to appear and detailing all the horrible catastrophes said to accompany its coming. This recital had the immediate effect of giving her a nervous chill. She went to her room and took a big dose of whisky, but could eat no supper and could not sleep that night. This fear of celestial calamity rapidly developed into fear of all heavenly bodies; a fear which would seem to belong to the middle ages, but which did incapacitate a rational human being of this twentieth century.

One particular fear I wish to mention, as it is not uncommon, but frequently is unrecognized, princi-

pally because of the reticence of the patients. So far as I know it has not been named, but might be called hierophobia. I refer to a fear afflicting clergymen in their public functions. Oftenest I have seen it in Catholic priests whose duties about the altar are more complicated and solemn than those of a protestant preacher in the pulpit. Another reason, I believe, for its greater frequency in the Catholic clergy is that they officiate fasting, and the primary attack has been induced by the faintness of a man working on an empty stomach and who perhaps has slept poorly, has been up most of the night, or has been smoking excessively. In nature it is just like other phobias. For some casual physical reason the patient experiences a faintness or dizziness, or a tremor or palpitation, or something which suggests to him that he might lose control of himself and do something unseemly or that he might lose consciousness or have a stroke. One patient noticed that in administering the sacrament his hands trembled. This begot two thoughts: first, that his parishioners might think he had been drinking (he was quite rubicund but very temperate); second, that he might blunder and spill the host or the sacramental wine. This patient, like most of the others, complained not of his fear but of general nervousness, tremor, poor sleep, head pressure, etc. Methodical and patient investigation was necessary to extract the kernel of his trouble and show it to him.

To consider the treatment of these cases forms no part of my present purpose, but I will allow myself two remarks. First: The remedies most frequently prescribed for these disorders are absolutely futile except for possible suggestive value. How can "tonics" or "sedatives," change of climate, a vacation, tacking up a floating kidney, lifting up a prolapsed uterus or rest in bed and massage eradicate fear? Would a winter in Florida, a trip around the world, an operation for hemorrhoids, or strychnin pills make a sinner less afraid of eternal punishment? Second: The way to remove fear is to show the patient what it is and then teach him to demonstrate to himself that it is groundless. In short, educate him out of it as he has been inducted into it. If a child is afraid of a dark room we do not give him soothing syrup and tell him there is no room and no darkness. Nor do we suddenly throw him into the place of dread. We explain the darkness and the entire absence of anything to be feared. Perhaps we light the room and then make it dark again. Then, when we are sure he is ready for it, we take him kindly but firmly by the hand and lead him into the dark room, or perhaps only to the door or part way in. Finally, he goes in alone, and when he has fully demonstrated to himself that there is nothing there to be feared, of course he is not afraid and he is cured. We are only children of a larger growth. And not so very much larger either.

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ABSTRACT OF DISCUSSION

DR. FRANK PARSONS NORBURY, Springfield, Ill.: I am a bit disappointed in Dr. Patrick's paper in that he did not go into the psychology of fear more extensively. I always look on this subject as one belonging to psychobiology, involving questions of survival, self-preservation, primary emotions and instincts. If we look at it from this viewpoint it does not matter what is the fear, but the fact that that fear exists. And when you analyze fear on this basis, even without the details, and consider the essential, instinctive, inborn condition that is present, I think we will then under-

stand the whole fear habit of man. Of course, we must ascertain what is the fear. The question of survival is always paramount and the individual is put on the defensive by the emotion of fear. True, that is according to what fear stimulus may exist. We should consider that fear is not limited to any one condition, but that it is a tendency, like all physical traits, involving all of us alike. Just as hunger is not limited to any particular desire for food of a certain quality, but the question is that we desire food, and this involves all centers and all cells. And so it is in fear. When we have fear the reaction is fear alone and involves the stability of all cells. It is therefore a question of biology and in consideration of the subject fear we should start from that viewpoint.

Dr. Patrick apologized when he mentioned the freudian doctrine. To me this is an essential question. In my judgment it is more than Freud's emphasis on the sexual instinct. We should call it the freudian wish, in which is involved the essential determining factor of life itself, at least in life preservation. The question is one requiring full elaboration of all the psychobiologic phenomena. And for that reason, when we take into consideration the fact that we are dealing with primary emotions and instincts, with the laws of survival, we have a rational basis for procedure. There may be an association test that will strike real fear, the elements that are concerned in the foundation of the complex, because fear is the root of many of our intellectual strivings. It is the strife which brings about adjustment and when you know that, you are readjusting and reeducating the personality. The essayist speaks of educating the child to go into the dark. If you get down to the primary analysis of why the child is afraid of the dark and show that it is an element of survival and of self-preservation, and then treat the question from the standpoint of what are the primary instincts, you will by this means get a better answer. You have to make an explanation. The child is seeking an explanation; he is looking for an answer to his instinctive reaction to his fear, just as you or I would in any other reaction. This is normal; it is a stage in development and an onward movement in individual development of personality. The fact of the policeman being not afraid to meet the criminal alone only has value as an evidence that he has adjusted himself to such fears. This is the biologic consideration of the question. The other reaction to fear is only of importance because of the fact that he has a fear.

DR. HAROLD N. MOYER, Chicago: Dr. Patrick said that it was a work of supererogation in this organization to separate impulse and fear and explain the distinction. I do not believe that is true. He tells us that the freudian doctrine is not essentially sexual, but here we are confusing the two things again, fear and impulse. And that is the point. We are afraid of the freudian doctrine, we fear that it is complicated by a sexual impulse. We do not want to be charged with the latter, hence we are afraid of the former. That is the doctrine. I suppose that within the month hundreds of people are sent to institutions for the insane with the statement that they are not only insane, but that they are suicidal. What is the basis of that statement made in their committal papers? Why, they have confessed to the doctor or to the examining magistrate or to somebody that they were afraid they would kill themselves. But they never intended to kill themselves—they were *afraid* they would. It was simply a morbid fear, they were not suicidal at all. A man quietly puts away his razor for fear he will kill somebody, hence in the papers regarding commitment he is put down as homicidal because he is *afraid*, he says. That is the common misconception—the relation of fear and impulse.

DR. ROBERT MCGREGOR, Saginaw, Mich.: The emotion of fear must always naturally arise from an instinctive basis. Its reaction is as forceful and uncontrollable as a reflex. I believe that fear of a vague and unreal kind plays a potent part in many of the manifestations of hysteria. For example, I knew of the case of a strong, husky farmer who stiffened out in a tonic spasm while the dentist was applying the rubber dam. Two days later he returned, reinforced by a

couple of his neighbors, when he went through the ordeal without a hitch. The remedy in the young subject is disciplinary and educational, along the lines of rendering more stable the emotional equilibrium.

DR. WALTER B. CANNON, Boston: The emphasis which Dr. Norbury has placed on the biological aspects of this discussion is well deserved because of the fundamental character of these emotions and the instinctive impulses that attend them. Dr. Patrick is, I believe, doing an important service in calling attention to the significance of these fundamental experiences which human beings share in common with the lower animals. During the past four or five years we have been studying the effects of fear and of aggressive feeling in lower animals, and the results obtained have rendered the suggestions which Dr. Patrick made today particularly interesting to me. He pointed out the very close association between courage with readiness for aggressive action, and a fear which likewise came on with great intensity. If you study the reactions that occur in lower animals either from fear or from intense aggressive feeling, you will find that they are essentially the same. All the changes noted—increased heart beat, inhibition of the movements of the stomach and intestines, liberation of sugar from the liver, increased blood pressure—occur either in fear or in rage, so that basally the biologic changes are alike. And there is good reason why they should be alike, because in either case, whether there is fear present because of danger against which the organism has to defend itself, or whether there is aggressive feeling which will result in attack, the organism has to engage in a struggle, a struggle which may mean life or death to it and consequently will call for the mobilization of all its forces. So there is abundant reason why, under the circumstances referred to, these changes, all of which are favorable to the mobilization of the abilities and activities of the organism, should then occur as reasonably in fear as in anger or rage. James years ago pointed out the very close relation between fear and anger. He remarked that we both fear and wish to kill anything that may kill us. And it seems to me that if we regard these emotions and the instincts that are associated with them *biologically*, and apply the biologic concepts to the peculiar instances and circumstances that may arise in particular cases, we may often get an illuminating insight into their actual operations.

DR. TOM A. WILLIAMS, Washington, D. C.: There is great confusion in this whole question. Of course, fear is a biologic reaction; of course, there is a physical mechanism; of course, we cannot arrest it by attacking the physical mechanism. Let us analyze the matter. There is first a reaction, what we call the manifestations of fear, physical and psychologic. The cause of that in all cases from the lowest biologic organism up to the human being is a sentiment, a feeling, an apprehension of danger. The cause of that is a concept a'ways. Because of that concept there is a percept of the situation. It is because of what we fear that makes us fear. Then it is only by reason of the removal of the primitive active factor of the fear that we can remove the fear. We cannot remove the fear by dealing with the ultimate mechanism. Therefore, the question is a psychologic one, and we must find the active percept which in each particular case produces fear. But the same situation does not always produce fear in every individual. Why? Because in each there is a different set of conceptual processes causing fear, and it is those which we have to attack by exploratory analysis. The only exploratory analysis is not freudian analysis. People were cured of these troubles long before that doctrine was known.

Dr. Cannon has shown how it is the concept which determines fear in the lower animals. All of us who have taken the opportunity to examine committal cases have found this to be true, and the mechanism by which the deviation from normal reaction occurs we can call what we like. I call it suggestion, which simply means a false appreciation of the situation, a lack of placing the situation in its true relationship to life as a whole and to the individual himself. It is true that certain individuals are more apt to deviate in that way. We know that certain individuals are nervous,

easily intimidated. One reason is the physiologic tendency toward the fear reaction, and the other is the environment. And it is this that we can, perhaps, influence. We can get at the way in which this individual reacts by going back to the childhood influences and environment, and readjust the mental attitude toward life, by this means suppressing at the inception the reactions which would otherwise eventuate in fear. Many cases of that kind have been published to show that these matters can be readjusted quite independently of the methods of the freudians. It is only because the patient cannot explain all the things that create the fear. It is not that he does not know that it is fear. He does not call it fear; he does not recognize the similarity of the reaction to his fear, but when placed face to face with the psychologic features of his own case he recognizes them as not derived fundamentally from fear. Hence even in Dr. Patrick's cases I believe there is no really unconscious mechanism; in which respect I think we can part company entirely with the freudians.

DR. WALTER B. SWIFT, Boston: I have done work along this line in connection with stuttering. In cases of stuttering we have found that a great many fears precede the utterance. Those fears are manifested through the utterance where stuttering is present, and many times follow afterward. The treatment that has been applied very successfully to these cases is what is called the supplying of a visual image. By this I mean that during the stammering process the visual image, that is normally present in talking, is absent. Therefore, by training these stutterers to visualize automatically during talking, their fear vanishes and their stuttering improves. I think that these fears in a general sense often come from false instructions and from interpretations of older people who have drilled them into us in our early days. Therefore it would seem that the general method of eliminating fear in these cases should be to supply automatic visual images. Cure results.

DR. C. B. BURR, Flint, Mich.: It is true that those patients fear the unfamiliar, as Dr. Patrick has said, but they also fear the familiar, as witness syphilophobia. A distinct delusional state occasionally is determined by harking back to a genuine or supposed infection.

DR. FOSTER KENNEDY, New York: I want to point out something which in the practice of psychoanalysis comes under one's observation in the day's work: That the whole theory of symbolism as enunciated by Freud, whether or not it be true, in the practice of the disciples of Freud, is used as mechanically as would be a set of chemical analytic tables. The details of Freud's symbolistic theories are as *ex cathedra* as are the enunciations of Mary Baker Eddy, and are accepted equally implicitly by the followers of the two systems of thought. In practice this has led not to the careful detailed personalized examination of the individual under consideration, but to a request for symptoms and their automatic pigeon-holing on a basis of preconceived data of purely pontifical character.

DR. FRANCIS RHODES FRY, St. Louis: There is no place for the freudian intrusion in any serious sense in the practice of medicine and psychiatry. It has been my observation that a phobia is often sustained by some point of irritation or distress in the patient's periphery, so to speak. In that class of cases, particularly, it does not do to remind the patient too soon that his trouble is psychic.

In a recent paper on the anxiety neuroses, the peripheral as distinct from the psychic side of these cases was my chief theme. Very often the fear patient has an anxiety based on a peripheral irritation constantly suggesting to his mind that something is wrong somewhere in his system. It is well to work seriously to correct possibilities of this kind. In other words, to begin something that looks like a campaign in the patient's interests. I have seen many patients affronted and driven away by the first interview with a practitioner, who has simply said, "Nothing the matter." Of course, such practitioners are generally not good enough psychiatrists to grasp a situation of this kind.

DR. CHARLES R. BALL, St. Paul: I think we can say of the freudian doctrine that it has some elements of truth, but

because of these few elements of truth it is not necessary for us to be compelled to swallow the whole thing. I believe absolutely in Dr. Patrick's and Dr. Williams' exposition of this subject: That correction must be along the lines of readjustment of the patient's ideas. With these patients we should do as in other affairs of life, "Show them." And still that is not all, because there is a biologic factor. It does not appear so plainly in the nervous cases as in the mental. I remember the case of a man with manic depressive insanity and with a fear of suicide. When I saw him his tongue was furred, he was losing in weight, there was lack of appetite, disturbed sleep, and he went on getting worse until one day while sitting in his office he did attempt suicide. He made a vicious slash at his throat, cutting himself from ear to ear, and slashed the arteries of his wrists, but fortunately did not kill himself. From that time on his fears left him, his tongue immediately cleared up, his sleep came back, and mentally he was himself again. This case illustrates the biologic side—that there is something which brings about those conditions in addition to ideas. I can recall a number of cases of this character where some great shock or perhaps some other fear has immediately relieved a manic depressive condition and suicidal tendency.

DR. ULYSSES GRANT DARLING, Chicago: It appears to me that in the elimination of fear, whether it be in animal or in human being, the greatest point in the cure is to give the individual the experience of the feeling of safety. It is not always necessary to be so very scientific or to follow after any particular hypothesis in the analysis of the individual. It also appears to me that the doctor, whether from a scientific standpoint or from an artistic standpoint, who is equal to the occasion at the moment of interview of discovering a method of giving his patient this experience, will have gratifying results. In the analysis of any morbid fear it must be an analysis that reaches that particular fear, and then we must be capable of giving the treatment which, after a clear-cut diagnosis, will have a particular bearing on the case in hand.

DR. DAVID S. BOOTH, St. Louis: I am unable to reconcile the view of the essayist on the treatment of fear with a fear which I will have to personally acknowledge in order to explain it. I have a fear of snakes and lizards, which I know is unnatural, although I realize that there is no reasonable basis for this fear. When a boy I had a classmate who carried them in his pockets and played with them and I know from knowledge of natural history that there are very few dangerous snakes. Even the imitation wooden ones make me "creep," and I also had that kind of "snaky feeling" when I used the ordinary earthworm used in fishing. Nothing of the kind has ever attempted to harm me, I have never been frightened with those things in any particular manner only in running onto them as boys naturally will in play. But I will admit that I can hardly look at a snake or lizard until after the initial feeling of fear has passed off, when I am able to kill it. I would like to have some freudian explain why I cannot get over this feeling.

DR. HUGH T. PATRICK, Chicago: Dr. Aikin has handed me a written suggestion, as follows: "Please emphasize the value of personality and our complete analysis of each patient as an individual and not a machine, as one in 10,000 made in the same mold." I cannot make it any more emphatic than that. To Dr. Norbury, I can only say that because I omitted to discuss the psychology and the biology of fear, I do not wish to be understood as not being entirely in accord with him and Dr. Cannon. In my paper I speak of fear as one of the fundamental things in us, and I illustrate the fact that we are controlled by our primitive emotions and appetites; not by reason, not by our intellectual processes at all. In a way I have said that there is some physical cause to start this thing. Of course, that might have been a transient physical something or it may have been a continuous physical something, and if there is a continuous physical something which the patient fails to interpret properly, naturally it perpetuates the fear. And if we do not find out his error and correct it we have not done our duty. Then there is the next step, which Dr. Darling

also alluded to, and which I should like to put perhaps very crudely in this way. We can scarcely be said to treat a psychoneurosis; we are working with the individual who has it. And I believe that in some instances the object should be—I say this with great deliberation—the object should be, not to give the patient the true explanation, which is to be preferred and in the majority of cases is the better procedure, but to give him an explanation which satisfies him; which appeals to his particular mentality, to his particular viewpoint, which harmonizes with his past, his education, his environment. And I thoroughly believe that some of the successes of the freudians have been attained not because they have found the truth, but because they have done something which begot confidence, which presented to the patient what for him was an adequate explanation. If we can make the patient *sure* that we understand, and if we can make him believe that he understands, it does not really make any very great difference whether we have reached the bottom of the psychology of fear in that individual or in the race—we have accomplished our object with that individual patient.

One symptom spoken of was the vague indeterminate sensation of fear. What I have tried to make clear is that most of these fears are not vague and indeterminate at all; they are perfectly definite, individualized fears, each one of which we can get hold of and bring to the surface so that we and the patient himself can recognize it.

HETEROPHORIA IN CHILDREN *

WENDELL REBER, M.D.

PHILADELPHIA

Heterophoria in children is a reasonably rare anomaly. The references to it in the literature are of the most cursory kind. Of statistics there are none. In the hope of establishing some kind of statistics I have had my private case records gone over with the following results: In the last twenty years, refraction was done in 6,400 cases. Of this number, 2,000 presented some manner of muscular anomaly. Many of the latter class were made so comfortable by their refractive correction alone that no especial attention (except for purposes of record) was directed to the muscular anomaly. Of these 2,000 muscular anomalies, representing all ages, 345 occurred in children up to but not including the fifteenth year. Of this 345 there were thirty-five, or about 10 per cent., whose muscular status became of moment and demanded treatment for the muscular condition itself. This has no reference to strabismus in children, which is familiar to all ophthalmic workers. The cases herein referred to were true heterophorias in that the children all enjoyed binocular vision, but were sufficiently hampered by their muscular imbalance to present quite an array of symptoms.

The figures submitted would indicate that one in 183 of all refractive cases will represent a child with an essential heterophoria, and that one child in ten that exhibits muscular imbalance will need some manner of treatment for its abnormal muscular status. There are doubtless those who feel that if these children had been given a good refractive correction and then had thoroughgoing attention paid to their general physical condition, there would have been no need for treatment of their muscular imbalance. It might, therefore, be stated here that in every one of the cases to be recited, the most careful correction of the refractive error

was done and every other possible source of reflex irritation removed before treatment was directed to the abnormal state of the ocular muscles. The relief of symptoms in all but three of the cases was striking. Children ordinarily possess such vigorous nervous systems that they experience very little trouble with heterophoria. When they do, therefore, the muscular imbalance becomes of considerable moment and is well worthy of attention. Moreover, binocular stereoscopic vision is not always a thoroughly established function in children up to 12 years of age, and the presence of a considerable hyperphoria might well be the one factor necessary to disrupt this complex function, as I have had occasion to observe in a fair number of cases. Analysis of the thirty-five cases here reported affords some interesting facts.

Of the thirty-five cases, eight presented esophoria and twenty-four presented exophoria, two presented uncomplicated hyperphoria and one presented anaphoria. Altogether there were seventeen cases of hyperphoria; but as fifteen of them occurred with either esophoria or exophoria, they will be dealt with separately. The most outstanding fact in the foregoing figures is the preponderance of exophorics—twenty-four of them as against eight esophorics. It has been thought that esophoria is the usual muscle status encountered in children up to the time of puberty, and I am still of the belief that in 100 children taken consecutively this would be the case. It would appear, therefore, that the predominance of exophoria will be found only among those children who have symptoms referable to their ocular muscles.

The presence of fifteen cases of hyperphoria in thirty-five cases of muscular imbalance in children is also a noteworthy finding. This represents 42 per cent. of all the cases. Heretofore we have thought that hyperphoria was a muscle status to be seen mainly in adults and largely in those over 30 years of age. In a paper on hyperphoria presented before this section in 1900, I found that out of 150 hyperphorics, 116 were found after the twentieth year, so that this pronouncement will have to be somewhat modified.

Study of the relation of the muscular status to the refractive status is not without interest, as the following figures will show:

RELATION OF MUSCULAR STATUS AND REFRACTIVE STATUS

	H+Ah	Ah	H	Ahm	M+Am	Am	M	Amh
Esophoria.....	5	..	1	1	1	..	..	..
Exophoria.....	17	3	..	1	2	1	..	..
Hyperphoria.....	9	2	1	1	2	..	..	..
Anaphoria.....	2	..	..	..	..	..	..	..
Hyperesophoria.....	3	..	1	1	1	..	..	..
Hyperexophoria.....	5	2	..	..	..	..	..	..

Of the eight esophorics, five occurred with H + Ah, one with H, one with Ahm and one with M + Am. This is in accord with the usual conception that compound hypermetropic astigmatism and its congeners are likely to have esophoria as the associated muscle status.

When we come to consider the twenty-four exophorias, we find that seventeen occurred with H + Ah, three with Ah, one with Ahm, two with M + Am, and one with Am. In other words, out of the twenty-four cases of exophoria, twenty-one had H + Ah or its allied states as the refractive status. This is a most interesting finding and one of great gratification to

* Read before the Section on Ophthalmology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

me, as it bears out the contention I made in a paper¹ before this section at the 1906 session at Boston. In that paper I analyzed the findings in 441 cases of exophoria in adults, and found that 319 of them, or 72 per cent., showed H + Ah and its allied conditions as the refractive status. The statement was there made that we should have to abandon the old conception that exophoria was to be mainly found associated with the myopic varieties of refraction. In these children, then, we find that in twenty-one out of twenty-four cases, or 87 per cent., of exophoria, the hypermetropic status prevailed, and it seems more firmly established than ever that we cannot predicate from the refractive status what the muscular status is likely to be.

If it be argued that the presence of hyperphoria might possibly account for the large percentage of exophorias in these children, I would rejoin that among the fifteen hyperphorics, seven presented exophoria, six presented esophoria, and two were simple uncomplicated hyperphorias. Whether these twenty-four exophorias were anatomic or innervational in origin, I am not prepared definitely to say. It is significant, however, that in the eight cases in which the tropometer readings were taken, the nasal rotations were absolutely normal, so that there is much presumptive evidence that the innervational factor is the main one, all of which goes to show that the relation between accommodation and convergence is a most elastic one. The ideal (or academic) relation between accommodation and convergence that obtains in the absolute or relative emmetrope (namely, as many diopters of accommodation as there are meter angles of convergence) is none too frequent. Nature is abundantly kind and even diplomatic. For each one with binocular stereoscopic vision she provides some manner of relation between accommodation and convergence. For the hypermetrope of 2 diopters, for the myope of 2 diopters and for the astigmatic of 2 diopters, Nature devises some kind of working relation between accommodation and convergence that is for them the best thing at that time, until some ophthalmic worker wisely affords a better one that more nearly approaches the ideal emmetropic relation. But even with the kind of artificial help afforded by a good correction, not always are the ideal relations established. Not always do the ocular muscles quiet down and fall into correct habits. In the thirty-five children here to be considered, there were residual symptoms of ocular distress in spite of the refractive correction, and these residual symptoms compelled extra attention and aid.

The diagnosis in these various muscular states was based on tests with the Maddox rod (for distance and 13 inches), the cover test (for distance and 12 inches), the ductions, the tropometer readings, and in vertical cases careful study of the binocular motor field for diplopia. Also, the action of the associated muscles in suspected pareses or palsies (congenital) of the vertical muscles was noted. In this way pretty accurate information was secured in every case but one.

Analysis of the esophorics showed that only three were uncomplicated. One of 8 degrees was given a $\frac{3}{4}$ degree prism base out in each eye and seemed perfectly comfortable with this treatment. Another with 15 degrees of esophoria has worn a 2 degree prism

base out in each eye for four years with complete disappearance of a general nervousness that had worried his family for two years previously. Another of 12 degrees has worn a 2 degree prism base out for six years with complete disappearance of facial habit spasm and malnutrition that had baffled two pediatricians for some years.

The other five esophorics exhibited a hyperphoria that so dominated the picture as to compel attention. All of these five patients are wearing vertical prisms varying from a total of 2 degrees to a total of 6 degrees. One child broke down two successive years at school; but in the three years that she has worn a vertical prism, she has had no difficulty in completing each school year and issuing from it in good physical condition. The most suggestive case in this series was that of a boy of 12 with 20 degrees of esophoria and 6 degrees of nonparetic hyperphoria. A 5 degree vertical prism dispelled the esophoria in two weeks, so that but three degrees remained, and this was the status three years later when he was examined again. A conspicuous failure occurred in a girl of 11 with esophoria of 8 degrees and left hyperphoria of 3 degrees. Lateral prisms were poorly tolerated, and a 1 degree vertical prism accentuated her symptoms so sharply that it had to be removed. There were no pareses of any kind. Hysteria was ruled out, also all organic disease. This case remains a complete mystery to me.

In the exophoric series of twenty-four cases, seventeen were simple exophorics. Of these, three were practically emmetropic under a mydriatic. (That is to say, they were entirely free of astigmatism and exhibited plus 0.25 to plus 0.50 sphere under the mydriatic.) They were given prism training with prisms bases out, and their symptoms disappeared under this treatment alone. Eight were placed on prism training after wearing their refractive correction, and this was sufficient to make them perfectly comfortable. Three had weak prisms (from 1 to 2 degrees) bases in incorporated in their glasses, and did very well. These were children from whose parents I could hope for no cooperation in training them at home. Finally, three others had weak prisms of from 1 to 2 degrees bases in in their glasses, and in addition had vigorous training of their convergence with prisms (bases out) at home. The results were at least beneficial each time. Two had some residual discomfort in spite of the treatment.

Seven of the exophorics were complicated with hyperphoria. Five of these have worn vertical prisms for from one to six years, and will be dealt with under hyperphoria. Two of them were made so comfortable on prism exercise that no vertical prism was ordered.

The one case which stands out in the exophoric series was that of a boy, aged 9 years, with 5 degrees of exophoria for distance and 12 degrees for the reading distance. This boy had a typical cerebral type of vomiting for two years. Two ophthalmologists had pronounced his eyes as absolutely normal. Under a mydriatic there was no astigmatism whatever, and the total spherical error was plus 0.50 sphere. Three pediatricians had exhausted themselves in attempts to solve the trouble. Brain tumor, central organic disease, hereditary and acquired, gluttony, and all other possible factors had been successively ruled out. The last pediatrician in the case continued to assert his belief in the ocular basis of the vomiting, inasmuch as it was much more in evidence during the school year and much less so during vacation. The boy would vomit independently of mealtimes, and often would stop in the middle of outdoor play, have projectile vomiting, and then go right on playing.

1. Reber, Wendell: A Study of Convergence and Its Defects, THE JOURNAL A. M. A., Sept. 1, 1906, p. 670.

In view of the muscular status and because the mother was of low mental type and offered no hope of cooperation in prism training, the boy was ordered plain $1\frac{1}{2}$ degree prisms bases *in* in each eye. For two weeks he was decidedly worse; then the vomiting suddenly stopped, and for three years, during which time he has gone through three school terms, there has not been the slightest return of the reflex. This is one of the purest instances of a gastric reflex of ocular origin that it has been my privilege to study.

Of the fifteen hyperphorias, two were simple vertical disturbances without lateral error.

One was in a school girl, aged 14 years, who came wearing a perfect correction of her compound myopic astigmatism. There was right hyperphoria of 2 to 3 degrees, varying from day to day. There was no diplopia to be elicited and there were no pareses of any of the vertical muscles. A $1\frac{1}{2}$ degree prism base *down* in the right eye relieved the vertigo and malnutrition from which she had suffered for five years. In three years she has revealed latent hyperphoria so that now she wears a 3 degree prism base *down* in the right eye, and has completed her high school course in splendid physical condition.

The other occurred in a girl, aged 7 years, with congenital paresis of the right superior rectus revealing itself as a parietic right hypophoria of 6 degrees. When the eyes were rotated to the right, the left eye flew in and upward sharply. The head was always characteristically tilted to the right. This is the type of case on which Duane has laid so much stress because of the associated spasm of the inferior oblique of the fellow eye. I have often felt in these cases that there was also spasm of the superior rectus of the fellow eye. For instance, in this case of paresis of the right superior rectus, if the eyes are carried to the right, the superior rectus of the left eye (being a secondary adductor muscle) would throw in its quota of action, and with the left inferior oblique turn the left eye upward in spite of the action of the left inferior rectus, which would also try to assist in adduction.

Nothing would better serve to illustrate the complicated character of what would seem to be simple ocular movements.

As Dr. Hansell and I² have continually urged, there is no one movement of the eyes in any direction in which one individual muscle is the sole performer. An individual muscle may be the predominant actor, but never the sole actor.

To return to our case history, the child had a 2 degree prism base *up* in the right eye incorporated in her refractive correction (a very low compound hypermetropic astigmatism) and was almost instantly relieved of her intense nervousness, night terrors and malnutrition.

It is interesting to note that her tropometric readings were:

	Up	Down	Nasal	Temporal
R.....	30	50	55	55
L.....	40	35	50	50

The mother was so distressed, however, by the occasional sharp upward deviation of the left eye that I finally reluctantly operated on the child, doing an advancement of the right superior rectus and a tenotomy of the left superior rectus. One month later the tropometric readings were:

	Up	Down	Nasal	Temporal
R.....	40	50	55	55
L.....	35	35	50	50

Two months later there was residual right hypophoria of 2 degrees, and there is now a 1 degree prism base *up* worn in the correction of the right eye. But the up and in shoot of the left eye is no more in evidence, and the child is using her eyes hard at school. The head tilting has also disappeared.

If I have gone into considerable detail in the recital of this particular case, it is because it so perfectly illus-

trates the complex problem with which we are confronted in these instances of congenital palsy of the vertical muscles. Each one must be solved for itself, and aberrant phenomena on the part of the muscles not impaired in their action must be rather expected.

Of the remaining thirteen hyperphorias, six were associated with esophoria. In one of them the esophoria amounted to 15 degrees, the hyperphoria $1\frac{1}{2}$ degrees. In this case the use of a 2 degree prism base *in* in each eye, and training of the ocular muscles, controlled the symptoms, and no attention was therefore paid to the vertical error.

In the other five, the hyperphoria dominated the condition, varying from $2\frac{1}{2}$ degrees in the lowest one to 12 degrees in the highest one. Only one of these was parietic, and duplicated in most respects the lengthy case history just recited. No operation was done, however, as the parents objected and the girl was made comfortable with vertical prisms alone, as were the other four.

The seven remaining hyperphorias were associated with exophoria variant in amount.

In one of them the hyperphoria equaled 3 degrees, but there was also exophoria of 15 degrees. Vigorous prism training, begun with 5 degree prisms bases *out* in each eye, and carried up gradually to 20 degrees in each eye made the patient (a husky boy of 12) absolutely comfortable. The vertical error was naturally disregarded.

In three others the hyperphoria was low (not in excess of $1\frac{1}{2}$ degrees), and prism training of the convergence, with weak prisms bases *in* for permanent wear, accomplished a complete cure, so that in these also the vertical error was ignored.

In the remaining three cases, the hyperphoria became an insistent factor demanding especial attention.

In a girl, aged 14 years, there presented an exophoria of 9 degrees and a left hyperphoria (nonparietic) of 5 degrees. One degree prisms base *in* in the permanent correction and prism training of the convergence was of no avail. A latent exophoria revealed itself gradually, so that finally there were 14 degrees of lateral error, her convergence viewpoint being 7 inches. At this point, modified tenotomy of each externus and of the left superior rectus was done with resulting exophoria of 3 degrees and left hyperphoria of 1 degree. Almost immediately a cervicobrachial neuralgia of five years' standing was completely relieved. The girl was passionately fond of music, but could not practice more than half an hour without becoming dizzy and nauseated. Today she spends hours at the piano without discomfort.

In the second case, a bright boy of 12 had been almost a nervous wreck for three years and had never been able to do any continued school work, but had always had a tutor. His exophoria was but 2 degrees for infinity and 6 degrees for the occupation distance. His right hyperphoria of 6 degrees was not parietic. A 3 degree prism base *down* before the right eye in his refractive correction transformed him in one year into a husky boy who could use his eyes for two hours at a time without the slightest discomfort, and after three years there has been no increase in the hyperphoria, or in the prism worn.

In the third case, a boy of 8 had been intractable for a year. He was choreiform, violent tempered and at night either walked in his sleep or had enuresis. No diplopia could be elicited in spite of his 6 degrees of left hyperphoria, nor were there any other signs or symptoms of paresis of any of the vertical muscles. In his eighth year he broke down physically and nervously at school. At this stage a 4 degree prism was incorporated in his left glass, as his parents and family physician objected to the operation proposed. In a year he had become a quiet, well poised boy of entirely different temperament, the outbreaks of temper had ceased,

2. Hansell, H. F., and Reber, Wendell: Ocular Muscles, Ed. 2, Philadelphia, P. Blakiston, Son & Co., 1912.

he no longer wet the bed at night, and he slept like a babe for eight hours every night.

The latter two case histories sound almost too good to be true, but they have convinced me of the power of an uncorrected vertical error in a child to alter their character and perhaps their whole career entirely. They also illustrate the fallacy of expecting a refractive correction alone to set aside all strain of visual apparatus in children. So insistently and dogmatically has this doctrine been laid down by our authorities and teachers, that I wish here humbly to protest against what to me seems an incomplete and unjust method—incomplete in that it does not reckon all the possible factors in a given case, and unjust to the children whose futures hinge so much on the state of their visual apparatus.

SUMMARY

Three esophorics out of eight were made comfortable on weak prisms, bases *out*, in their permanent correction.

Five other esophorics had hyperphoria and wore vertical prisms. Three of them were cured by this method, one was improved and one was not helped a bit.

Eleven exophorics out of twenty-four were made entirely comfortable on prism training alone plus the wearing of their respective corrections when needed.

Three more had prisms of from 1 to 3 degrees, bases *in*, incorporated in their regular correction, and also needed prism training to complete the cure.

Three more had permanent prisms only in their corrections, as nothing could be hoped for from their parents in the matter of cooperation.

Seven had hyperphoria, of which number, two improved so much on training of their convergence as to render lateral vertical prisms unnecessary.

The other five had sufficient vertical disturbance to compel attention and were treated from that standpoint.

Of fifteen hyperphorics, two were paretic. One was operated on successfully, and the other quite as successfully treated with vertical prisms.

Five of them became so comfortable on prism correction of the lateral error that the vertical imbalance was ignored.

Eight of them were intrinsic nonparetic hyperphorias that called for prism intervention, and all of the eight are wearing vertical prisms, six being completely cured and the remaining two in a fair way to live up to the visual requirements demanded by modern education.

No esophorics came to operation.

Two exophorics came to operation.

Two hyperphorics came to operation.

CONCLUSIONS

1. Heterophoria in children is in a certain proportion of cases an entity which must have some kind of attention.

2. Painstaking consideration of all the general physical factors is most imperative.

3. Thoroughgoing correction of the refractive status is imperative, but in some cases it is merely "first aid."

4. Esophoria when intrinsic will probably be best met with weak prisms (from 1 to 2 degrees), bases *out*, plus lateral rotation exercises.

5. Exophoria when intrinsic will often respond to training alone, frequently will need prisms, bases *in*

(from 1 to 2 degrees) for permanent use, and rarely comes to operation.

6. Hyperphoria when intrinsic almost always demands vertical prisms of from one third to one half the total infinity deviation, and when paretic will more frequently than any other muscular anomaly justify operative interference.

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ABSTRACT OF DISCUSSION

DR. GEORGE H. PRICE, Nashville, Tenn.: Heterophoria in children is a condition we are not called on to investigate very frequently, because many people think that trouble about the eyes of children is simply a manifestation of temper or a subterfuge to avoid school work. But children do suffer from heterophorias, as is evident from the report of Dr. Reber. He called attention to an observation I, too, made sometime since, namely, infants never look at you. An infant always looks into the distance. The child in early infancy must learn to converge, just like it learns to take hold of an object. Those acts which in early life are reflex in nature, by education and training later become automatic or intentional. In the 345 cases reported by Dr. Reber, he found thirty-five cases of intrinsic heterophoria. Of this number, eight, or about 23 per cent., were esophoric; twenty-four, or nearly 70 per cent., were exophoric, and fifteen, or nearly 43 per cent., were hyperphoric. I am inclined to think that some of the esophoric cases must have been pseudo in type, depending on hypermetropia, which, when corrected, would be relieved. In the exophoric cases, if myopic, correcting the defect would in many cases give relief, but if hypermetropic, it is in all probability a pseudo type; if so, resort to exercise of the ciliary muscle is indicated, but if the exophoria is high in degree and resists the exercise, it will require an operation on the strong rectus externus to give relief. He reports quite a large number of cases of hyperphoria. This is always intrinsic, and if the degree is excessive and cannot be overcome by prisms or properly decentered lenses, then resort to operation is the only course open for relief. What was the average age?

DR. REBER: Nine to fifteen.

DR. PRICE: A little early in some, for purely conjugative functions to dominate and control, but they show conclusively that these children had not had their ciliary muscles trained up to fullest efficiency or capacity, therefore when the necessity arose to use them continuously they failed to perform their proper functions. In these cases Dr. Reber has reported only two operations. The presumption is, therefore, that he found only a small number which could not be increased in efficiency by exercises, after correction of the defects in vision, where it was necessary to decrease the tonicity or strength of the particular offending muscle, therefore he resorted to operation. I was glad he called attention to the lateral method of exercise, or wall to wall movement for the lateral muscles. This can also be applied to the superior and inferior recti muscles, by the ceiling to floor exercise. Thus we can exercise and strengthen all the recti muscles when they are reduced in tonicity. In the cases followed up it had a very beneficial effect. It is quite evident that we frequently overlook these conditions.

DR. ALBERT E. BULSON, JR., Fort Wayne, Ind.: Exceptions may be taken to the statement that heterophoria in children is a reasonably rare anomaly, for if children are tested carefully for muscle imbalance it will be found that heterophoria is rather common. I can, however, agree with the statement that in a very large percentage of cases a good refractive correction and suitable attention to the general physical condition causes a correction of the heterophoria, or at least a sufficient portion of it to give perfect relief from all symptoms referable to the eyes. In my experience it has been the children of highly neurotic temperament and those in ill health or suffering from bad hygienic regulation that have required the wearing of prisms to correct a small amount of heterophoria, but I do not believe that prisms should be

added until after the patient has worn the full correction constantly for a sufficient time to obtain the effect of it, and that in addition to this the case has been given such general attention as seems indicated.

A further point that I would emphasize is the necessity of very painstaking correction of the refractive error under atropin cycloplegia. In my own experience it has been the hyperphoria that has given most trouble in children, and I have rarely found it necessary to correct either exophoria or esophoria with prisms. My experience in the use of muscle exercises in children has not been satisfactory in view of the difficulty in obtaining sufficient cooperation on the part of the patients.

DR. G. C. SAVAGE, Nashville, Tenn.: Dr. Reber says that eyes with two degrees of esophoria in the far and two degrees of exophoria in the near are the most comfortable. This cannot be so. Orthophoria, both far and near, is beyond all question the most desirable of all ocular muscle conditions. Eyes with two degrees of esophoria for distance would see double, the false and the true objects being two degrees apart, if it were not for the demand made on the right and left fourth basal centers, compelling the external recti muscles to overcome the esophoria. This diplopia would, of course, be homonomous. The same eyes showing two degrees of exophoria in the near would have crossed diplopia, the false object being just two degrees from the true, if it were not for the activity of the right and left third basal centers compelling the interni to counteract the two degrees of exophoria. In orthophoria for distance and near no basal center would be called into action in the straight forward look. It can readily be seen that there is a difference between orthophoria and heterophoria, and that difference is very much, and always in favor of orthophoria. For cases of exophoria, and I suppose he would also include cases of esophoria, Dr. Reber advises "wall-to-wall" exercise. "Wall-to-wall and ceiling-to-floor" exercise is applicable only to cases of asthenic orthophoria. It certainly would be incapable of curing any form of heterophoria. The practice of putting at rest the ciliary muscle in the eyes of young people, for refractive purposes, is correct, for there is no other way of knowing just what work the tenth conjugate center must do in its effort to control the ciliary muscles in the interest of sharp vision. Any effort on the part of this center is associated with a corresponding effort on the part of the third conjugate center, which produces a pseudo-esophoria, the quantity of which can be known after the refraction has been determined. Even in young people the strength of the lens determined under a cycloplegic is not, necessarily, the lens to be prescribed in a given case. Those who advocate "no mydriatic" will live to a day when they will see the folly of such claim. The claim is not only unfounded, but it is one of the sweet morsels which opticians roll under their tongues. Under such delusion refraction work is at best only guess-work.

DR. WENDELL REBER, Philadelphia: As to Dr. Price's remark about exercises, I may say that prism exercises in hyperphoria have always been in my hands a lamentable failure. I have only succeeded in aggravating the symptoms. The ceiling to floor rotation exercise is of value. The idea of operation in the hyperphoria of children is mostly foreign to our office. In one of these cases I operated of my own volition; in the other I was forced to operate. The vertical prism is the one we can prescribe with the greatest assurance of comfort to the patient. I can only endorse what Dr. Bulson has said. Of course I want it distinctly understood that these cases of muscular error which I have recorded are cases in which the muscular symptoms called for attention when the refractive correction had not done its work. That is the point of the paper. Only one in ten were considered worth treating on a muscular basis; nine out of ten were made comfortable by the refractive correction alone. I believe the refractive correction should be worn at least six months before prismatic correction is attempted. As to esophoria of two degrees in the distance and exophoria of two degrees in the near, those who make careful investigation of these patients will find that they are the people

who have the greatest comfort in using their eyes. As to so-called asthenopic orthophoria, if a patient has orthophoria and shows weakness of all the ocular muscles, they have not asthenopic orthophoria, they have a general myasthenia and need an allwise general medical practitioner and not an oculist.

BLOOD TRANSFUSION

WITH SPECIAL REFERENCE TO GROUP TESTS*

WALTER V. BREM, M.D.

LOS ANGELES

Since Moss¹ published in 1910 his remarkable studies of iso-agglutinins and isohemolysins, we have been working continually with these interesting bodies, and have applied the principles established by him to the practical work of transferring blood to patients suffering from various conditions. The work of Moss was so accurate and complete that during six years we have never found in it a flaw, nor have we been able to add anything essential to it. Our only addition is that we have been able to modify the technic of blood grouping so that it can be done easily and accurately within a few moment's time, and in this we have but applied Moss' principles of blood grouping to a microscopic method. Moss found that all normal and pathologic bloods alike could be classified into four groups by agglutination tests of the serums against the corpuscles. These groups are:

Group 1 (10 per cent.): Serum does not agglutinate any corpuscles. Corpuscles agglutinated by the serums of Groups 2, 3 and 4.

Group 2 (40 per cent.): Serum agglutinates corpuscles of Groups 1 and 3, not 2 or 4. Corpuscles agglutinated by serums of Groups 3 and 4, not 1 or 2.

Group 3 (7 per cent.): Serum agglutinates corpuscles of Groups 1 and 2, not 3 or 4. Corpuscles agglutinated by serums of Groups 2 and 4, not 1 or 3.

Group 4 (43 per cent.): Serum agglutinates corpuscles of Groups 1, 2 and 3, not 4. Corpuscles not agglutinated by any serums.

It may be seen that no serum agglutinates corpuscles belonging to its own group, and furthermore, that if one has a known Group 2 or Group 3 blood, he can determine the group of any other blood by testing the known serum against the unknown corpuscles, and the unknown serum against the known corpuscles. As Moss thought, we have found that the group reactions of any one person appear to be permanent characteristics, inherited, and that they probably follow the mendelian law. In 1910, my associate, Dr. A. H. Zeiler, and I found that our bloods belonged to the reciprocal Groups 2 and 3, respectively, and in tests made many times during six years, there has been no change in the group reactions. We have been able, therefore, to use either one of our bloods in determining the groups of unknown bloods.

Moss found, further, that isohemolysins, when present, always followed the group reactions of iso-agglutinins, but that while iso-agglutinins are always present with isohemolysins, the contrary is not true, and that isohemolysins are not always present with iso-agglutinins. Isohemolysins cannot be used, therefore, in determining blood groups. The isohemolysins may even interfere with the group determination, for

* From the Clinical Laboratory of Brem, Zeiler and Hill.

* Read before the Section on Practice of Medicine at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Moss, M. L.: Isoagglutinins and Isohemolysins, Bull. Johns Hopkins Hosp., 1910, xxi, 63.

strong isohemolysins may break up the agglutinated corpuscles so rapidly that they may mask the agglutination reaction. This source of error must be guarded against, especially in using the microscopic method to be described. We ourselves were led once into error by the phenomenon, and the result of the transfusion was most alarming.

The possibility of such an error arising can be obviated by using the antihemolysin which Moss found constantly present in the serum of the blood whose corpuscles are hemolyzed by a serum belonging to another group. If a little of the antihemolytic serum is mixed with the preparation of corpuscles and serum to be tested, it will prevent hemolysis, and the agglutination will proceed without interference, as serums contain no antiagglutinins.

Another precaution that must be observed is that the known Group 2 or Group 3 blood which is used for determining the group of another blood must contain in the serum strong agglutinins. The strength or quantity of agglutinins varies in different serums even of the same group, and we were led into serious error on another occasion by using a known Group 2 blood, which was weak in agglutinins, for determining the group of a donor. The known Group 2 corpuscles were not agglutinated by the donor's serum, and the known Group 2 serum apparently did not affect the donor's corpuscles, that is, the donor apparently belonged to Group 2, which was the group desired for transfusion. The reaction which resulted in this instance, also, was most alarming. Afterward we regrouped the donor's blood with another Group 2 blood and found that the known Group 2 serum agglutinated the unknown corpuscles, and that the unknown serum did not agglutinate the known Group 2 corpuscles, that is, the donor's blood belonged to Group 1 and was unsuitable for the transfusion.

In view of these facts, the technic and rationale of the method of blood grouping which we use can be easily understood.

Let *II* represent a known blood belonging to Group 2, and *x* a blood the group of which must be determined. Five or 6 drops of *II* blood are collected in a small clean dry test tube or centrifuge tube, and 1 or 2 drops, according to the size of the drops, in another tube containing 1 c.c. of 1.5 per cent. sodium citrate in 0.9 per cent. salt solution, which gives one approximately a 5 per cent. suspension of corpuscles. The percentage does not have to be exact. The *x* blood is collected in the same way in two similar tubes. The bloods in the dry tubes are allowed to coagulate, the coagulum is loosened from the side of the tube with a platinum wire, and the tubes centrifugalized to separate the serum. Serum and corpuscles are now ready for the tests. Platinum loopfuls of serum and corpuscles are placed on coverslips, which are inverted over an ordinary cell slide rimmed with petrolatum. Two loopfuls of serum are used and one of corpuscle suspension. The slides are gently rolled from side to side to agitate the corpuscles in order to bring them into contact with each other. Agglutination, if it occurs, takes place at room temperature within five minutes. It can usually be detected with the naked eye, showing as brick red particles, but should be examined, also, with the low power objective of the microscope. Rouleaux formation of red corpuscles must be differentiated from small clumps due to agglutination.

ILLUSTRATIONS OF GROUP DETERMINATIONS (THE FIGURES REFER TO LOOPFULS)

$$\begin{array}{l} 2 \text{ II serum} + 1 \text{ x corpuscles} = \text{agglutination} \\ 2 \text{ x serum} + 1 \text{ II corpuscles} = 0 \end{array}$$

Group 2 serum agglutinates the corpuscles of Groups 1 and 3 only. But Group 3 serum agglutinates the corpuscles

of Group 2, which does not happen in the foregoing test with *x* serum and *II* corpuscles. The *x* blood does not belong therefore, to Group 3, but must belong to Group 1.

$$\begin{array}{l} 2 \text{ II serum} + 1 \text{ x corpuscles} = \text{agglutination} \\ 2 \text{ x serum} + 1 \text{ II corpuscles} = \text{agglutination} \end{array}$$

Each serum agglutinates the other corpuscles, so the two bloods belong to the reciprocal Groups 2 and 3, that is, the *x* blood belongs to Group 3.

$$\begin{array}{l} 2 \text{ II serum} + 1 \text{ x corpuscles} = 0 \\ 2 \text{ x serum} + 1 \text{ II corpuscles} = \text{agglutination} \end{array}$$

Group 2 serum does not agglutinate Group 2 or Group 4 corpuscles, while it does agglutinate the corpuscles of Groups 1 and 3. The *x* blood belongs, therefore, to Group 2 or Group 4. Which one is determined by testing *x* serum against *II* corpuscles, which it agglutinates. A serum does not agglutinate corpuscles belonging to its own group, so the *x* blood does not belong to Group 2, but must belong to Group 4, the serum of which does agglutinate Group 2 corpuscles.

$$\begin{array}{l} 2 \text{ II serum} + 1 \text{ x corpuscles} = 0 \\ 2 \text{ x serum} + 1 \text{ II corpuscles} = 0 \end{array}$$

The *x* blood belongs to the same group as the blood used for testing, Group 2.

COMMENT ON THE METHOD

This method of determining the group of an unknown blood requires not more than fifteen minutes after the bloods are obtained, and only small quantities of blood, such as can be obtained from a puncture of the finger tip, are necessary. The masking of agglutination by hemolysins is prevented by the serum, containing antihemolysin, that is present in the citrate-salt-corpuscle mixture. This serum, if not present in sufficient quantity to prevent hemolysis, at least delays hemolysis so that agglutination is not masked. Neither the presence of this serum, nor the citrate interferes with agglutination, and hemolysins can be disregarded.

The assertion of some authors that hemolysins can occur without agglutinins, and that, therefore, a test for hemolysins as well as agglutinins must be made, is based, without doubt, on the fact that in the tests with washed corpuscles suspended in salt solution, hemolysis can cause such a rapid breaking up of clumps of corpuscles as to mask agglutination. In order to detect agglutinins in these bloods, the preparations must be watched with care microscopically during the first few minutes after the serum and corpuscles have been mixed. I have seen complete hemolysis of corpuscles in salt solution occur in the test tube within five minutes, leaving, of course, no trace of agglutination. But marked agglutination occurred immediately in the microscopic preparations, or in preparations which contained some of the serum of the blood to which the corpuscles belonged. The quantity of the antihemolytic serum necessary to prevent hemolysis probably varies widely according to the strength of the hemolytic serum. The hemolytic action of one serum was not inhibited by the presence in the test of 2.5 per cent. of the antihemolytic serum, but 11 per cent. partially inhibited hemolysis. One loopful of antihemolytic serum added to the test mixture of two loopfuls of serum and one of washed corpuscles (making a 25 per cent. solution of the antihemolytic serum) has always inhibited hemolysis, and it is a safe plan to introduce this element into the test.

The hemolysis with hemoglobinuria which has occurred from transfusions with ungrouped bloods is explained by the dilution of the antihemolysin in the donor's serum, the dilution being great enough to leave the introduced corpuscles unprotected or but partially protected. It is probable that hemolytic serum introduced in a transfusion never causes hemolysis of the

patient's corpuscles, for in such a case the hemolytic serum is diluted, while the antihemolytic elements of the patient's serum remain relatively concentrated. The agglutinins, also, may be diluted beyond the point of danger by the patient's serum. If, therefore, it is necessary in an emergency to give a patient blood belonging to a different group, the corpuscles should not be agglutinated or hemolyzed by the patient's serum, as pointed out by Ottenberg.² Bloods of Group 4 answer this requirement for all the other groups, and, fortunately, Group 4 is the most common group, Moss having found that 43 per cent. of all bloods belong to it.

TRANSFUSIONS

It is not within the scope of this paper to discuss the indications for transfusion, the results and the reactions. This ground has been covered recently in a thorough manner by Ottenberg and Libman,³ and our observations, in the main, agree with theirs. We have given 191 transfusions—165 of defibrinated blood, nine of 1 per cent. citrated blood, eleven of 0.2 per cent. citrated blood, and six of whole blood by the syringe-needle method. Our widest experience has been with pernicious anemia—eighty-two transfusions to twenty-four patients, one of whom received twenty transfusions. Our most successful transfusions have been in cases of secondary anemia due to hemorrhage, and preceding operations. We have had reactions in about 25 per cent. of the instances. These generally consisted in the ordinary chill and fever, and were usually mild. Severe reactions occurred four times after transfusions of 1 per cent. citrated blood (Weil⁴). The temperature of one patient reached 106 F., and remained elevated for about a week. Two other patients died a few hours after, but it is fair to say that these patients were moribund at the time of transfusion. However, we feel that 1 per cent. citrated blood is toxic, is dangerous, and is unnecessary. Lewisohn's⁵ method of giving 0.2 per cent. citrated blood seems safe, and this quantity of sodium citrate is sufficient to prevent clotting. Three anaphylactoid reactions occurred, two, at least, being in patients having active advanced tuberculosis. These are a study in themselves and will be discussed in a future paper.

The reactions which concern us chiefly at present are those associated with "incompatible bloods," that is, cases in which the donor's blood does not belong to the same group as the recipient's blood.

There were twelve such instances in our series. In seven instances the donor's serum was agglutinative for the recipient's corpuscles, but the recipient's serum was not agglutinative for the donor's corpuscles. There were no reactions suggestive of wrong grouping, though two of the patients had the ordinary chill and fever following. The absence of "group reactions" in the cases coincides with the view previously expressed that when agglutinative and hemolytic serum is introduced into a patient, the serum is so diluted by the patient's serum and the latter contains such an excessive quantity of antihemolysin that no "group reaction" should result. The reaction of recipients to donors in these seven instances was as follows:

Four Group 2 patients were given blood from Group 4 donors.

One Group 1 patient received three transfusions from Group 2 donors.

An eighth patient, belonging to Group 3, was given 100 c.c. of whole blood from her husband, who belonged to Group 2. The blood was transferred immediately with syringes while the patient was under an anesthetic. There was no reaction, but a "group reaction" might have been masked by the ether anesthetic. Each of these serums was agglutinative for the other corpuscles.

In the four remaining instances, the bloods bore the following relations:

Two Group 4 patients received Group 2 blood.

One Group 2 patient received Group 1 blood.

One Group 3 patient received Group 1 blood.

Three of these patients had violent reactions coming on immediately after the injection of only a small quantity, from 10 to 70 c.c., of blood. One of these had marked hemoglobinuria. The fourth patient had a mild reaction during the transfusion, which, however, was completed, 550 c.c. of blood being given. It was found later that this patient's serum was only weakly agglutinative to the corpuscles injected, and this fortunate fact probably explains why the reaction was mild. All of these patients recovered, and had no trouble with later transfusions.

An analysis of the causes of the transfusions of blood belonging to wrong groups shows that twice it was done because of emergency cases, three times because no Group 1 donor could be obtained for the patient who belonged to that rare group, and the other seven times it occurred through an error made in group testing, errors that can now be avoided. In none of the 179 instances of transfusions in which proper groups were used was there hemoglobinuria or "group reactions."

GROUP REACTIONS

These reactions are quite typical and come on quickly as a rule after the transfusion is begun, sometimes only 10 c.c. of blood being needed to precipitate the onset. There is a feeling of fulness in the head, suffusion of the face and eyes, precordial distress, dyspnea, coughing, backache, rapid and small pulse which may become imperceptible at the wrist, and sometimes complete loss of consciousness, and convulsions. Hemoglobinuria may occur. The shock is very much like the anaphylactoid shock, only, in our cases, the urticarial rash of the latter was absent. According to the views of Jobling and Petersen⁶ and Bronfenbrenner⁷ on tryptic shock, the conditions here are ideal for the anaphylactic phenomenon. The corpuscles introduced may be considered the antigen, and the hemolysin (which is an amboceptor-complement hemolysin) as the antibody. The union of antigen and antibody may cause the adsorption of antitrypsin, and the products of trypsin digestion of the patient's own serum may cause the shock.

CONCLUSION

The practical working out of our group tests and method of transfusions has proved most satisfactory. We have determined the groups of numerous donors and have made Wassermann tests on their bloods. Our laboratory keeps in touch with these donors, who are glad to give several hundred cubic centimeters of their blood for a small sum of money. They come to the laboratory, and, by the needle and vacuum flask method, we withdraw the quantity of blood desired, having first cocainized the skin over the vein. Some

2. Ottenberg, Reuben: Studies in Isoagglutination, I, Transfusion and the Question of Intravascular Agglutination, *Jour. Exper. Med.*, 1911, xiii, 425.

3. Ottenberg, R., and Libman, E.: Blood Transfusion; Indications; Results; General Management, *Am. Jour. Med. Sc.*, 1915, cl, 36.

4. Weil, Richard: Sodium Citrate in the Transfusion of Blood, *THE JOURNAL A. M. A.*, Jan. 30, 1915, p. 425.

5. Lewisohn, R.: The Citrate Method of Blood Transfusion in Children, *Am. Jour. Med. Sc.*, 1915, cl, 886.

6. Jobling, J. W., and Petersen, W.: Mechanism of Anaphylatoxin Formation, *Jour. Exper. Med.*, 1914, xx, 37.

7. Bronfenbrenner, J.: The Mechanism of the Abderhalden Reaction, *Jour. Exper. Med.*, 1915, xxi, 221.

of these donors have been used many times during four years. They lose no time from work, the procedure is practically painless, they feel that the money is easily earned, and the patient is under no obligation to the donor. Having our donors classified and knowing their Wassermann tests are negative, we are in a position to give transfusions quickly. A group test of the patient's blood requires only a few minutes after the blood is obtained, and then we can summon the correct donor. The method is simple and easy for every one concerned, and the results, as far as I can judge from the literature, are as satisfactory as from other methods of transfusion. The defibrinated or citrated blood is injected intravenously through a needle without previous incision of the skin. The skin is cocaineized at the time of injection.

ABSTRACT OF DISCUSSION

DR. RICHARD LEWISOHN, New York: I agree thoroughly with Dr. Brem's remarks about the toxicity of Weil's dose, in fact I was the first one to show that citrate of soda mixed with blood at the 1 per cent. ratio is extremely toxic when used in large transfusions. The general applicability of citrate of soda for blood transfusions, and the perfect safety of its use is based entirely on the small dose (0.2 per cent.). I have used the method in seventy-five cases; 20 per cent. had a rise of temperature above 101 F., and 10 per cent. had a chill. The clinical effect of the transfusions was not impaired by these reactions. I wish to sound a note of warning against the storage of the blood, or against the transfer of citrated blood from house to house. I have used this method of transfer in two transfusions and had a severe reaction in both of them. After all we know very little about biologic changes in blood which is kept in storage.

DR. GEORGE R. MINOT, Boston: At the Massachusetts General Hospital we have made use of the groups for testing donors for transfusion. Our results are quite in accord with those of Dr. Brem. I have found the use of unwashed citrated suspensions of cells of advantage in the microscopic iso-agglutination tests. I have also made use of the fact, that given serum and cells of a known Group 2 or 3, one can determine to what group an individual belongs. Dr. Moss told me that recently he found that the individual's group is often not established at birth, but that it is established in 85 per cent. of children between 1 and 2 years of age, though it may not be established completely until 10 years of age or more. Thus in testing children's blood it is perhaps better to use a direct test between donor and patient rather than the group method.

DR. F. G. NOVY, Ann Arbor, Mich.: There is one thing that needs to be emphasized in view of the statement that the poisonous effects at times following the injection of serum resemble those of anaphylactic shock. I wish to make the statement even stronger and say that normal serum is always poisonous and that the symptoms do not merely resemble but actually are those of anaphylactic shock. We used to think that serum was harmless and that it could be injected as freely as water, that is, salt solution. Such, however, is not the case since simple animal experiments show that normal serums are toxic. The effects produced depend on the dose employed, and also on the method of preparing the serum. Thus, a serum made by defibrinating with beads is considerably more toxic than one prepared by simply whipping with a glass rod. As regards the use of whole blood, it should be realized that the same danger exists, and is even greater since whole blood may become, in a short time, even more toxic than serum. Thus, to illustrate this statement, it may be said that 10 c.c. of blood drawn from a rabbit and injected intravenously into a guinea-pig, with the least possible delay, will produce little or no effect. On the other hand, if such blood is kept in the syringe for three minutes and is then injected, it will kill in a dose of 2 c.c. A typical, acute anaphylactic shock is the result. In other

words, whole blood is more toxic the nearer it is to the coagulation stage. This toxicity has nothing to do with clot itself. The use of citrated serum, as pointed out, has its dangers which are more pronounced the longer it is kept. It can easily be shown that the incubation of a citrated serum results in the production of increased toxicity. That serum is something more than a harmless fluid should be recognized and not lost sight of in the future.

DR. ABRAHAM JACOBI, New York: Dr. Novy, when the serum is injected into the spinal canal is the effect as poisonous as when it is injected in the usual way?

DR. NOVY: I have had no experience in that line. My experiments have been made intravenously.

DR. WALTER V. BREM, Los Angeles: Dr. Lewisohn suggested that it might be a dangerous procedure to withdraw blood from a donor and carry it to another place for injection into the recipient; that some alteration in the blood might occur. We have done this in nearly all of our transfusions, and have not been able to attribute special reactions to it. We have transported the blood as far as seventy miles without reactions ensuing.

DR. NOVY said that serum and whole blood were deadly poison. I do not doubt that Dr. Novy can make them so by his physical methods of treating them, but these procedures do not appear to be reproduced in the technic of our transfusions; and the mild transfusion reactions that not infrequently do occur do not appear to interfere with the good results from the transfusion. It would seem, therefore, that these animal experiments of Dr. Novy do not weigh heavily against the results obtained in our method of transfusion of human beings, such transfusions having in themselves experimental value. However, Dr. Novy's work may throw light on some of the reactions and enable us to eliminate them.

I agree with Dr. Novy that the reactions I described as "group reactions" are true anaphylactic phenomena, but I felt that "anaphylactoid" would be the better word at present, for there is too great a tendency abroad to use loosely the term "anaphylaxis."

THE ETIOLOGY OF NONPARALYTIC OCULAR IMBALANCE

SOME ORIGINAL CONCEPTIONS AND INTERPRETATIONS
BASED ON THE PHYSIOLOGY AND PSYCHOLOGY
OF OCULAR MOVEMENTS *

WILL WALTER, M.D.

CHICAGO

In the pre-session volume of last year's meeting, in a paper published in the March issue of Knapp's *Archives*,¹ I laid the foundation for a new consideration of this still clouded problem by a critique on paralytic types of ocular muscle imbalance.

That was a serious effort to get a new point of attack on the problem, and this discussion is a follow-up one. It is the hope that the value of considering the question from the standpoint of levels of control will be hereinafter apparent.

In the above-mentioned critique on paralytic types and by virtue of a close study of clinical pathology, certain fundamental points were demonstrated, and evidences in the recent literature were cited in proof of levels of control of the ocular movements.²

* Read before the Section on Ophthalmology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Walter, Will: Clinical Pathology of Ocular Muscle Paralysis, *Arch. Ophth.*, xlv, 172.

2. This grouping is one which might well be regarded from the standpoint of evolution since in the lower forms where the eyes move independently (Fuse: Abducent Nucleus of Mammals, *Ztschr. f. Augenh.*, xxix, 175) and without coordination, we find only the first level nuclei; in a second group we find evidence of combined use of eyes—some coordinated movements, and with it coincident evolution of joint control—but only in higher forms is this perfected, and only in highest forms does it carry the added attribute of convergence coordination.

These so-called levels of control are in the light of present knowledge quite accurately oriented for the high or third, and first or low levels. Evidence is only now, and as the result of pathologic findings, accumulating and is only approximate as to the mid-level; but it is not necessary to our view to know the sites of these control areas if we may exclude the high and the low levels from the consideration.

The high or third level or that of voluntary control, by virtue of which we may perform associated movements of convergence, of dextrovergence, sinistrovergence and sursumvergence in response to will, is beyond doubt in the frontal lobes. Its control centers (at the foot of the second frontal convolution) do not, however, respond to optical, acoustic or tactile impressions.³

This level of control does not, if my conception is correct, enter into the etiology of nonparalytic imbalance. Neither are we concerned primarily with the first or low level control of individual muscles. The nuclei for these are too well understood to require further description. We want only to emphasize the special or *individual nature of their actions*.

The ocular muscle does, then, what it is stimulated to do—contracts in proportion to its stimulus. The relay stations, wherein the amounts of stimuli are apportioned to the individual muscles, are what we term the second level control. There is a difference between *the will*—the initiating mechanism in its broadest sense (frontal cortex), and *the way* or the subconscious reflex coordinating mechanism (occipital cortex) which goes on independent of volition. If we do not accept this, even though we cannot locate the control centers accurately, we have no basis but empiricism for the use of prisms for exercise or orthoptic training of any sort, or prescribing of convex lenses to lower the impulses to convergence or concave lenses to stimulate them; or prisms for wear, or cycloplegia or any of the means we employ in the management of these cases. All of these measures operate beside volition and in a purely reflex way.

Nor is this level of control limited to retinal impulses. With it are included impulses from tactile, olfactory, auditory and other sense stimuli.

All of these are responses to environment for the satisfaction of the fundamental things of life, as attack and defense, and satisfaction of hunger and thirst, and such stimuli are fundamental, automatic, mechanistic phenomena and are quite independent of high level—voluntary—control.

This is evident from the experimental removal of the frontal lobes or their dissociation,⁴ since these reflexes remain still in action.

So, as I concluded in my paper of last year,¹ voluntary impulses (volitional control) and reflex stimuli through the vision (retinal impulses) are probably independent.

This intensely specialized reflex control⁵ is a system and not an area, and is what we call in its entirety the second level of control, and this is the level concerned in the phorias and the tropias. But let us in view of the lack of definite localization of control areas of associated movements in this midlevel speak of them henceforth as coordinations. They are known to lie largely in the occipital lobes.⁶ That they are not individual muscle nuclei is evident from the investigation of many observers.⁷ The view that the individual muscle is ever alone in action is not supported by anatomists or physiologists or by analogy. Latterly, Suffa,⁸ employing his new ophthalmotrope, proved that in no movement of the globes were there less than three muscles employed. This means that delicate coordinations—apportionment of impulses—are necessary for even the simplest ocular movements.

As Landolt⁹ has recently again emphasized, the many generations of association of accommodation and convergence have tied these functions so together (phylogenetic association) that errors or weaknesses of one must show in the other function. This inter-association is the basis of all of our study, and whether appreciated or not, the literature of the phorias and the tropias is made up of efforts to search out the reflex nature of this interdependence.

Second level control is, then, that grouping of centers which is tied up with the retinal stimuli, the ciliary activity, and in general the automatic system which goes on regardless of volition or conscious effort and which is effective just in proportion to its freedom and sureness of action.

If defective at any segment, the mechanism is slower and more labored, and the individual is not up to normal in his reactions; or if he is, it must be at unusual expenditure of neuromuscular energy. In any event, he is inefficient and it is immediately apparent that

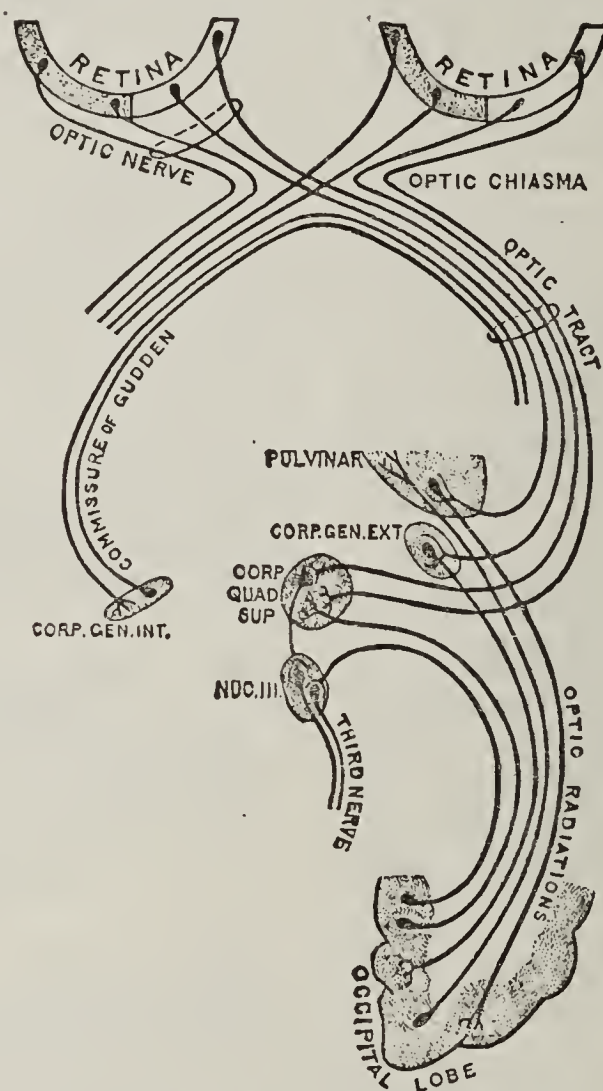


Fig. 1.—Diagram of "midlevel" connections of the optic nerve and optic tract (from Fisher).

5. See Roux (Neurol. Centralbl., xxxiii, 1225) and Durand and Jaquet (Reflex Conjugate Rotation of Eyes, Limousin, med. xxxvii, 157) for tactile reflex stimuli, and for auditory, the centers for which lie in the temporal lobe, see also de Kleign (Ocular Muscles Reflex and the Ear, Nederl. Tijdschr. v. Geneesk., 1915, p. 1835; Arch. d'ophth., xxxiv, 780), Hageman (Ocular Manifestations of Aural Disturbances and Their Interpretation, Med. Rec., New York, Jan. 16, 1915) and particularly a recently reported case wherein by a quick movement of the head and hence stimulation over the auditory tract, the patient is able to overcome a paralysis of lateral movements, the eyes following the object to the extreme limits of rotation as soon as, under the influence of the auditory impulse, the motion was started.

6. Darkschewitsch: Ueber den oberen Oculomotoriuskern, Anat. u. Phys. Anat. Abth., 1889. Farnariere: Diphtheritic Paralysis of Accommodation, Ann. di ottal., xlii, 572; Clin. Ophth., xix, 489. Fisher, J. Herbert: Ophthalmological Anatomy, Ophth. Rev., 1904, pp. 13, 23, 126, 130. Howell: Proc. Roy. Soc., London, 1896, American Text-Book of Physiology, 1896, p. 684. Freund (Footnote 3). Burkholder: Neurology of Fusion Faculty, Ophthalmology, x, 592. Ferrier and Turner, Aldren: Functions of the Brain, 1876.

7. Fisher: Ophth. Anat., 1904.

8. Suffa: A New Ophthalmotrope, Jour. Ophth. and Oto-Laryng., xxi, 245.

9. Landolt: Arch. d'ophth., xxxiv, 416, 466, 529.

3. Freund: Paralysis of Vertical Movements, Neurol. Centralbl., xxxiii, 1215.

4. Shafer: Proc. Roy. Soc., London, 1888, xliii.

the defect is far reaching on his response to environment.

We may will whether we enter into the hunt, but the eye will follow the game in a purely reflex way under stimuli from visual, auditory and other sense organs (mechanistic stimuli), and the influence of the will is limited rather to initiating and inhibiting the mechanism. In fact, it takes often so much voluntary effort to inhibit these reflex stimuli that men have been lost in the pursuit. One may will to look to the right or left or up or down, but when a sudden impulse, as through a sharp sound (auditory stimulus), a blow (tactile stimulus) or an ominous odor (olfactory stimulus), reaches the central areas, the response is a reflex, a turning of the eyes toward the stimulus; searching movements—more rapid than volition because fundamentally protective and mechanistic. These are second level acts; they are as automatic as the usual winking of the eye, and they are surer than when volitional control is called out. The reaction time as between the frontal and occipital control has been measured by Shafer,⁴ who found that the former was several hundredths of a second slower than the latter. The individual who would depend on volitional control would be handicapped and would lose in the contest.

This is an important link in my conception, and I wish to drive it home: the automatic nature of this midlevel control. I regard the second level control as a part of that fundamental automatic neuromuscular mechanism by which the bodily functions are maintained, and, thus comprehended, it becomes at once a part of the great system which controls the involuntary forces, without which there would be no existence for us. There is analogy between accommodation, convergence, the act of prehension, the systole of the heart, the respiratory stimulation (an excess leading to bronchial spasm), vasomotor tone, on one side of the system, and between inhibition of accommodation and convergence and the cardiac diastole and the like on the other side. There is normally a controlling tonus in this reflex nervous system, an automatic balance between contraction and relaxation. The voluntary impulses may initiate or inhibit its actions, but only to a limited, indirect and not a controlling way.

Overtonus on the part of this system shows itself in excesses of accommodation, convergence and other automatic phenomena; it shows in acceleration of pulse during forced respiration, a common condition in girls and boys under 15—the *pulsus irregularis respiratus*—and it is held by Eppinger and Hess¹⁰ that if this phenomenon continues after puberty it is abnormal; and, be it noted here, atropin controls and pilocarpin increases the overtonus.

Now Reber,¹¹ in his excellent discussion on indications for operation in the tropias, thinks that it

would be better if every patient who comes for operation should be at least 14 or 16 years of age, and that advancement should be preferred because of the preponderance of convergence forces before and the increase in the divergence forces after the fifteenth year.

On this I wish to lay claim to the thought that convergence power diminishes at this period, not because of the cited reasons—anatomic development of cranium and attachment of muscles to the globes—but because another element is added to the automatic nervous regulation above mentioned. From the standpoint of anatomy this so-called vegetative nervous mechanism is divided into midbrain, bulbar and sacral segments, and it is the sacral segment which becomes dominant at this age, for the evolution of the sexual function, and with it is a coincident lessening of tonus of the other segments which have in their order been dominant. The midbrain segment finds egress through the oculomotor pathways, and convergence and ciliary weakness are by no means uncommon accompaniments of puberty and adolescence by virtue of this loss in domination. This point should be considered both in diagnosis and therapy; and we may well believe it to be abnormal if, after puberty, a convergence excess

holds; and we may well be forewarned not to operate for moderate degrees of convergence excess, and to undercorrect before puberty if we must operate.

This is a big, new point of view given us by this newer work on the automatic nervous system. It tells us that atropin and its like have other value than as cycloplegics since, when absorbed, they are inhibitory to the general overtonus manifested in ciliary contraction and convergence, while pilocarpin, strychnin and on

occasion epinephrin are aids to the antithesis of this state, and, though they act differently, help to bring about an occasionally needed positive tone. It tells us in what manner infections, indicanuria and acidoses may quickly affect accommodation and convergence through the automatic system, and it helps to explain the frequent development of strabismus as an accompaniment of exhausting diseases.

The connection between the vegetative system and the ocular movements is through the ciliary ganglion, and we now have another reason for the administration of atropin for convergence excess, and we know why strychnin or pilocarpin is an aid in divergence excess† or convergence insufficiency, and we need not longer prescribe them empirically.¹²

There is something very fundamental in this linking of ocular movements with the automatic nervous system. It tells us to be physicians, and that phorias may be influenced by the conditions of this mechanism—

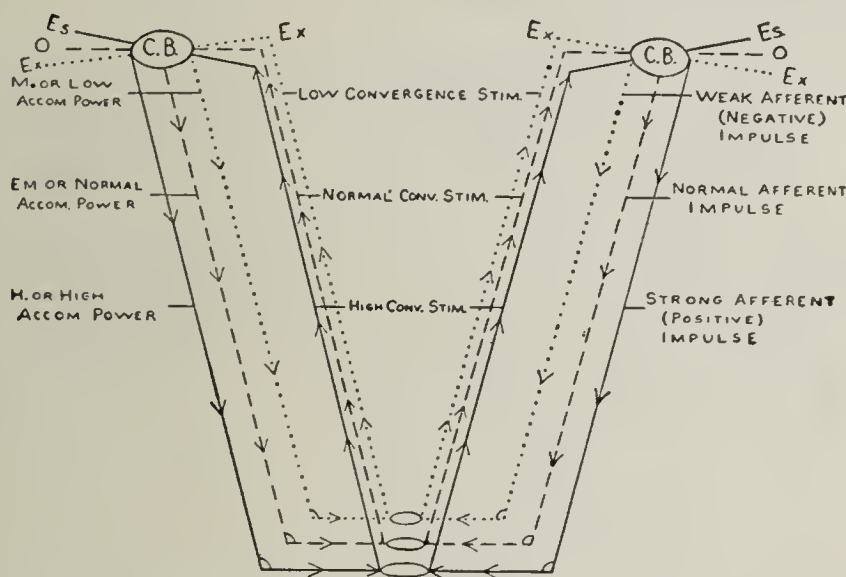


Fig. 2.—Ciliary reflex arc: C. A., ciliary reflex arc; C. B., ciliary body; O., orthophoria; Es., esophoria; Ex., exophoria.

12. This point of view tells us that perhaps our foreign confrères are right when they say that in our country asthenopias are exaggerated. Higher pressure of living, as exemplified by us, spells magnified tone of automatic functions; this means closer tying up of correlated acts, overwrought kinetic systems, greater central fatigue and hyperesthesia.

† Divergence excess in our legend signifies the prism divergence excess of Duane, i. e., over ten centrad.

10. Eppinger and Hess: Ztschr. f. klin. Med., lxvii, No. 5, and lxviii, No. 2.

11. Reber: Indications for Operation of Strabismus, Penn. Med. Jour., xliii, 602.

the balance or imbalance of its segments. Overtonus of this system results also in constipation from its effects on the circular musculature of the colon and the sphincter (akin to ciliary spasm and leading to autointoxication), and in some atypical types of thyroid disease; all are related, and all are modified by atropin and intensified by pilocarpin. Undertonus leads to low accommodation, divergence excess, convergence weakness, preponderance of the sympathetic side of this automatic system, intensified by atropin, and relieved by pilocarpin. And this pharmacologic differentiation is quite characteristic of the whole involuntary nervous system.¹³

If we may, then, dismiss from our minds all thought of the primary influence of the will over the phorias and tropias, we shall have made a step toward the solution of our problem.

TWO REFLEX ARCS

I would construct two separate reflex arcs to cover our conception of the visuo-oculomotor mechanism (1) the ciliary reflex arc—the accommodative convergence loop (C. A., Fig. 2), and (2) the retinal reflex arc—the fusion loop (R. A., Fig. 3).

I hope to be able by study of these to make clear some hitherto clouded points, and to show why it is that only by way of the ciliary arc may compensatory muscular overgrowth or undergrowth be brought about. Also it may be seen why the training of the "fusion loop," as by worn prisms and prisms for exercise, is palliative only, and not in any way capable of correcting defects or weakness in the segments which go to make up the retinal arc.

My conclusion that the retinal arc does not develop muscular compensation is supported by the experience of practically all of us, for prism exercise and prism wear do not bring about ocular balance.¹⁴ On the other hand, the ciliary reflex does, and the reasons for these observations may be shown.

The significance of the various factors concerned may be briefly called to mind, craving your indulgence.

ETIOLOGY OF ESOPHORIA AND ESOTROPIA

Nonparalytic imbalance is the end-result of prolonged overstimulation or understimulation, actual or relative, and that not of an individual nerve but of a coordination. An esophoria, for example, is the result of such an overstimulation of convergence. If with it there is a correlative ciliary overgrowth, the condition is explained as a compensatory overaction of convergence; and this is true whether it has come about as the result of a hypermetropia (*a*) which forces the ciliary contraction, or whether (*b*) both accommoda-

tion and convergence are subject to overtonus as a part of the general automatic mechanism, as is common up to the age of 15. Or there may be (*c*) a weak ciliary muscle requiring overstimulation to get a focus, a stimulation which is carried over to a convergence excess, or lastly (*d*) there may be a *relatively* excessive convergence due to anomalies of development, because of which a normal ciliary contraction overacts on convergence; *a* and *b* would be differentiated by test under cycloplegia, *c* by tests of relative range of accommodation, and *d* by exclusion of *a*, *b* and *c*, supported by tropometric measurements. In *a* the compensation may be such as to cause no discomfort, or the strain of accommodation may give symptoms and require refraction, and when the correction is made, difficulties arise over the changed relations, and the problem of partial or total correction is on us. The comfort or discomfort attained depends on what I shall term the *habit impulse*, a stimulus which tends to perpetuate itself. Its breaking up is a difficult matter, and as we all know, one

which tries our patience, skill and endurance to the utmost. This experience with refraction correction is one of the strong points in my conception of the ciliary reflex arc function.

INFLUENCE OF PROLONGED CILIARY ARC STIMULATION

We have seen that in early life there is overtonus of the then developed segments of the automatic nervous mechanism. The dorsal segment supplying the cardiac, respiratory, stomach and intestinal orders is dominant in infancy; then in early childhood comes the development of the midbrain segment. If perchance there is more than a low degree of

hyperopia, there is an exaggerated stimulus to both the ciliary and the convergence muscles leading to increased growth. And, under normal conditions, something else happens: the muscles thicken and shorten, and the tendons widen, while the opposing muscles become thinned and elongated.

This is all going on while the tissues are plastic, and continues *pari passu* with the stimulation. It is a reflex compensatory development like that of the heart muscles in valvular lesions. If the ciliary stimulus is weak, so is the convergence stimulus, and there is dystrophy or undergrowth, as is shown in myopia. There is plenty of proof for this. We may vary the ciliary stimulus by increasing the strength of convex lenses, if there is overaction, or by applying concave lenses, if underaction (Fig. 4), and thus control within measure the accommodation convergence loop, and the overgrowth or undergrowth. But the results must invariably depend on the period of life, and the duration of its application. If during the plastic period of

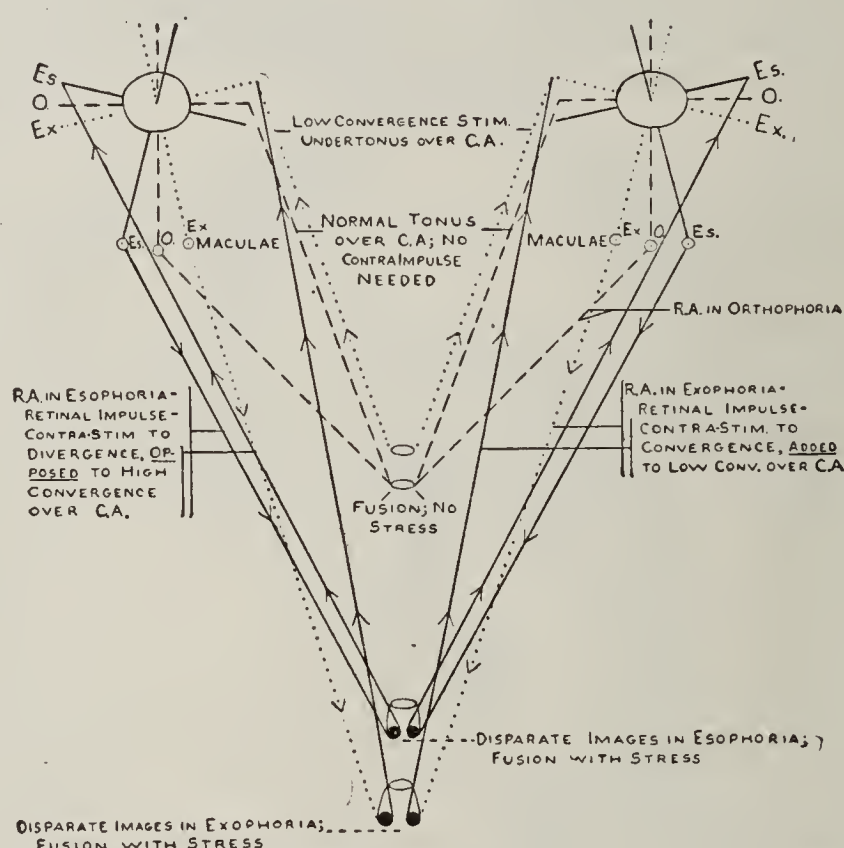


Fig. 3.—Retinal reflex arc; C. A., ciliary reflex arc; R. A., retinal reflex arc; O., orthophoria; Es., esophoria; Ex., exophoria.

13. Eppinger and Hess: Vagotonia Monograph, 1915.

14. Posey: Muscular Imbalance and Its Treatment, Am. Ophth., xxxiii, 24.

life, it will tend to alter the growth development, but after the tissues have their growth the changes are slower and less in effect.

Zentmayer's report¹⁵ on the effects of correction of ametropia on the phorias are about what we would expect.¹⁶ He says in conclusion that while the changes in the phorias were not great, even after a lapse of time, it was even less when, in a series which he studied, but two weeks lapsed before the second test. Now an early application of correction, that is, during the formative period, would have changed his results, and early stimulation of convergence in low convergence and overcorrection for high would aid or not according to how early in life it is applied. Herein is the value of prescribed plus scales in esotropias, as originally advocated by Linn Emerson¹⁷ and later emphasized by Reber.¹⁸ On occasion we have gone further and created artificial myopia by constant wear of overcorrection. Prolonged use of atropin cuts out ciliary stimulation entirely and leads to dystrophy. Usually the esophoria persists, and it may be that regressive changes go on faster for the ciliary muscle than for the convergence group, and that the ciliary thus drops to normal long before the convergent overgrowth; but it seems more likely that this is due to the fact that a strongly developed muscle responds to a light stimulus, and hence the stimulus which the ciliary body gets when the refraction is corrected is still sufficient to maintain the convergence at nearly its former power; and thus the esophoria is perpetuated even though the refraction is corrected.

Hyperopia and ciliary overdevelopment, esophoria and esotropia, represent the positive side of this mechanism. The negative side of the mechanism is underdevelopment or dystrophy, exophoria or exotropia, negative or underconvergence or divergence excess.¹⁹

The vegetative system is not infallible and may go wrong, and hence persistent undertonus or overtonus may exist independent of errors of refraction, and such a condition, either as a disorder of automatic function or as an atavism, would explain exophorias in some cases. This may begin early in life, as convergence

insufficiency from lack of tonus, and go over to divergence excess or even exotropia. This would be more likely to happen at puberty when the sacral segment develops, and would seem a reasonable hypothesis in the etiology of exophoria or exotropia. If this is so, hope is offered through the study of the stimulation of tonus in the automatic nervous mechanism.

One may see the need of correcting errors of refraction before the period of training of coordinations is passed. They are generally well established by the sixth year of life. By this means there is a chance to forestall the overgrowth or undergrowth which, once developed, tends to perpetuate itself under habit impulses.

The end-result of relative overstimulation or understimulation during the development period over the ciliary arc will be a phoria so long as the fusion loop can carry the load, and we all know from observation that its possibilities are very great.²⁰

RETINAL REFLEX ARC

We come, then, to the retinal reflex arc — the fusion loop²¹ — and the first point I would impress is my conception that fusion has

little to do with the ciliary arc, that is, with the accommodation and convergence ratios (Fig. 5). It is the innocent bystander who so often gets the blows delivered by antagonists, and that is what happens with the much abused fusion faculty.

Fusion may depend on two factors: 1. Inheritance,²² hereditary absence of fusion (Fig. 5), and this has been shown by many observers to be of great importance (Worth 50 per cent., Holthouse 30 per cent., Lagrange and Moreau

43 per cent., Reber 68 per cent., Junson 70 per cent.). But this is perhaps only setting the question back a little further, since we may not know whether or not the anisometropia is the inherited factor. 2. On the similarity of visual impressions (Fig. 5).

Let us now view the loop diagrammatically. It is made up of the retinal stimuli, afferent impulses, which are carried to the visual areas; and inasmuch as movements occur in the two eyes from stimulation of either occipital lobe, we know that impulses from both eyes

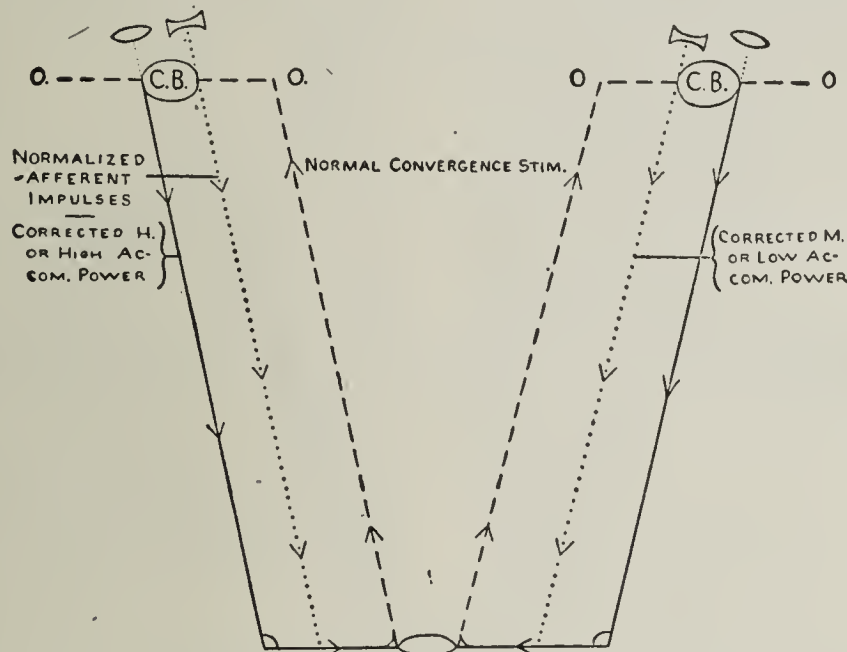


Fig. 4.—Ciliary reflex arc, showing corrections or normalization of impulses.

15. Zentmayer, William: A Study of the Effect on Heterophoria of the Correction of Ametropia, *THE JOURNAL A. M. A.*, Aug. 15, 1914, p. 572.

16. Zentmayer finds, as the result of careful analysis and tabulation of 397 cases, that the correction of the ametropia reduces the esophoria for distance when associated with H and Ah, and tends to increase the exophoria for near. When esophoria exists both for distance and near, the heterophoria at distance will be reduced and the esophoria for near may be converted into an exophoria. Esophoria for distance, and likewise an exophoria for near will be reduced by the correction of M Am. Exophoria for distance and near will be practically unchanged by the correction of a coexisting M Am. Esophoria for distance will be little changed or may go over into an exophoria by the correction of an associated Amh. An exophoria for near, under like conditions, will be increased. Exophoria for distance in anisometropia will be decreased by the correction of the ametropia. Unfortunately age, which is the crux of the whole question, according to my conception, was not considered by Zentmayer.

17. Emerson, Linn: Convergent Strabismus, *Ophthalmology*, 1907.

18. Reber: Use of Bifocals in Treatment of Esotropia in Children, *Ophth. Rec.*, xxiii, 612.

19. Bielschowsky: Position of Relative Rest of Eyes, XXXIX *Ophth. Congress*, Heidelberg, p. 67.

20. Bielschowsky (Footnote 19) gives evidence on this in his studies of the relative position of rest in 289 cases in which binocular vision had been lost and hence fusion was not in action. He found less than $1\frac{1}{2}^{\circ}$ of deviation in the primary position in 25 per cent. of the cases, while 10 per cent. had 2° or more inward. Also, that in hyperopia, deviation inward (monocular esophoria) was frequent, indicating independence of the ciliary reflex arc. This also held for cases beginning before the age of puberty, whether hyperopic or not, which would seem to show the influence of the general automatic system, which we are so insistent is a factor in the action of the ciliary arc.

21. Please note that I have called this the "fusion loop" and not "fusion faculty," and this is because the latter is only the neural segment of this retinal arc, and the retinal segment is of probably paramount importance in the period of development; since if the retinal images are of varying sizes and shapes, the dissonance renders fusion difficult or impossible (Bradburn: *Etiology and Psychology of Ocular Imbalance*, *Ophthalmology*, xi, 183). That anisometropia is a blur on fusion may be proved by self experimentation. If fusion fails, the nonfixing eye goes, of course, toward the direction of the dominant pull.

22. Howell: *American Text Book of Physiology*, 1896. Worth: *Ibid.*, 1906, p. 23. Reber: *Present Status of the Heterophoria Question*, *Ophthalmoscope*, xii, 456, 592, 644.

are superposed in the visual cortex of each hemisphere²³

Fusion of identical images takes place normally and without stress. Fusion of dissimilar images is difficult or impossible. There is not time for discussion of this intricate phase of the problem, but one may be allowed to formulate a scheme of relations between breadth of fusion and binocular single vision without subscribing to any theory.

One point should be self-evident, namely, that if the so-called fusion is sufficient to overcome an imbalance at all, it puts stress on the control coordinations. A high degree of phoria with a good breadth of fusion would cause little, while the same phoria with a limited breadth would cause much stress.

COMPENSATORY DEVELOPMENT IN THE FUSION LOOP

We have seen that in the ciliary arc there is compensation as between accommodation and convergence, and that they are coordinated. But for the mechanism of fusion such muscular compensations do not develop. If they did, prism exercise and prism wear would lead to altered rotations and diminutions of error, which we know that they do not. This is a point against the intimacy of fusion and duction.

The compensation in this loop is of a different type. Its escape is through suppression of images. If the so-called fusion is weak or absent, suppression is the easiest way out of the strain; but with strong fusion there is no escape, and fatigue and exhaustion of coordination result. This brings us to the consideration of another factor.

THE INFLUENCE OF FATIGUE

In February, 1897, I called attention²⁴ to the analogy between muscular asthenopia and the fatigue neuroses, and in November, 1897, continued the study by a brief²⁵ on the primary causation of asthenopia and the influence of fatigue. Again in 1912, at the American Academy of Ophthalmology, in a discussion of a paper by Reber²⁶ on prisms, this point of view was further emphasized. I can best condense this argument by quoting what was said on that occasion:

About fifteen years ago we made an exhaustive analysis of the relation of fatigue to asthenopia, tracing the analogy between this eye distress and the fatigue neuroses, aiming to show that writer's cramp and reader's cramp are analogous. While this study did not produce such a furore in the profession as to lead to my knighthood, as the youthful mind thought its due for such a discovery, it has served as

a working hypothesis since then, and is worthy your thought, clearing, as it does, many otherwise unexplainable phenomena in this complicated subject. Our case histories have during these years been recorded in terms of the neurologic nomenclature as a true dyskinesia, of spastic or the neuralgic type as the case might be, for ciliary spasm is a true spastic dyskinesia, even as is writer's or piano player's cramp. Now, reasoning from the assumed analogy, we have a right to bring to bear the observations of the neurologists in their field, where the neuromuscular organism is more exposed for electric and other tests.

The work of Hodge²⁷ was quoted by me at that time, and the demonstration of Crile here Wednesday offers later-day confirmation that it is the central nerve elements which are changed and profoundly so, by excessive employment, and obviously the nerve stress is much greater when the conditions of muscle strain are abnormal. And as muscle may still be stimulated to contraction after complete voluntary exhaustion, we know it is the coordinating and volitional centers that suffer exhaustion and that biochemical catabolic products do the choking. I beg your attention here to the phenomena that even as the hand may be moved with

freedom by sufferers from writer's cramp for other acts than writing, so the eye will move without discomfort for work other than the intricate coordinations, as reading, and this also points to the central origin of the distress.

Now, attention is called to this viewpoint because it seems to explain at once why prisms worn for exercise and why minor operations on the tendons so often give relief and why that relief is so often temporary. The paradox must have often come to the notice of many of you, when prisms given have been through misunderstanding or through error wrongly applied, either for exercise or wear, i. e., as to the placing of the edge, that the patient expresses relief; also that weighted convergence exercise will often relieve the distress of esophoria, and many other seeming paradoxical experiences with

prisms and with management of the ocular dynamics generally.

The assumption of fatigue or exhaustion of the coordinating mechanism rather than of the muscles themselves explains the apparent paradox, and clears the subject of much obscurity, for the work of coordination is changed in detail by the altered relations brought about by the applied prisms. The relation of fatigue to incoordination, both as subjectively and as objectively manifested, is again commended to your thought.

Therefore, for something like twenty years this has been a central thought, and around it has been developed my conceptions of this mechanism.

INFLUENCE OF ANATOMIC RELATIONS

I had not intended to discuss the anatomic side of the problem, but a few points, and only a few, must be considered in support of my conceptions.

Divergence a Negative Convergence.—On the convergence or positive side of our ciliary reflex arc we have three strong muscles—the superior and

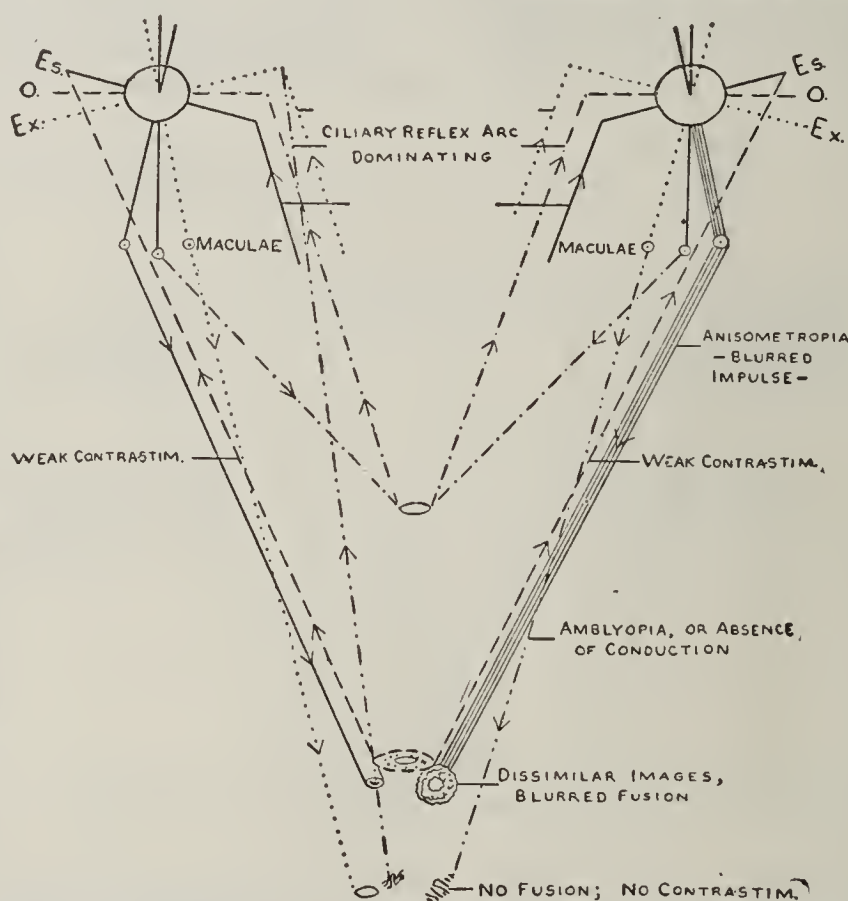


Fig. 5.—Retinal reflex arc, showing effects of anisometropia, amblyopia and absence of fusion. Abbreviations same as in Figure 3.

23. Howell (Footnote 6).

24. Walter, Will: On Asthenopia as a Fatigue Neurosis, Ophth. Rec., February, 1897.

25. Walter, Will: Primary Causation of Asthenopia: Relation of Fatigue, Am. Jour. Ophth., November, 1897.

26. Reber: Value of Prisms in Ophthalmic Practice, Am. Acad. Ophth. and Oto-Laryng., 1912, p. 136.

27. Hodge: Am. Jour. Ophth., xiv, 324.

inferior recti and the internus, all innervated by the same nerve, the nerve which also innervates the ciliary body. This is a dominant grouping as against the abductors, the externi and the obliques, all with different nerve supplies, and lends credence to my conception of negative convergence or reduced tonus, leading to divergence, instead of active divergence as a function. One cannot deny the existence of a control for divergence in the light of the definite clinical findings in Zentmayer's²⁸ case and Duane's²⁹ four cases of divergence paralysis. But such a center of control must be merely accessory and supporting, since it is proper to ask, What but diplopia could result from the primary employment of divergence? The power to lift one eye against its fellow—from 1 to 3 degrees of sursumduction—is another contrary movement, and what but diplopia would follow the employment of such a function? The conclusion is forced, therefore, that these, as well as two parallel movements which Maddox³⁰ uncovered in a case of nystagmus, and two contrary movements, namely, binocular intorsion and extorsion,³¹ are control mechanisms and useful for offsetting untoward swings or torsions and not for primary acts.

Delicacy, accuracy and steadiness are needed for ocular movements, and such accessory functions are necessary to these ends. That is why also a muscle does not act alone, for there could be none of these effects with the pull of a single strand of tendon.

Regarding the Action of the Retinal Reflex Arc.—I have shown diagrammatically that stimuli from the maculae—central images—fuse naturally, but that they tend to separation in muscle imbalance. The easy and natural way—the way it would be done over the ciliary arc—to effect this in esophoria, for instance, would be by inhibiting impulses to convergence (as by plus lenses) and in exophoria by stimulating convergence (as by minus lenses), and the result of that would be a compensatory neuromuscular training tending toward balance. That such is not the method in what we call the retinal reflex arc, we know because no such muscular compensation takes place and the phoria does not change. The reverse happens, for the stimulus is thrown to the divergence coordination for esophoria and to the convergence for exophoria; and, moreover, this contra-impulse is not productive of lessened primary impulse to the convergence coordination since it is not an inhibitory one. It is a contra-impulse and leads to extra-ocular tension. There is no other active means of escape, and as this does not lead to muscular compensation, as experience tells us, the

result is stress on the coordination. The only escape for this is by suppression of images, and this is impossible in well developed power of fusion. There being no compensatory muscular development over this loop, the compensation is afforded by changing the ability to fuse, and that does not alter the phoria, but only the ability to endure it. The principle taught us by this conception is, then, *Prism exercise or prism wear for symptoms, but refractive treatment for changing muscular compensation.* The latter must be done during the growth period for inherent defects, and on occasion for incidental imbalance.

Proof of Ciliary Arc Control of Convergence Development.—There is more convergence in high myopia than in emmetropia, but seldom does it lead to esophoria or esotropia. One would think that convergence power would increase, resulting in errors on the positive side; but such is not the case; and my conception is that the absence of the ciliary stimulus is the reason for it, since that is the afferent end of the loop through phylogenetic association.

APPLICATION

Just how do these conceptions affect us practically?

1. They speak for early setting in order of the ciliary arc—the accommodative convergence loop. This means before the sixth year; and also, if not corrected, that compensatory changes will take place and lead to conflict between the convergence development and single vision. This develops phorias if fusion is possible, or tropias if it is not.

Safeguarding the development of fusion by early creation of similar images is also necessary. This may or may not be possible, and if not the eyes should be watched for development of the dominant pull. This pull should be neutralized before overgrowth and contracture on one side have led to atrophy and thinning on the other.

Ametropes, antimetropes and anisometropes should be born with glasses on.

2. There should be recognition of the dominant effects of the automatic nervous mechanism and particularly the natural overtonus on the ciliary reflex arc, the normal plus accommodation and convergence before puberty, and lastly the influence of drugs and of the kinetic system on this tonus.

3. There should be recognition of fatigue effects and means of controlling them.

4. Has it occurred to you, as it has to me, quite out of keeping with everyday needs of ocular movements, that the eyes should be bound by such hard and fast lines as we have been led to believe? Seeing is not a mathematical problem, but a natural, and, normally, subconscious function. It is difficult to subscribe to the inelastic mechanism of the physicists. Such a conception would require that to be comfortable we must carry our heads in a fixed position, eyes horizontal, in the primary position, and all the laws of rotation, horopter, corresponding points and planes complied with. We should study the owl, who, wise in historic lore, without ocular muscles, with eyes fixed on bony bases still projects and fixes with accuracy and follows his prey, guided by neck muscles, to a degree almost incredible.

Our visuo-oculomotor mechanism is provided with many compensations, muscular and psychic, with ability to suppress confusing images, both peripheral and central, and more safeguards than we have hitherto conceived.

28. Zentmayer: Paralysis of Divergence, Tr. Am. Ophth. Soc., xiii, 521.

29. Duane: Ophthalmology, October, 1905.

30. Maddox: Case of Seesaw Nystagmus, Proc. Roy. Soc. Med., April 14, 1914.

31. Following is Maddox's table of binocular innervations, modified to my nomenclature by the substitution of versions for ductions:

KINGDOM I, FOR CREATING THE BINOCULAR EYE		
Contrary.....	Horizontal	{ 1. Convergence 2. Divergence
	Vertical	{ 3. R Relative elevation over L. 4. L Relative elevation over R.
	Torsional	{ 5. Binocular intorsion 6. Binocular extorsion
KINGDOM II, FOR DIRECTING THE BINOCULAR EYE		
Parallel.....	Horizontal	{ 7. Binocular dextroversion 8. Binocular levoversion
	Vertical	{ 9. Binocular elevation 10. Binocular depression
	Torsional	{ 11. Binocular dextrotorsion 12. Binocular levotorsion

In surprising ways the anatomic, physiologic and psychic factors are correlated, and the breadth and sites of attachments of tendon are in proportion to the needs of rotation, and to the needs of control. We would be slow if ocular movements were not reflex, accurate and from habit, easy.

122 South Michigan Avenue.

ABSTRACT OF DISCUSSION

DR. G. C. SAVAGE, Nashville, Tenn.: Thirteen years ago I made further statement of my discovery of additional members of the family of conjugate brain-centers connected with the eyes. Up to that time only five had been known and named. Maddox had said: "Besides these five I imagine there may be three which govern torsion, and two which regulate the vertical balance of the eyes." In the same paper I announced that I had discovered another family of brain-centers, and showed that each member of this group existed in the interest of binocular single vision.

All that was said in that paper about these two families of centers was correct, but the whole truth was not stated, for the reason that some truths and beauties connected with these centers had not yet come to the surface. Later the nerve-control of the ocular muscles was more fully set forth by me. The most severe criticism was to the effect that the brain-centers discussed seem to be too numerous. Dr. Walter's paper does not deny the existence of the nine conjugate cortical centers and the twelve individual basal centers.

But two groups of brain-centers are needed for explaining the action of any ocular muscle or combination of ocular muscles, extrinsic or intrinsic. To the higher group belong the centers that are conjugate, for the reason that their cells are diaxonic; volitional, for the reason that the will, whether consciously or unconsciously exercised, is the only agent for setting free their stored neuricity; verting, for the reason that one, or at most three of them, is concerned in every turning of the eyes. These centers act alike on orthophoric, heterophoric and heterotropic eyes; on eyes that are capable of binocular single vision and on eyes that have antipathy to binocular single vision, and when there is only one eye. There are eighteen of these centers connected with the extrinsic ocular muscles, associating the twelve into nine groups of two muscles, one belonging to each eye. Only nine of the eighteen centers are ever active, eight always on one side of the brain, while the other one always stands alone on the other side of the brain. The other nine centers, eight on one side of the brain and one on the other side, neither store nor discharge neuricity, for the reason that they are not needed. Each group of nine, at birth, stands as ready as the other to take up the verting and converging work of the eyes, but the determining cause cannot be discussed here.

DR. GEORGE H. PRICE, Nashville, Tenn.: The law of binocular rest and motion is imperious, and will be obeyed as long as there is equal tonicness of all the muscles, as in orthophoria, in maintaining binocular single vision. If tonicness alone is not sufficient, as in heterophoria, then tonicness plus contractility, which is brought about by the calling into action of the basal center of the weaker muscle, is necessary to compel obedience to this law. If tonicness plus contractility is not equal to the demands of this law, then there is some form of heterophoria. In discussing this question I will refer only to the phorias. Phorias are only two in kind, namely, intrinsic and pseudo. Intrinsic phorias are always muscular in origin, the varied condition one of two forms: abnormality in the relative sizes of the two muscles, or abnormality of their relative attachments. Intrinsic phorias can be cured by the exercise of the weaker muscles, or by suitable operations on the stronger or weaker muscle, and can be relieved by prisms in the positions of rest for the weaker muscle. In either of these cases the basal centers are the structures relieved. Pseudophorias are always dependent on a disordered nervous relationship between the ciliary muscles and the converging muscles, and

the pseudo-error is always an esophoria or an exophoria, and never a hyperphoria, cataphoria or a cyclophoria. There are two causes for pseudo-esophoria. First, it is always dependent on a weak ciliary muscle, whether in an emmetropic or a hypermetropic eye, requiring an extraordinary impulse from the tenth conjugate center in order to produce a given amount of contraction. This excessive excitation always induces an associated impulse from the third conjugate center to the interni, causing the pseudo-esophoria. If this condition exists in emmetropia, the pseudo-error only appears in the near; but if such eyes are hypermetropic, the pseudo-error shows itself in both the far and the near. The only cure for this form of pseudo-error is the exercise of the ciliary muscle; the only other relief for such condition would be the premature prescribing of presbyopic lenses. The second cause of pseudophoria is hypermetropia, and this pseudo-error varies in proportion to the intrinsic strength of the ciliary muscles, being always less if these are strong, and always more if they are weak. This form of pseudo-esophoria shows itself in one of three ways: first, an esophoria when there is intrinsically orthophoria; second, in a greater quantity of esophoria, both far and near, than intrinsically exists; third, showing a less quantity of exophoria, both far and near, than intrinsically exists. This form of pseudo-esophoria is always and only curable by the correction of the existing hypermetropia. In the first case the correcting lenses induce a condition of orthophoria, resulting in absolute relief. In the second case the plus lenses always correct only the pseudo-error, leaving the intrinsic esophoria; hence the relief will not be complete or permanent. In such cases the plus lenses must be supplemented by exercises or operation, depending on the amount of the intrinsic esophoria in each case. In the third case a full correction of the hypermetropia should never be given, for in such a case the intrinsic exophoria would become manifest. In such a case, however, if the hypermetropia is high in degree, and urgent in its demands, here the intrinsic exophoria should be cured either by exercise or operation, depending on the amount of the intrinsic exophoria. Pseudo-exophoria, which is nothing more or less than deficient convergence, is always dependent on one of two causes, namely, a myopia, or excessively strong ciliary muscles in emmetropia, therefore always showing itself in the near. The first form is curable by correction of the myopia with proper lenses. The second form is relievable by such concave lenses as will make a supplemental demand on the tenth conjugate center, which will bring this demand up to the normal for that center in near work. Whether the pseudo-error is esophoric or exophoric, it is curable only by establishing the normal relationship between the tenth and third conjugate centers.

DR. WENDELL REBER, Philadelphia: The three levels which Dr. Walter speaks of must be considered. Sherrington and Russell showed beyond all peradventure the existence of centers in the frontal lobes. That there are others at the base of the frontal lobe seems without question. Burkholder makes a suggestive observation when he calls attention to the fact that the occipital cortex is split up by the line of Genarri in a way that no other portion of the brain cortex is arranged; we have a double arrangement of the cortex; and if there are visuo-motor centers to be used all day long, it is only to be supposed that nature would place them anatomically at about that point. This is a speculation, but is quite as good as any other. With all respect to Dr. Savage's views, until we have absolute evidence of the histologic arrangement of the third nerve nuclei, we cannot dogmatically assert the existence of various brain centers for various ocular movements. We have now five or six schemes for the arrangement of the nucleoli in the nucleus of the third nerve. We must never forget that no one ocular muscle moves an eye in any one direction. If we recall the old scheme of Mauthner (drew a diagram on the blackboard) and choose to divide it in this fashion (indicating) we will see how in the movement of one eye, two elevators must take part. If we superimpose the scheme for one eye over that for the other eye it becomes evident how movement in any direction is bound to be a very complex act. We

must bear that in mind all the time. When we come to consider the influence of the ciliary arc reflex, it does not explain the large proportion of hypermetropes that have exophoria, or divergence excess. It may be convergence insufficiency in a moderate majority as determined by poor convergence at the near point. I think convergence anomalies in the vast majority are a reversion to a lower type. Convergence is the last act of evolution that has been added to us, and the number of people with seemingly poor convergence is astonishingly large; also the great readiness with which it responds to training bears out this assumption. The idea of fatigue, as emphasized by Dr. Watler, cannot be too much emphasized. It is true as foreign authorities have claimed that we are laying too much stress on asthenopia. I believe it is simply a reflex of that high rate at which the American lives. We call it advanced civilization. Dr. Risley has happily included all this tension under the term "physiologic vices of civilization," in which we all more or less partake. I agree with Dr. Posey that in a given case of convergence insufficiency we can produce complete abatement of the symptoms with training, but that the muscular error remains at about the same amount. What the patient wants is relief from the symptoms, and this we give him with the prism training. I agree with Dr. Walter that we must be physicians first, last and all the time; that right living is the basis of cure of every muscular anomaly. I believe seeing is a mathematical problem, although Dr. Walter feels that it is not exactly so; but I believe that it is, plus the ever varying complexity that goes with the development of the association fibers in different individuals.

DR. WILL WALTER, Chicago: We are not discussing primarily the centers of control. The coordinating or reflex centers are arbitrarily placed in our scheme and are included in the mid-level control. However, answering the arguments of Dr. Savage, I see no reason for changing my views on localization of control of ocular movements. There is no fundamental difference between us as to localization, but only as to grouping of control. It certainly is better to consider the question from the standpoint of three levels of control. It is better than to divide them as he does into cortical and basal and then forthwith include the occipital cortex in the basal. We are talking of physiologic levels and not spirit levels. In the second place, it is manifestly better to adopt some such tables of movements as Maddox has given us, which is based on ocular movements that are known, then on his grouping under control of the recti and control of the obliques. This conception of independent action of recti and obliques has no proofs. The thought of convergence with the interni and divergence with the externi has been the source of more error than any fallacy on ocular movements. If we get it clearly in mind that no one muscle moves the globe in any one direction we will have less confusion, for, as we have said and many others have shown, there is no support for such a thought. It is contrary to physics and nature is not so remiss. It is certainly safer to speak of convergence control than of internal rectus control in the light of what is known of the influence of the vertical recti, for convergence is not always (perhaps not usually) done in the median plane.

The Cost of Drugs.—It is estimated that \$500,000,000 are expended for drugs in this country, most of which are self-administered. Into the delicately adjusted machinery of the human body is yearly poured at least 75,000,000 pounds of drugs and chemicals, haphazard, with no real knowledge on the part of the users of what the mess is going to do to that machinery. We have cold cures, headache cures, consumption cures, cancer cures, liver pills, kidney cures, spring tonics, blood purifiers, ague cures, rheumatism cures, cures for everything except the credulity and physical neglect that make possible this enormous expenditure for drugs that are in the vast majority of cases useless when they are not harmful. Since 1880, the expenditure per capita for patent remedies consumed in the United States has risen from 33 cents to \$1.54.—*Health Letter*, Life Extension Institute.

CASE OF MASTOIDITIS COMPLICATED BY PURULENT CEREBROSPINAL MENINGITIS; OPERATION AND RECOVERY*

W. H. HUNTINGTON, M.D., WASHINGTON, D. C.

History.—A. W., a white girl, aged 8, had a past history of no importance. She had complained of head colds since the latter part of December, 1915 (with occasional earache), which were not severe and subsided without treatment.

Jan. 21, 1916, the left ear began to pain intensely and the temperature was 101; headache was severe and the child was irritable. January 22, she was brought to my office by the mother, who gave me the foregoing information. At that time examination showed a slightly red membrane in the left ear; there was no bulging, and no perforation or discharge. There had never been any discharge from the ear. There was slight postauricular pain and some pain in the angle under the ear.

Treatment and Course.—A free paracentesis was done which yielded no pus; the temperature was 100.5. January 23 the mother reported that the child was feeling better and was out playing. Temperature was normal.

January 24, the mother reported that the child's temperature was 102, that headache was intense, there was frequent vomiting, and the child was very irritable, and complained of pain in the back of the neck.

I found the patient in bed, in an extremely exhausted condition. She was vomiting a greenish watery fluid, and was slightly delirious, with knees drawn up, head drawn back, pupils dilated, and marked nystagmus with quick component to the diseased side; Kernig's sign was present. There was no eruption on the body. The patient had had no chills. Tache cérébrale was negative. There was no discharge from the ear. There was slight sagging of the superior meatal wall. The temperature was 102, and the pulse, 120. The mother was informed of the grave condition of the child. My diagnosis at that time was "latent mastoiditis with meningitis," and my hopes were that the meningitis was of the serous type.

The patient was taken to the hospital, where I called Dr. McKimmie in consultation. He concurred with me in the diagnosis and advised immediate operation. Nystagmus at that time was less marked, while the sagging of the meatal wall was more marked than when the patient was examined at home. Postauricular pain was marked. The patient was delirious, with a temperature of 103, and pulse 130.

The operation revealed a large amount of fluid pus in the cortical cells, antrum, tip, and deeper cells overlying the sinus wall. There was no macroscopic evidence of necrosis of the inner table.

Paracentesis was repeated. Lumbar puncture showed fluid under marked pressure and rather cloudy. I withdrew about 25 c.c., which was taken immediately to Dr. W. H. Hough for chemical, microscopic, and bacteriologic examination. The report was as follows: Appearance, opaque; protein content, markedly increased; cells per cubic millimeter, 6,850; differential cell estimation, chiefly polymorphonuclear leukocytes; a few lymphocytes and endothelial cells; occasional macrophage and plasma cell. Fehling's solution was not reduced. The only organism present was the Friedländer bacillus.

The morning after the operation the patient was slightly delirious and irritable, and complained of pain in the head, back of neck and throat; the knees were constantly drawn up and the flexor contractions were general. There was some hyperesthesia of the back. No nystagmus was apparent. On the afternoon of the 25th the patient was bright; the temperature was 99.8 and headache was less marked. January 26, her condition was much improved, the headache and pain in neck were much less severe and muscular contractions had diminished.

From this time, the temperature remained normal, no complications ensued and the mastoid wound healed in less than eight weeks. The patient was discharged, March 20. The

* Reported to the Medical Society of the District of Columbia, March 8, 1916.

labyrinth on the left side is functioning perfectly at this time, and there seem to be no abnormalities whatever as a result of the meningitis.

COMMENT

This case is of interest for several reasons:

Fortunately the child was seen in the early irritative stage and operated on early. I attribute the recovery to this fact and also to the fact that a lumbar puncture was done. The latter, although done principally for diagnostic purposes, undoubtedly exerted a favorable influence on the disease, and I feel certain that it was a large factor in the recovery.

Another point of interest was the fact that there never had been any discharge from the ear. This fact and the lack of other subjective and objective symptoms typical of mastoiditis would make one hesitate to make that diagnosis.

The bacteriologic work was done by Dr. Lester Neuman, and his report showing Friedländer's bacillus as the organism cultured from the spinal fluid, adds still another interesting feature, as this organism is rarely the cause of meningitis.

The intelligent observation of the child by its mother made it possible for an early diagnosis and operation. I wish to add to the plea made so often by the aurist for a close observation of children, by mothers and family physicians, when the usually neglected nasal and aural infections are in evidence. Attention to these cases will tend to the conservation not only of the special senses, but of life itself.

1624 I Street N.W.

Therapeutics

BLOOD PRESSURE

(Continued from page 35)

TECHNIC

It is essential that the patient on whom the examination is to be made should be at rest, either comfortably seated, or lying down. All clothing should be removed from the arm, and there should be no constriction by sleeves, either of the upper arm or the axilla. When the blood pressure is taken over the sleeve of a garment, the instrument will register from 10 to 30 mm. higher than on the bare arm.³

While it may be better, for insurance examinations, to take the blood pressure of the left arm in right handed persons as a truer indicator of the general condition, the difference is generally not great. The right arm of right handed persons usually registers a full 5 mm. higher systolic pressure than the left arm.

The patient, being at rest and removed as far as possible from all excitement, may be conversed with to take his mind away from the fact that his blood pressure is being taken. He also should not watch the dial, as any tensing on his part more or less raises the systolic pressure, the diastolic not being much affected by such nervous tension. The armlet having been carefully applied, it is better to inflate gradually 10 mm. higher than the point at which the pulsation ceases in the radial. The stethoscope is then firmly applied, but with not too great pressure, to the forearm just below the flexure of the elbow. The exact point at which the sound is heard in the individual patient, and the exact amount of pressure that must be applied, will be determined by the first reading, and then thus applied to the second reading. One reading is never sufficient for obtaining the correct blood pressure. The blood pressure may be read by means of the stethoscope during the gradual raising of pres-

sure in the cuff, note being taken of the first sound that is heard (the diastolic pressure), and the point at which all sound disappears, as the pressure is increased (the systolic pressure). The former method is the one most frequently used.

By taking the systolic and diastolic pressures, the difference between the two being the pressure pulse, we learn to interpret the pressure pulse reading. While the average pressure pulse has frequently been stated as 30 mm., it is probable that 35 at least, and often 40 mm. represents more nearly the normal pressure pulse, and from 25 mm. on the one hand to 50 on the other may not be abnormal.

Faught⁴ states his belief that the relation of the pressure pulse to the diastolic pressure and the systolic pressure are as 1, 2 and 3. In other words, a normal young adult with a systolic pressure of 120 should have a diastolic pressure of 80, and therefore a pulse pressure of 40. If these relationships become much abnormal, disease is developing and imperfect circulation is in evidence, with the danger of broken compensation occurring at some time in the future.

It should be remembered that the diastolic pressure represents the pressure which the left ventricle must overcome before the blood will begin to circulate, that is, before the aortic valve opens, while the pressure pulse represents the power of the left ventricle in excess of the diastolic pressure. Therefore it is easy to understand that a high diastolic pressure is of serious import to the heart; a diastolic pressure over 100 is significant of trouble, and over 110 is a menace.

FACTORS INCREASING THE BLOOD PRESSURE

With normal heart and arteries, exertion and exercise should increase the systolic pressure, and generally somewhat increase the diastolic pressure. The pressure pulse should therefore be greater. When there is circulatory defect or abnormal blood pressure, exercise may not increase the systolic pressure, and the pressure pulse may grow smaller. As a working rule it should be noted that the diastolic pressure is not as much influenced by physiologic factors or the varying conditions of normal life as is the systolic pressure.

In an irregularly acting heart the systolic pressure may vary greatly, from 10 to 20 mm. or more, and a ventricular contraction may not be of sufficient power to open the semilunar valves. Such beats will show an intermittency in the blood pressure reading as well as in the radial pulse. The succeeding heart beats after abortive beats or after a contraction of less power have increased force, and consequently give the highest blood pressure. Kilgore urges that these highest pressures should not be taken as the true systolic blood pressure, but the average of a series of these varying blood pressures. In irregularly acting hearts it is best to compress the arm at a point above which the systolic pressure is heard, then gradually reduce the pressure until the first systolic pressure is recorded, and then keep the pressure of the cuff at this point and record the number of beats of the heart which are heard during the minute. Then reduce the pressure 5 mm. and read again for a minute, and so on down the scale until the varying systolic pressures are recorded. The average of these pressures should be read as the true systolic blood pressure. During an intermittency of the pulse from a weak or intermittently acting ventricle, the diastolic pressure will reach

3. Rowan, J. J.: The Practical Application of Blood Pressure Findings, THE JOURNAL A. M. A., March 18, 1916, p. 873.

4. Faught: New York Med. Jour., Feb. 27, 1915, p. 396.

its lowest point, and in auricular fibrillation the pressure pulse from the highest systolic to the lowest diastolic may be very great.

In arteriosclerosis the systolic may be high, and the diastolic low, and hence a large pressure pulse. When the heart begins to fail in this condition, the systolic pressure drops and the pressure pulse shortens, and of course any improvement in this condition will be shown by an increase in the systolic pressure. The same is true with aortic regurgitation and a high systolic pressure.

If the systolic pressure is low and the diastolic very low, or when the heart is rapid, circulation through the coronary vessels of the heart is more or less imperfect. Any increase in arterial pressure will therefore help the coronary circulation. The compression of a tight bandage around the abdomen, or the infusion of blood or saline solutions, especially when combined with minute amounts of epinephrin, will raise the blood pressure and increase the coronary circulation and therefore the nutrition of the heart.

MacKenzie,⁵ from a large number of insurance examinations in normal subjects, finds that for each increase of 5 pulse beats the pressure rises 1 mm. He also finds that the effect of height on blood pressure in adults seems to be negligible. On the other hand, it is now generally proved that persons with overweight have a systolic pressure greater than is normal for individuals of the same age. He believes that diastolic pressure may range anywhere from 60 mm. of mercury to 105, and the person still be normal. A figure much below 60 certainly shows dangerous loss of pressure, and one far below this, except in profound heart weakness, is almost pathognomonic of aortic regurgitation. While the systolic range from youth to over 60 years of age gradually increases, at the younger age anything below 105 mm. of mercury should be considered abnormally low, and although 150 mm. at anything over 40 has been considered a safe blood pressure as long as the diastolic was below 105, such pressures are certainly a subject for investigation, and if the systolic pressure is persistently above 150, insurance companies dislike to take the risk. However, it should be again urged in making insurance examinations that psychic disturbance or mental tensivity very readily raises the systolic pressure. MacKenzie believes that a diastolic pressure over 100 under the age of 40 is abnormal, and anything over the 110 mark above that age is certainly abnormal.

It has been shown, notably by Barach and Marks,⁶ that posture changes the blood pressure. When a normal person reclines, with the muscular system relaxed, there is an increase in the systolic pressure and a decrease in the diastolic pressure, with an increase in the pressure pulse from the figures found when the person is standing. When, after some minutes of repose, he assumes the erect posture again, the systolic pressure will diminish and the diastolic pressure increase, and the pressure pulse shortens.

Excitement can raise the blood pressure from 20 to 30 mm., and if such excitement occurs in high tension cases there is often a systolic blow in the second intercostal space at the right of the sternum. This may not be due to narrowing of the aortic orifice: it may

be due to a sclerosis of the aorta. On the other hand, it may be due entirely to the hastened blood stream from the nervous excitability. This is probably the case if this sound disappears when the patient reclines. If it increases when the heart becomes slower and the patient is lying down, the cause is probably organic.

This psychic influence on blood pressure is stated by Maloney and Sorapure⁷ "to be greater than that from posture, than that arising from carbonic acid gas control of the blood, than that arising from mechanical action of deep breathing upon the circulation, and than that arising from removal of spasm from the musculature."

Weyssse and Lutz⁸ find that the systolic pressure varies during the day in normal persons, and is increased by the taking of food, on an average of 8 mm. The diastolic pressure is not much affected by food. This increased systolic pressure is the greatest about half an hour after a meal, and then gradually declines until the next meal.

Any active, hustling man, or a man under strain, has a rise of blood pressure during that strain, especially notable with surgeons during operation, or with brokers or persons under high nervous tension. Daland⁹ states that a man driving an automobile through a crowded street may have an increase of systolic pressure of 30 mm., and an increase of 15 mm. in his diastolic pressure, while the same man driving through the country where there is little traffic will increase but 10 mm. systolic and 5 mm. diastolic. Fear always increases the blood pressure. This is probably largely due to the peripheral contractions of the blood vessels and nervous chilling of the body.

(To be continued)

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLE HAS BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. ITS ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

VITALAIT STARTER.—A culture in vials of the *Bacillus bulgaricus* and the *Streptococcus acidilactici* in symbiosis.

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Manufactured by The Vitalait Laboratory, Inc., Newton Centre, Mass. No U. S. patent or trademark.

The *Bacillus bulgaricus* and the *Streptococcus acidilactici* are grown in skim milk without the addition of any chemical, and the culture sent out represents these organisms growing in this medium.

5. MacKenzie: Med. Rec., New York, Dec. 18, 1915.

6. Barach, J. H., and Marks, W. L.: Effect of Change of Posture — Without Active Muscular Exertion — on the Arterial and Venous Pressures, Arch. Int. Med., May, 1913, p. 485.

7. Maloney and Sorapure: New York Med. Jour., May 23, 1914, p. 1021.

8. Weyssse and Lutz: Am. Jour. Physiol., May, 1915.

9. Daland: Pennsylvania Med. Jour., July, 1913.

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SATURDAY, JULY 15, 1916

THE NERVOUS SYSTEM IN RELATION TO DIET AND DISEASE

The weight of the brain, the largest component of the central nervous system, comprises less than 2 per cent. of the weight of the entire body. For this reason, perhaps, it is scarcely to be expected that ordinary chemical changes in the nervous tissues would reveal themselves readily in the midst of the preponderatingly greater metabolism which is associated with the abundant muscular and glandular structures of the body. Careful examinations of the excreta and measurements of the respiratory exchange have accordingly failed, as a rule, to give any significant indications of alterations in the brain or spinal cord which can be associated with definite functional or pathologic changes. To obtain evidence of upsets in the central nervous system it has become customary, therefore, to depend on special physiologic tests, for the opportunity to make a direct inspection of the nervous tissues and to investigate possible changes in their cells is never available except at necropsy. The nearest approach to a chemical examination of any peculiarities in the chemical changes within the nervous system consists in occasionally possible observations on the cerebrospinal fluid in which unusual products may perhaps be expected to accumulate for the moment in somewhat greater concentration than in fluids more remote from the nervous structures. Even in this case it is doubtful whether, in view of the rapid transfer of soluble substances liberated from the cells of the brain or cord into the blood stream, any detectable change of composition referable to the nervous structures themselves is to be expected during life.

There are surprisingly few data on the chemical composition of the central nervous system in relation to disease, although the pathologic histology of nervous disorders has been a fruitful field of study. In part the lack of knowledge on the chemical side doubtless is due to the inherent difficulties of such investigations. Suitable material of a sort appropriate for analysis under acceptable conditions is never abundant; and few investigators have prepared themselves for research in the biochemistry of the nervous system.

The meager data available indicate that ordinary changes in diet do not materially affect the brain and spinal cord in its grosser characteristics of chemical composition. Even starvation produces slight variations, at best, from the supposed normal.

Recent years have witnessed an awakening of experimental interest in a number of diseases attended with evidences of histologic changes in the peripheral nerves and presumable alterations in the central nervous system, if one may judge from the severity of the symptoms often initiated. Such features have often been discussed in relation to beriberi and varied types of polyneuritis and more recently to pellagra. Inasmuch as these disorders are currently widely associated with deficiencies of diet, considerable significance attaches to the newly reported researches from the Hygienic Laboratory of the U. S. Public Health Service¹ relating to the chemical changes in the central nervous system as a result of restricted vegetable diet. Voegtlin has recently advanced the hypothesis that pellagra is due to a mainly vegetable diet, characterized by a relatively low percentage of protein and a correspondingly high content in carbohydrates. Koch and Voegtlin have now observed various changes in the brain and spinal cord of animals fed on an exclusive vegetable diet. The important point is that histologic examination of the central nervous system of these animals reveals extensive degeneration of many nerve tracts in the spinal cord, very similar to those found in pellagra. In some of the animals the chemical changes are practically identical with the changes observed in pellagra. These findings, therefore, are believed to yield additional evidence for the theory that pellagra is a dietary disease.

We cannot discuss here the details of the extensive chemical analyses conducted by the Hygienic Laboratory on the central nervous system in cases of uncomplicated pellagra. Koch and Voegtlin conclude that in a general way the spinal cord exhibits the most striking chemical changes, a fact which is in perfect agreement with histologic observations. The chemical changes in pellagra, while similar in many respects, differ from those in other diseases affecting the central nervous system. They believe that the present investigation brings out the fact that the central nervous system in pellagra is subjected to a series of considerable chemical changes involving principally certain lipoids. The study of these changes from a chemical point of view has led to a new method of characterization of this disease which may permit them to be correlated, as has been shown in the preceding investigation, with the changes experimentally produced in the nervous system of animals.

1. Koch, Mathilde L., and Voegtlin, Carl: I. Chemical Changes in the Central Nervous System as a Result of Restricted Vegetable Diet, II, Chemical Changes in the Central Nervous System in Pellagra, Bull. 103, Hyg. Lab., U. S. P. H. S., February, 1916. Voegtlin, Carl: Am. Jour. Physiol., 1915, Proceedings; The Treatment of Pellagra, THE JOURNAL A. M. A., Sept. 26, 1914, p. 1094.

The demonstration of an atrophy of the central nervous tissues associated with characteristic quantitative variations in the chemical constituents studied and produced by means of a change in diet is perhaps somewhat unexpected. The government investigators are enthusiastic in the belief that this is only the beginning of fruitful research in the direction of correlating errors of diet with nervous defects. In fact, they confidently expect that a number of pathologic conditions observed in nervous diseases may ultimately be explained by some as yet unknown abnormality in diet. There is nothing inherently unlikely in the possibility of correlations such as it has thus been attempted to establish.

THE EPIDEMIC OF INFANTILE PARALYSIS

All reports agree in characterizing the outbreak of poliomyelitis now making such sad havoc in New York City and elsewhere as a highly serious emergency both for the affected locality and for the entire country. The type of disease is evidently severe, and the mortality already has passed far beyond the figures reached in the great New York epidemic in 1907. The time of year is distinctly unfavorable, summer being usually the period of greatest prevalence. Once the disease has started there is generally an increase in the number of cases until checked in some unknown way by the advent of cool weather. In the Vermont epidemic of 1914 there were 8 cases recorded in July, 88 in August, 142 in September, 56 in October, and 8 in November. The increase that has occurred in New York since June 1, and especially the outbreak of the past two weeks, emphasizes the unpropitious nature of the seasonal conditions. It can hardly be anticipated that the task of combating the epidemic will be materially lighter for some weeks to come, and it may become even more formidable than at present.

Various conditions seem to threaten a more or less extensive dissemination of the disease. It is stated that many thousands of children of well-to-do parents—one estimate going as high as 50,000—were sent or taken out of New York City within the few days following the great development of the epidemic in early July. Taking into account the natural vacation exodus at this season, the danger of establishing new foci of infection can be seen to be very great.

There are several features of epidemic poliomyelitis that make the spread of this malady peculiarly difficult to combat. Certain things important epidemiologically, such as the minimum period of incubation, are not yet cleared up. The researches of Flexner and his co-workers have, to be sure, shown that the virus is present in the nasal and buccal secretions and is also eliminated in some cases from the intestines. These facts might be thought to indicate that the ordinary measures of isolation and quarantine of frank cases would be quite successful, as in some other diseases, in preventing the spread of the infection. Such mea-

asures do, undoubtedly, lessen the frequency with which infection is transferred, but unfortunately they are not so efficacious as might be anticipated, because of the apparently large number of abortive, atypical, or ambulatory cases that in one way or another escape recognition and control. Undetected cases of poliomyelitis of this sort seem to be especially numerous. As in other infections, persons who have recovered from an attack of poliomyelitis may continue to harbor the virus, and under suitable conditions disseminate it for many months. Of a different but perhaps even more dangerous type are the healthy virus carriers familiar in connection with a variety of infectious diseases. There is no precise information as to how common these healthy carriers of poliomyelitis may be, but there is some reason to believe that they are a not insignificant agency in the diffusion of infection. Potentially any one who has been in contact with either a frank case or an abortive case of infantile paralysis may become a carrier. Through this agency conceivably the specific microbe may be transferred to yet other healthy individuals until finally it reaches susceptible soil.

The important point is that a much larger proportion of cases of poliomyelitis appears to be caused by contact with an unknown virus carrier—convalescent, healthy or atypically ailing—than is the case with most other infections.

A particularly perplexing feature of this disease is the remarkable incidence in rural districts. This preference for out-of-the-way, isolated localities has been noticed in many regions in which the disease has occurred. All that is known experimentally of the localization of the virus and its mode of entrance points to direct contact with infected human beings as the chief, if not the only, means by which the disease is contracted. Insects, water supply, foodstuffs, domestic animals and other external agencies have never been proved to have any share in causing infantile paralysis. And yet some unknown feature of rural life appears to favor its propagation and spread. This rural incidence is very conspicuous in the carefully studied Vermont epidemic. "Utterly inexplicable . . . is the fact that many small sparsely settled rural townships off from main thoroughfares . . . were severely visited. Many times the first case in a town occurred in families whose members had not been away from home for several weeks and who had received no suspicious visitors."¹ In harmony with such observations are the facts that the more densely populated towns where contact is presumably more frequent often suffer less during an epidemic than the thinly settled districts near them. In the Vermont outbreak of 1914, the village of Barton, with a population of 1,300, had twenty-three cases, while Burlington, with over 20,000 inhabitants, had but thirty-two, or about one tenth as many in proportion to the population. The apparent conflict between the facts of

1. Caverly: Bull. Vermont State Board of Health, June 1, 1916.

observation and experimentation needs further elucidation. Why are there not more cases of poliomyelitis in localities where opportunities for contact are numerous than where they are few?

In spite of such puzzling questions, the best results in control have been obtained by the ordinary methods of isolation. At present the methods available for fighting the spread of infantile paralysis are those made familiar in many other infections. Every frank case and every suspected case should at once be reported to the health authorities. All cases of even slight illness in young children should be carefully handled with reference to the disinfection of discharges from the nose and mouth, and the patients, if necessary, should be placed under expert supervision. Any convalescent or any person who has been in contact with the disease must be regarded as a possible carrier of infection. Opportunities for the contact of large numbers of children, as at parties, picnics and moving picture shows, should be avoided so far as possible. Such are the methods that are suggested by our present confessedly imperfect knowledge, and measures of this character are being carried out energetically in New York. The outcome of the work of the municipal, state and national health authorities in New York will be anxiously awaited. The situation could not be in better hands. It may be confidently expected that some additional knowledge of the most effective way of combating this baffling infection will be soon forthcoming.

GIVE THE PROFESSION AND THE PUBLIC THE FACTS

When the long drawn out libel suit, in which the American Medical Association was recently involved, came to a close, and the "patent medicine" company was awarded one cent damages, THE JOURNAL received dozens of letters and telegrams congratulating the Association on the outcome of the trial. The number of condolatory letters received in this connection could be numbered on the fingers of one hand. The attitude of medical journals toward the outcome of the case will probably vary in about the same proportion as that shown in personal communications. The *Journal-Lancet* in its July 1 issue offers condolences to the American Medical Association and declares that the verdict is "a very decided victory for the 'patent medicine' association." Right there we beg to differ with the *Journal-Lancet* and reiterate that the outcome of the case was a moral victory for the Association. The *Journal-Lancet* further declares that the verdict "throws the burden of the court costs upon the American Medical Association," but here again, our lugubrious contemporary is in error. Continuing its jeremiad, that publication questions "whether it pays to attack a 'patent medicine'" or, if that be unavoidable, "is publicity the way to accomplish the true end?"

THE JOURNAL believes — and has consistently acted on that belief — that publicity is the only rational means of attacking the nostrum evil, whether of the "patent medicine" or of the "ethical proprietary" variety. Any attempt to put an end to the evils connected with the business by dealing in generalities is bound to fail. Until the public is given definite and specific facts no great strides will be made in preventing unscrupulous cupidity from preying on the sick and suffering. That THE JOURNAL's methods of giving the widest possible publicity to the results of its investigations of fraudulent, dangerous or worthless nostrums have borne fruit is a matter of common knowledge.

One of the hardest problems the Association had to meet in defending itself in the recent suit came, not from the assaults of its avowed enemies, but from the action of those who might have been assumed to be its friends. Many times since the libel suits in question were started, the statement has been made that if the Association lost it would be due to the medical profession, and not to the "patent medicine" interests. The fact that members of the medical profession, many of them in their county and state organizations, and not a few of them actually Fellows of the Association, came to the defense of the very interests that were fighting the Association, could not help but have its effect on a jury of laymen. It is because no small part of the medical profession is itself still under the blight of the "patent medicine" business — albeit the preparations in question are euphemistically spoken of as "ethical proprietaries" — that the "patent medicine" interests were able to enlist — at a price — the help of men who were, ostensibly, so technically trained and educated as to be above such temptation.

And it is pertinent here to say that one of the most potent reasons for the continuation of this state of affairs lies with a certain type of medical journals, a class to which the *Journal-Lancet* belongs. Can it be that the *Journal-Lancet* is opposed to publicity in dealing with the "patent medicine" evil because it derives no small part of its advertising revenue from products to which THE JOURNAL has given some unwelcome publicity? Possibly it is to be expected that so long as the *Journal-Lancet* sells its own pages to such "patent medicines" as "Angier's Emulsion," "Fellows' Syrup of Hypophosphites," "Ergoapiol," "Glyco-Heroin," etc., it will deplore the methods of the American Medical Association in dealing with the nostrum evil.

The *Journal-Lancet* opines that "the American Medical Association will probably not be discouraged" by the verdict and "will probably go on in spite of a temporary defeat." It will. But the *Journal-Lancet* feels that the Association cannot go on "unless it has the full support of the medical profession and the support of the people behind the doctors." The Association has the support of the better part — numerically

and intellectually — of the profession and is rapidly gaining the support of the public. It can and will go on in its work. It would move more rapidly if all physicians and all medical journals were true to the best traditions of the profession they represent.

ECZEMA AND PROTEIN HYPERSENSITIVENESS

There has been a tendency of late to seek an explanation of certain puzzling forms of hypersensitiveness of the organism in the directions indicated by modern studies of anaphylaxis. Among the phenomena put into this category are such idiosyncrasies as occur in persons susceptible to urticaria, vomiting or angio-neurotic edema after the ingestion of certain foods. Hay-fever and allied conditions have been investigated from the standpoint of an acquired hypersensitiveness to pollen protein. Attacks of asthma have been charged with an anaphylactic origin, owing to the resemblances between their manifestations and those seen in animals which have been tested after special sensitization. Fagopyrism (buckwheat poisoning) and other forms of exceptional susceptibility to special articles of diet have furnished evidence that they may often be interpreted as conditions of hypersensitiveness to the proteins of certain foods. The outcome has been the introduction of methods of testing for a state of hypersusceptibility to various substances by application of minute quantities of suspected proteins to the scarified skin or by intracutaneous injection. A positive reaction is shown by the appearance of an urticarial wheal or of marked edema or erythema at the point of examination.

Blackfan¹ has recently called attention to the well known observation that many children, the subjects of asthma, suffer from eczema in infancy or early childhood. He states that a history of eczema in early life is nearly always the rule with patients who are unable to take different foods, such as eggs, shellfish, pork, etc., on account of urticaria and edema and sometimes asthma. It is much more than a coincidence. According to observations made at the Harriet Lane Home and Department of Pediatrics of the Johns Hopkins University, patients without eczema very rarely give a positive reaction to protein. Of forty-three patients without eczema, only one showed any evidence of susceptibility to protein by cutaneous and intracutaneous tests. Of twenty-seven patients with eczema, twenty-two gave evidence of susceptibility to proteins. Egg white, cow's milk and woman's milk were the substances that most frequently caused a reaction. If there was a reaction from one protein there usually was a reaction from several.

These coincidences may be accidental, or there may be some etiologic relationship between protein sensitization and eczema. Blackfan has attempted to apply

dietary treatment or restrictions in harmony with the responses to the tests. He states that the removal of some or all of the animal proteins from the food brings about great improvement in some cases of eczema in older children and adults. With infants it is not successful, first, because it is impossible to feed an infant for a long time on a diet that contains no animal protein, without the risk of seriously affecting his nutrition, and second, because there is a strong tendency for the eczema to return, even though a protein-poor diet produces early improvement, and even though the protein-poor diet is continued. Useful observations in this field are only beginning to be collected with the accuracy that rational employment of therapy based on the results obtained really demands. It is not unlikely, however, that the new leads, fortified by further statistics furnished by numerous rigorously controlled cutaneous tests, will open a way to real progress in the management of certain rather intractable conditions which have heretofore been treated in a decidedly empiric way.

Current Comment

UNEQUAL DISTRIBUTION OF MONEY FOR MEDICAL EDUCATION

Prior to fifteen or sixteen years ago, gifts for medical education were few and far between; in fact, were scarcely heard of. Since that time, however, donations to medical schools have been gradually increasing both in size and in frequency. Since then, citizens of various localities have shown their increasing interest in medical education by responding more readily and generously to requests for financial assistance by local medical colleges; state legislatures are making larger appropriations for state medical schools, and individuals making donations to medical schools during the last fifteen years not only have increased in number but also are giving larger sums. Such gifts have increased from a few thousand dollars in each instance to hundreds of thousands, and, in the last three or four years, gifts of millions have been frequent. Thus far, however, donations have been made under the stress of the moment to individual colleges and not in accordance with any national plan for the financing of medical education. As a consequence, some medical schools have received large sums, while others, perhaps equally deserving, still lack funds necessary to provide even the barest essentials for medical teaching. This is particularly true in some of the smaller or thinly populated states which cannot provide large sums for medical education. It is also true in other states where private universities, without state aid, are performing the function of state universities. Some of these institutions particularly need and deserve generous financial aid. They have secured better teachers, improved their laboratories, and increased their equipment to a commendable degree. Some have adopted higher entrance requirements, knowing that such action

1. Blackfan, K. D.: Cutaneous Reaction from Proteins in Eczema, *Am. Jour. Dis. Child.*, June, 1916, p. 441.

would reduce their enrolment of students and, correspondingly, their financial income. There should be some method whereby these deserving schools might share in the generosity of those having money to give for medical education. This thought is worthy of consideration by organizations which have been given the privilege of distributing large funds for education, such as the Carnegie Foundation for the Advancement of Teaching, the General Education Board, and the Rockefeller Foundation.

THE PITUITARY BODY AND RENAL FUNCTION

In three cases of diabetes insipidus studied by Motzfeld,¹ the subcutaneous injection of pituitary extract was followed by a marked decrease in the quantity of urine passed and an increase in its concentration. This effect, which was not permanent, could be maintained by giving from two to five injections in twenty-four hours. The anterior lobe, however, was found to have no effect in controlling the diuresis. He would conclude that diabetes insipidus is due to a lowered functional activity on the part of the posterior lobe of the pituitary body, and not to malfunction of the anterior lobe. This conclusion is in accord with the results of the experiments, and also with the fact that, in a number of cases of diabetes insipidus, definite lesions in the posterior lobe of the hypophysis, as secondary tumors, have been demonstrated. He also observed the effect of pituitary extract in diseases other than diabetes insipidus, finding in twenty-one cases that the quantity of urine passed was diminished for periods varying from two to four hours, in one instance for a much longer period. Epinephrin given simultaneously with pituitary extract was not antagonistic to the action of pituitary extract. From these observations it is evident that the pituitary body exerts a constant physiologic influence on renal function.

THE IDENTITY OF THE TRYPANOSOMES

Central Africa is a country abounding in wild game, whose protection from extermination has been one of the principal solicitudes of the governments of that region. Nor has that attitude been dictated by scientific or humanitarian considerations. On the contrary, the wild game of Africa is of the utmost economic importance to its peoples. When, therefore, we find a scientific commission recommending the destruction of all wild game over the whole of the tsetse fly area, which is considerably larger than the United States, one would naturally expect to find the grounds for such recommendation absolutely sound. Such a recommendation was made by the sleeping sickness commission of the Royal Society; it is based on the alleged identity of *Trypanosoma brucei*, which infests game, with the trypanosomes causing disease in man in Nyasaland. However, investigation of the grounds for this identification shows that they are hardly sufficient to justify so drastic a measure as the wholesale destruction of the wild game of central and eastern

Africa. The decision of the commission has been seriously attacked by Maynard,¹ statistician and clinician to the South African Institute for Medical Research. Maynard traverses all the grounds for this supposed identification of these trypanosomes, and shows that, on the whole, even the evidence adduced by the commission goes toward establishing the non-identity of the organisms in question. The greater part of the pamphlet is taken up with an elaborate mathematical analysis of the curves plotted from the morphologic characteristics of the different organisms. The commission had relied on mere inspection of these curves in judging of their identity. Maynard and Pearson have shown that on proper analysis the seeming similarity of the different curves disappears, and it becomes highly probable that in several instances the strains examined by the commission were impure.

SYNTHETIC SUBSTITUTES UNDER THE HARRISON LAW

The Harrison Narcotic Law, as is now well known, restricts the manufacture, sale or dispensing of "opium or coca leaves or any compound, manufacture, salt, derivative or preparation thereof" to persons registered under the act. The language quoted is from Section I of the law. In all other sections, with a single exception, the drugs covered by the law are referred to as "the aforesaid drugs." In Section VI, however, after providing for the exemption of preparations containing minimum quantities of these drugs, the law exempts from the exemption "liniments, ointments and other preparations which contain cocaine or any of its salts or alpha or beta eucaine or any of its salts or any synthetic substitute for them." On the legal theory that a section of a law could be interpreted by a succeeding section, if the succeeding section were more explicit and illuminating in its verbiage, the Treasury Department issued Treasury Decision 2194, placing "alpha and beta eucaine or any of their salts or any synthetic substitute for them" under the provisions of the law. To this ruling, the Farbwerke-Hoechst Company, the manufacturers of novocain, a synthetic substitute for cocain, took exception and, by agreement, a test case was argued before the United States District Court of New York. It is reported that the court took the case from the jury and ordered a verdict for the Farbwerke-Hoechst Company, on the ground that the text of the law did not include synthetic substitutes except in Section IV, where it was without force as far as the general construction of the law is concerned. This ruling is an important one, and it is probable that the case will be taken to the higher courts.

1. Maynard: The Trypanosomes of Sleeping Sickness, 1915.

1. Motzfeld: The Pituitary Body and Renal Function, Boston Med. and Surg. Jour., 1916, clxxiv, 644.

Infant Mortality and Ignorance.—In those countries where the marriage document is signed with X, instead of a signature, there is the highest infant mortality. In these countries there is a large proportion of women who have never been educated, and who are consequently ignorant not only about general matters, but also about matters concerning the proper care of their infants.—Ashby, Infant Mortality.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Full Time Health Officer.—It has been decided that Talladega will have a full time health officer, to be selected by the Talladega County Medical Association, with a salary of \$3,000.

Mastin Jubilee.—The faculty and students of Spring Hill College, Mobile, paid tribute to Dr. William M. Mastin, Mobile, on the occasion of the silver jubilee of Dr. Mastin's connection with the college as health guardian of the faculty and students.

Personal.—Dr. Cecil D. Gaston has been appointed city health officer of Birmingham, succeeding Dr. Russell M. Cunningham, resigned.—Dr. Burdett L. Arms, Galveston, Texas, has succeeded Dr. Philip B. Moss as director of the State Laboratory and Pasteur Institute, Montgomery. The position has been temporarily filled by Passed Asst. Surg. Joseph R. Ridlon, U. S. P. H. S., pending the appointment of a successor to Dr. Moss.—Dr. Thomas F. Dryer, Huntsville, has been elected whole time health officer of Huntsville and Madison County.

Hospital News.—The section of St. Margaret's Hospital which has been used for negro patients will be much improved and will be converted into a section for the treatment of white patients, and an additional two story building, for the care of negro patients, is being erected at a cost of \$25,000.—Work is about to begin on a four story hospital at Gadsden to be known as the Gadsden Infirmary. The building is to be erected by Dr. James E. Leach, Gadsden, and will cost \$30,000.—The new hospital for negroes at Huntsville has been opened for the reception of patients.—Two hospitals are being built in Dothan at a cost of about \$25,000 each. One is being erected by Dr. Mercer S. Davie and the other by Dr. Earle F. Moody, both of Dothan.

DISTRICT OF COLUMBIA

Appointment to School Board.—The term of Dr. Creed W. Childs as member of the Board of Education of the District of Columbia having expired on the 30th of June, the Supreme Court of the District of Columbia, the appointing body, announced the appointment of Dr. J. Hayden Johnson (colored) to succeed Dr. Childs. The term of service is three years. Dr. Johnson was formerly president and is now chairman of the committee on public health of the medical society. He is also state vice president of the National Medical Society.

Physicians Ordered to Texas.—A large number of officers of the Medical Corps and of the Medical Reserve Corps have been ordered to proceed at once to Fort Sam Houston, Tex., and other points along the Mexican border for duty. In the list are First Lieuts. Clarence S. Ketcham, Charles W. Rilcy, Robert P. Williams, Roy K. Evans, Percy J. Carroll, Charles H. Hecker, John P. Beeson, Paul E. Bowers, Arthur W. C. Bergfeld, Bacil A. Warren, Clarence Gunter, John H. Beckert, J. G. Ellis, Jr., Thomas C. Savage, Ernest C. Dalton, Fred T. Koyle, Isaac W. Brewer, Lester L. Roos, Louis D. Mead, and Frank E. Winter.

Memorial Planned to Maj. Walter Reed.—A fitting memorial to Maj. Walter Reed of the army, the discoverer of the yellow fever mosquito and for years a resident of Washington, D. C., is planned for the campus of the University of Virginia, of which he was a graduate, according to an appeal sent out in the current alumni journal of that institution. Each nation, it is said, which has been directly benefited by Major Reed's work, would be glad to contribute a block of stone, from which the memorial would be built. Each block of stone could be carved with the name of the contributing nation. A number of suggestions as to the form the memorial should take have been advanced.

GEORGIA

Higher Entrance Standard.—A letter just received from the Atlanta Medical College states that, commencing Jan. 1, 1913, two years of college work will be required for admission to that institution.

Increased Entrance Requirement.—An official communication from the University of Georgia, Medical Department, states that two years of college work will be the entrance standard of that institution on and after Jan. 1, 1918.

Personal.—Dr. Lec Smith, Dublin, has been appointed a member of the staff of the Medical Department of the Southern Pacific Railway Company with headquarters at the Southern Pacific Hospital, San Francisco.—Dr. James J. Martin, Atlanta, has been appointed superintendent of the City Contagious Disease Hospital, Atlanta, succeeding Dr. Cornelius E. Ware, term expired.

ILLINOIS

Infantile Paralysis.—New cases of infantile paralysis have been reported in Christopher, Gibson City, Streator, Kankakee and near Oregon. It is said that there have been several cases of the disease recently at Decatur.

Personal.—Dr. Edward A. Morris, Springfield, has been commissioned first lieutenant, M. C., Ill. N. G., and assigned to duty with the Fourth Infantry.—Dr. Robert R. Smith, Mount Vernon, has been appointed superintendent of the Alton State Hospital.

Public Health and Welfare Association Organized.—At a meeting of the representatives of medical, health and social organizations and municipal health officers, held in Urbana, June 26, the organization of the Illinois Public Health and Welfare Association was perfected and Dr. John A. Robison, Chicago, was elected president.

Chicago

Return from War Zone.—Dr. George G. Davis has returned after a considerable period spent in English war hospitals, where he achieved the rank of lieutenant-colonel in the British army.—Dr. William Arthur Clark, director of the American Red Cross unit at LaPanne, Belgium, for several months, has returned to Chicago.

Personal.—Dr. Arthur Dean Bevan was given the honorary degree of Master of Arts by Yale University, June 21.—At the fifty-eighth annual commencement of Northwestern University, the honorary degree of Master of Science was conferred on Dr. Edmund J. Doering.—Dr. Ethan A. Gray has been appointed a member of the committee on business management of the Chicago Municipal Tuberculosis Sanatorium.

Infantile Paralysis.—An appropriation of \$5,000 has been made to aid in the prevention of infantile paralysis. This fund will be used for the salaries of field physicians who are meeting incoming trains from New York and examining all children on board. There is believed to be little danger of an epidemic in Chicago, but all precautions are being taken.—The death believed to have been from infantile paralysis is reported by the health department to have been due to another cause.

Institute of Medicine Secures Home.—Mrs. F. S. Coolidge has donated to the Institute of Medicine of Chicago the house 2636 Prairie Avenue, in memory of her husband, Dr. F. S. Coolidge. This gift gives to the institute a permanent home which will enable it to begin the formation in Chicago of a strong medical institution, analogous to the College of Physicians in Philadelphia, the Academy of Medicine in New York, and other similar institutions. Physicians, medical teachers and investigators who have common professional and scientific interests and ideals will meet here, and thereby the progress of medicine in this center will be advanced. It is further anticipated that this house will not only be used for scientific meetings, but will also offer facilities for the adequate preservation of books and other objects of medical, historical and scientific interest.

Base Hospital Personnel.—The personnel of the Chicago Base Hospital Unit No. 1 was announced, July 10. It will be under the direction of Dr. Frederic A. Besley. The surgical division will consist of Drs. Joseph F. Jaros, Thomas J. O'Malley, V. David Greer, Oak Park, Payson L. Nussbaum, Walter L. Stranberg, Joseph J. Lebowitz, Hammond, Ind., A. M. Krost, Hyrum Y. Richards, and Burt H. Hardinger Gays. The medical division will consist of Drs. Milton Mandel, assistant director; Martin R. Chase, Leo G. Dwan, Hugo W. Traub, David E. Markson, Frank Whitmore and William P. Honan. The personnel of the laboratory division is as follows: Drs. Alexander A. Day, assistant director; James P. Simonds, pathologist; M. L. Blumenthal, P.Ph., roentgenologist, and George E. Meyer, D.D.S., and Charles W. Freeman, D.D.S., are the oral surgeons of the unit.

KENTUCKY

Tuberculosis Work.—A meeting of the State Tuberculosis Commission was held in Louisville, June 30, to close accounts for the fiscal year. The commission adjourned to meet July 6.—May 31, Dr. Dunning S. Wilson, Louisville, was appointed a member of the Kentucky Tuberculosis Commission, to succeed Dr. Everett Morris, LaGrange, term expired.

Personal.—Dr. Hubbard T. Buckner, Covington, is now assistant surgeon at the American Ambulance, Neuilly, near Paris.—Dr. J. H. Ammonds has been appointed a member of the state extension board.—Dr. Isaac H. Browne, Winchester, has been elected vice president of the Clark County Health and Welfare League; Dr. Harvey R. Henry, chairman of the committee on care and suppression of tuberculosis; Dr. George F. Doyle, committee on inspection of schools, and Dr. Isaac A. Shirley, committee on malnutrition and maintenance of medical clinic for the poor.—Dr. Lillian H. South, Bowling Green, state bacteriologist of Kentucky, delivered an address before the Butler County (Ohio) Medical Society at Hamilton on "Hookworm Disease and Pellagra."

LOUISIANA

Chiropractic Bill Defeated.—The bill asking for a state board of chiropractic, recently submitted to the Louisiana legislature, has been reported unfavorably by unanimous vote of the Committee on Health and Quarantine, to which it had been referred. This vote was taken after the committee had heard a chiropractor claim that goiter, tuberculosis, diphtheria, pneumonia and like diseases could be easily cured by the chiropractic method of manipulation of the spinal column.

Lack of Funds Imperils State Board.—The action of the appropriations committee of the house in cutting out the annual appropriation of \$50,000 for the state health department leaves the board facing a practical abolition of the department. The board appointed Drs. Theophilus T. Tarlton, Grand Coteau, and William M. Perkins, New Orleans, to go before the Senate Appropriations Committee and ask that this important matter be considered. The operating fund of the board has, it is said, been exhausted and while there is remaining \$20,000, this sum has been appropriated for the establishment of a state tuberculosis sanatorium.

Hospital News.—The cornerstone of the Corinne Casanas building of the Presbyterian Hospital, New Orleans, was recently laid with appropriate ceremonies. The building is to be used as a free clinic for the poor and, when completed and furnished, will represent an expenditure of \$40,000, the amount of the bequest left by Miss Casanas. The building will be fireproof, and will face Girod Street adjoining the main building. The lower floor will be used as a clinic and the upper floor for the dormitory for nurses.—The annual report of the New Orleans Eye, Ear, Nose and Throat Hospital was devoted in a great measure to a report of the fight against diphtheria which the hospital has been waging for several years. During the last year 4,759,000 units of diphtheria antitoxin were dispensed, and the mortality of diphtheria has been reduced to about 1.5 per cent. During the year 7,698 cases were treated, 47,943 consultations were given, and 2,158 of the patients came from other parishes.

MAINE

Personal.—Dr. Thomas Tetreau has been appointed health officer of Portland.—Dr. John A. Donovan, Lewiston, for fifteen years surgeon in chief of the Central Maine General Hospital, celebrated the fiftieth anniversary of his entrance into the practice of medicine, April 30.—Dr. James P. Russell, South Brewer, has been elected president, and Dr. Calvin P. Thomas, Brewer, a director of the Bangor Anti-tuberculosis Society.

MARYLAND

Infantile Paralysis in Baltimore.—The first case of infantile paralysis in Baltimore occurred on July 7 and the patient was immediately quarantined. Two cases have occurred during the past week in Anne Arundel County, one of the patients dying later at the University Hospital. The health officers are using every precaution to prevent an epidemic.

Personal.—Drs. Nathan Winslow, Edgar B. Friedenwald and Duncan MacCalman, all of Baltimore, have been ordered to Fort Sam Houston, Texas, for duty with the Medical

Reserve Corps.—Dr. Robert W. Johnson, who is first lieutenant, Medical Corps, assigned Fourth Maryland Regiment, has left for Eagle Pass with his regiment.—Dr. D. Tanquam of Java has arrived in Baltimore to undergo radium treatment at Dr. Howard A. Kelly's Sanatorium.—Dr. Harry Friedenwald, Baltimore, was elected president of the Federation of American Zionists at its annual session in Philadelphia, July 5.

Rockefeller Foundation Explains Purposes of Hygiene Institute.—An official bulletin just issued by the Rockefeller Foundation is the first public statement of the principles and purposes of the School of Hygiene and Public Health to be established as an integral part of Johns Hopkins University. The school will be opened in October, 1917, as it is estimated that a year will be required for the construction and equipment of the institute and the gathering together of the staff of teachers. The school is established in recognition of the urgent need in this country of improved opportunities for training in preventive medicine and public health work, as the facilities for those desiring to devote themselves to preventive medicine and the promotion of public health are as yet inadequate.

MASSACHUSETTS

Floating Hospital Begins Work.—The Boston Floating Hospital made its initial trip for the season, June 28. The ship sailed at 9 o'clock, returning to its dock at 4:30 in the afternoon. G. Loring Briggs is manager of the institution, and is assisted by a staff of physicians and seventy nurses.

Psychopathic Conference.—The fourth annual conference on the medical and social work of the Boston Psychopathic Hospital was held, June 10, under the auspices of the Boston State Hospital. The entire institution was open to public inspection, and at the conference Mr. Henry Lefavour, chairman of the board of trustees, presided. Addresses were made by Dr. Elmer E. Southard of Harvard Medical School; Dr. Herman M. Adler, chief of the staff of the hospital; Dr. Elisha H. Cohoon, administrator of the institution; Dr. Harry C. Solomon, special investigator for the State Board of Insanity; Mr. R. M. Yerkes, psychologist for the hospital, and Dr. Thomas W. Salmon, New York, medical director of the National Committee for Mental Hygiene.

Personal.—Dr. Frank S. Atwood, Salem, has been reappointed as medical examiner of Essex County.—Dr. Frank J. Wheatley, North Abington, has been appointed, by the governor, chairman of a commission to investigate the use of habit-forming drugs.—Prof. Selskar M. Gunn, director of the division of hygiene of the state department of health, resigned, June 23, to take effect August 31. Dr. Lyman A. Jones, Swampscott, will succeed Professor Gunn.—Dr. J. Erle Forrest, Franklin, who has been in the employ of the Serbian government for several months, has returned after an interesting trip through Bulgaria, Roumania, Russia, Scandinavia and England.—Drs. Elliott P. Joslin, Francis M. Rackemann, William W. Howell and Charles D. Easton, Newport, have been elected councilors of the Harvard Medical Alumni Association.

MICHIGAN

Personal.—Dr. Charles A. Lenhard, Detroit, has been reappointed surgeon-general of the International Order of Knights of St. John.—Dr. D. Emmett Welsh has been appointed a member of the Grand Rapids Board of Health.—Dr. William A. Wilson, Detroit, has been appointed field superintendent of the Michigan Child Welfare Congress.—W. S. Kellogg, Lapeer, has been appointed assistant secretary of the state board of health.—Dr. Victor C. Vaughan, Ann Arbor, delivered the principal address before the Montana Health Officers' Association at Miles City, July 10.

Tuberculosis Survey of Houghton County.—The state health experts in charge of the health survey in Houghton County held free examinations in Houghton, June 27 and 28, in the court house; in Hancock, June 29 and 30, in Germania Hall; in Calumet, July 5 and 6, in the city hall; in Laurium, July 6 and 7, in the city hall, and one day clinics in Mohawk, July 3, at St. George's Hall, and at Lake Linden, June 27, at McKinley School.—A special meeting of the Houghton County Medical Society was held at Houghton at the Red Jacket town hall, June 28, at which Dr. Edwin R. Van der Slice, Mason, spoke on "The Early Diagnosis of Pulmonary Tuberculosis," and Dr. William DeKleine, Lansing, director of the tuberculosis survey, spoke on "The Scope of the Tuberculosis Survey."—A tuberculosis survey will start in Sault Ste. Marie, September 25.

MINNESOTA

Southern Minnesota Physicians to Meet.—The midsummer meeting of the Southern Minnesota Medical Association will be held at Rochester, August 1 and 2, under the presidency of Dr. E. Starr Judd, Rochester. The program includes, in addition to the papers to be presented, surgical clinics at St. Mary's Hospital and the Mayo Clinic building, and demonstrations in the laboratories of the latter.

Extermination of Mosquitoes.—Prof. C. W. Howard of the state farm is in charge of sixteen University of Minnesota students who, under his direction, are endeavoring to exterminate mosquitoes in a section of Minneapolis covering 8 square miles. The work includes the covering, screening and destroying of tin cans, rain barrels and other water containers and the oiling of stagnant pools and swamps.

Personal.—Dr. Charles H. Mayo, Rochester, was the guest of honor at a banquet, June 22, given by the citizens of Rochester in recognition of Dr. Mayo's election as president of the American Medical Association. A silver loving cup was presented to Dr. Mayo.—Dr. Mayo was also the guest of honor of the Knox County Medical Society at Mount Vernon, Ohio, June 19, and on the same day he was given an honorary degree by Kenyon College.—Dr. Oliver S. Olson, for four years surgeon in charge of the infirmary of the Duluth Steel Plant, has resigned and will devote himself to private practice.—Dr. Gilbert J. Thomas, for seven years a member of the Mayo staff at Rochester, has moved to Minneapolis.—Dr. Orville C. Trace, Little Falls, is reported to be seriously ill as the result of a cerebral hemorrhage.

MISSISSIPPI

Health Survey of Columbus.—Surg. Rudolph H. von Ezdorf, U. S. P. H. S., and Sanitary Engineer J. A. A. LePrince have recently completed a health survey of Columbus. They submitted to the mayor and city council a report of their work, together with a map showing infected places and breeding points and recommendations regarding the betterment of conditions as regards malaria.

Tuberculosis News.—Dr. Walter H. Rowan, formerly state sanitary inspector, has been elected superintendent of the Mississippi Tuberculosis Sanatorium, which is to be established under authority of the last legislature. The legislature appropriated \$25,000 for building the institution, and a cash donation of a similar amount and a site of 270 acres has been made by a citizen of Hattiesburg.—The Lauderdale County Tuberculosis Hospital has been transferred to the Earnest Workers Circle of King's Daughters, Meridian.

MISSOURI

Personal.—Dr. Ralph McReynolds, Knox City, has returned after several months' Red Cross service in Belgium.—Dr. John L. Cox has been appointed police surgeon of St. Joseph, succeeding Dr. Frank G. Beard, city physician and police surgeon, who has been appointed health officer of the city.—Dr. George L. McCutchan, physician at the State Penitentiary, Jefferson City, has resigned and has been succeeded by Dr. William A. Clark, Jefferson City.—Dr. Thomas F. Miller, head physician in the Kansas City General Hospital, has been appointed assistant superintendent of the institution.—Dr. Oscar L. Peak, Springfield, was elected national medical director of the Knights and Ladies of Security at the annual meeting of the national council of that order in Toledo, June 16.

St. Louis

Free Attendance on Soldiers' Families.—Members of the St. Louis Medical Society and the staffs of eight hospitals have agreed to render medical and hospital service without compensation to the families of militiamen who have gone to the front. A temporary relief committee of the society has opened an office at Room 316, Security Building, Broadway and Olive streets.

NEW YORK

State to Fight Poliomyelitis Epidemic.—Dr. Hermann M. Biggs, state commissioner of health, has instructed the health officer of Orange, Rockland, Putnam, Westchester, Nassau and Suffolk counties to report by telegraph every suspected case of infantile paralysis and to enforce the strictest quarantine of the patient. A personal letter with reference to the control of the epidemic is to be sent to every physician in the state. July 5, responding to calls for assistance in identifying and controlling cases of infantile paralysis reported from the Hudson River counties, State Commis-

sioner of Health Biggs detailed Dr. William B. May to visit Hudson, Beacon and Kingston.—Several suspected cases on Long Island are under inspection by Dr. Frank Overton, Patchogue, of the department staff.—At Freeport, Long Island, the local health officer is carrying on an extensive campaign of publicity.

New York City

Health Board Secretary Retires.—Eugene W. Scheffer, secretary of the New York Department of Health, has been retired on a pension after twenty-one years of service.

Floating Hospital Begins Work.—The *Helen C. Juilliard*, the new floating hospital, made its first trip, July 5. Trips to Seaside Hospital are made daily. The services of this boat are free and no sick child and its mother are denied admission, except in case of contagious disease.

Vaccines Sent to Border.—The bacteriologists of the department of health are busy filling orders for vaccines for the troops on the Mexican border. In addition to typhoid and smallpox vaccines and diphtheria antitoxin, glanders vaccine for testing horses is being sent in large quantities. Thromboplastin is also being manufactured in large quantities for use in checking hemorrhage. One hundred and fifty-one cubic centimeters of eye mallein have been sent to the Second Field Artillery at Van Cortland Park for use on new horses brought from the West.

Faculty Appointments.—The following appointments have been made to the medical faculty of New York University: clinical professors of surgery, Drs. Joseph B. Bissell, Thomas A. Smith, Walter C. Cramp and Arthur M. Wright; professor of clinical surgery, Dr. William C. Lusk; chief of clinic, department of surgery, college dispensary and instructor in surgery, Dr. W. Howard Barber; instructor in surgery, Dr. George Francis Cahill; clinical professor of medicine, Dr. Theodore J. Abbott; instructor in medicine, Dr. Hubert V. Guile; clinical professor of cancer research, Dr. Benjamin M. Levine; assistant professor of bacteriology and hygiene, Dr. Charles Krumiede, and instructor in bacteriology, Miss Mary Smeeton.

The American Posture League.—This organization held a joint meeting with the American School Hygiene Association in the auditorium of the Horace Mann School, Teachers' College, July 5. The program included the following papers:

"The Relation of Posture to Health," Dr. Eliza M. Mosher, Brooklyn; "Good Posture as a Condition of Efficient Brain Activity," William H. Burnham, Ph.D., professor of pedagogy and school hygiene, Clark University; "The Work of the American Posture League on School Furniture," Dr. Henry Ling Taylor, New York; "Eye Strain and Posture," Dr. Ellice M. Alger, New York; "The Relation of Clothing to Posture," Dr. Linnaeus E. La Fetra, New York; "An X-Ray Study of the Effects of Exercise, Posture, and Dress on the Position of Internal Organs," Dr. Nathalie K. Mankell, Buffalo; "The Importance of Intensive Work on School Hygiene," Lewis M. Terman, Ph.D., professor of education, Leland Stanford Junior University. Miss Jessie H. Bancroft, assistant director of physical training in the public schools of New York, demonstrated class-room methods for training correct posture.

Personal.—Dr. Thomas Darlington has been sent to the Mexican border under the auspices of the National Civic Federation to study the health of the enlisted men of the army and of the organized militia.—Dr. Arthur Zentler has been appointed visiting dental surgeon to the Lebanon Hospital.—Dr. Abraham Strachstein has been appointed chief of clinic and clinical instructor to the department of urology of Cornell University Medical College.—Dr. Rosalie Slaughter Morton sailed for Liverpool, July 8.—Dr. Charles S. Benedict sailed for San Juan on the Porto Rico liner *Brasos*, July 8.—Drs. Harry Plotz and George Baehr arrived home, July 7, after a time spent in Serbia, Bulgaria and Austria, during which they have been making further researches in typhus fever.—Dr. Henry T. Coggeshall has sailed for Bordeaux on the French liner *Rochambeau*.

The Poliomyelitis Epidemic.—The epidemic of infantile paralysis continues apparently unabated. For the week ending July 8, 892 cases have been reported, with 205 deaths. Thus far the death rate has ranged from 20 to 25 per cent., which is four times as great as it was in the epidemic of 1907. Nearly all the fatalities have occurred in children under 10 years of age, and the largest proportion occurs between the ages of 1 and 3 years. A daily list of patients with their addresses is published daily in the newspapers and parents are urged to read the list and to keep their children from the infected localities. At the request of the health commissioner the department of licenses has notified all moving picture theaters in the city not to admit children under 6 years of age until such a time as the board of health declares this health menace at an end. The department of health will not interfere with the regular summer school

classes or with the work of the fresh air funds, or with daily health excursions, such as are conducted by St. John's Guild where there is proper medical and nursing supervision. All promiscuous gatherings of children which do not include proper medical precautions are disapproved of. Sunday schools are expected to provide all the health safeguards that are exacted of all the secular schools. At a conference of health officials, held July 6, it was announced that Secretary McAdoo had offered the services of the United States Public Health Service to the city to help stamp out the epidemic. The offer was accepted and it was requested that the U. S. Public Health Service should take up specially the very difficult "carrier" problem and should make both field epidemiologic studies and laboratory studies with animal inoculations. A letter will be sent to all large hospitals having well equipped pathologic departments asking them to send material from fatal cases to the department for examination and research study. With the increase in the number of cases on Staten Island, it has been thought feasible to request the U. S. Public Health Service to perform the routine laboratory diagnostic work for the Staten Island cases at its laboratory at the quarantine station. There is a need for additional nurses at both the Kingston Avenue Hospital, Brooklyn, and the Willard Parker Hospital. July 6, there were 280 cases at the Kingston Avenue Hospital, and seventy-two at Willard Parker. The National Red Cross Society is cooperating with the health department and will provide additional nursing service.—Telegrams from New York, July 11, announce 195 new cases of infantile paralysis in the previous twenty-four hours, with 32 deaths, an increase of nearly 100 per cent. of new cases over the record of the preceding day, and a still larger proportion of deaths. Reports from the boroughs show that in Brooklyn there were 155 new cases with 20 deaths; in Manhattan 14 cases with 6 deaths; in Richmond 6 cases with no deaths; in the Bronx 7 cases with 3 deaths and in Queens 13 cases with 3 deaths. Thus it will be seen that east of the East River 168 of the 195 new cases occurred and 23 out of the 32 deaths. At present the total number of known cases is 1,278.—Secretary of the Treasury McAdoo, on July 11, asked for an appropriation of \$135,000 to be used in the prevention of an interstate spread of infantile paralysis, from New York, and for the comprehensive research work to determine the cause and nature of the disease and the remedy for it. Of this amount \$85,000 will be expended to prevent an interstate spread of the disease and \$50,000 for research work.—President Wilson, on July 11, signed the joint resolution of Congress authorizing the use of the government hospitals on Ellis Island for the treatment of anterior poliomyelitis.

NORTH DAKOTA

Personal.—Dr. Robert C. Reimche has been appointed local surgeon for the Minneapolis, St. Paul and Sault Ste. Marie Railroad at Harvey.—Dr. Herbert J. James, Bathgate, is reported to be seriously ill in the Peter Bent Brigham Hospital, Boston.

Hospital News.—Bids were opened, June 14, for an addition to the Bismarck Hospital to cost about \$50,000. This will provide quarters for nurses and sufficient accommodation for patients to increase the capacity of the institution one third.—An eight day campaign was inaugurated last month to raise \$100,000 to apply on the building fund of the addition to St. John's Hospital, Fargo.—Improvements have been decided on for St. Luke's Hospital, Fargo, to cost \$40,000. The new building will be a four story addition to the hospital which will house an obstetric department. The new unit will be ready for occupancy about January 1.—Nearly \$11,000 has already been subscribed for a hospital at McVie, and the institution has been incorporated under the name of Community Hospital. The institution will be under the care of Drs. Arne O. Arneson and Andrew J. Paulson.

PENNSYLVANIA

Personal.—Dr. William S. O'Neill Sherman, Pittsburgh, sailed from New York, July 8, for Liverpool, to represent the United States Steel Corporation in the research work to be prosecuted by the Rockefeller Institute in the base and field hospitals of the allies.—Dr. William M. Hall, Conshohocken, who has been under treatment at the University Hospital, Philadelphia, is reported to be critically ill.—Dr. Eilcen J. Giles, Reading, has been appointed head physician of the Altapass Hospital, North Carolina.

Philadelphia

Personal.—Dr. Henry L. Picard, who has for twenty years been a visiting physician to the Wills Eye Hospital, has resigned.—Drs. Alfred C. Wood, John G. Leitch and John A. Murphy, members of the Medical Reserve Corps of the United States Army, have been ordered to the Texas border.

Medico-Chirurgical College Passes Into History.—After thirty-six years as an undergraduate school of medicine, the Medico-Chirurgical College closed its doors, June 30. The college buildings have been closed, except the office of the dean. The final papers in the merger with the University of Pennsylvania have been signed.

Ice Cream Fund for Hospital.—Dr. Wilmer Krusen of the department of health and charities has asked citizens to contribute to a fund to provide ice cream for patients in the tuberculosis wards of the Philadelphia General Hospital. This would cost about \$300 to feed them during the months of July and August, twice a week. The city cannot provide this money, so Dr. Krusen has called on the people to raise a fund.

Negro Physicians Meet.—The Interstate Association of Colored Physicians, Dentists and Druggists was held in this city, July 13-15. Five hundred delegates from New York, Pennsylvania, New Jersey, Delaware, Maryland, Massachusetts and the District of Columbia were present. The meeting was held in the Philadelphia Academy of Medicine. Dr. Nathan F. Mossell of this city is present. The committee who had charge of the arrangements were Drs. George L. Carson, Benjamin Withers and Charles A. Lewis, Philadelphia.

TEXAS

Pellagra Commission.—The first meeting of the Commission for the Study of Pellagra appointed by the chairman of the Doctors' Luncheon Club, Fort Worth, was held, June 12, under the chairmanship of Dr. Wilmer L. Allison, Fort Worth.

Personal.—Dr. Oliver H. Radkey, Edna, for several years health officer of Jackson County, has resigned and Dr. Garrett Hogg has been appointed his successor.—Dr. Walter H. Moursund, Dallas, has been appointed pathologist of the city board of health.

Health Survey.—The commissioners of Harris County, June 26, made an appropriation of \$2,400 for a complete health survey of the county. The Rockefeller Commission has appropriated a similar sum and the work will begin during the latter part of August.—Dr. Platt W. Covington, Austin, will be in charge of the work, which will include the inspection of homes; the delivery of popular lectures on germ diseases, especially hookworm and malaria; the inspection of sanitary conditions; and advice to the people of the county regarding health conservation.

UTAH

State Public Health Association Organized.—The Utah Public Health Association was recently organized at Salt Lake City with all lay officers, with the exception of Dr. Horace G. Merrill, Provo, assistant secretary-treasurer. The directorate includes a number of physicians of Salt Lake City and other parts of Utah.

Personal.—Dr. Samuel G. Paul, Salt Lake City, has been appointed assistant physician of Salt Lake County.—Dr. Ezekiel R. Dumke, Ogden, has been appointed local surgeon of the Ogden, Logan and Idaho Railway at Ogden, succeeding the late Dr. Charles F. Osgood.—Dr. Daniel H. Calder, for eleven years superintendent of the State Mental Hospital, Provo, resigned, taking effect May 20.

VIRGINIA

License Fee for Physicians Raised.—The council of the city of Suffolk, June 15, passed the license tax ordinance which changes the annual license fee of attorneys at law, physicians and dentists from \$20 to \$25.

Contagious Hospital Donated.—Mr. James H. Dooley, Richmond, has agreed to contribute \$40,000 to pay the entire cost of the erection and equipment of a contagious hospital, to be connected with the Memorial Hospital.

Health Survey of Fauquier County.—The Board of Supervisors of Fauquier County have voted \$300 to assist in the expenses of a health campaign in the county. The state board of health has contributed \$900 for this purpose and will assign officials who will go through the county giving instructions in health and sanitation.

Soldiers' Families to Have Free Medical Care.—At a meeting of the Augusta County Post-Graduate Medical School, held at Staunton, June 21, a resolution was adopted tendering the gratuitous services of the Augusta County Medical Society to the dependent families of enlisted men serving in the National Guard from Augusta County and the city of Staunton when so requested by a family or any member thereof.

Personal.—Dr. Robert V. Palmer, Cherrydale, has been appointed full time health officer of Alexandria County. Drs. Richard N. Sutton, Clarendon, and Robert M. Slaughter, Seminary Hill, were also made members of the health board of the county.—Dr. Albert P. Traynham, Richmond, assistant bacteriologist of the state board of health, has been transferred from the laboratory of the board and directed to complete an inspection of summer resorts and summer resort cities.

Loving Cup to Health Board.—The members of the board of health of Richmond, which went out of existence July 1, were given a silver loving cup by the officers and men of the department, June 26. Chief Health Officer Ernest C. Levy made the presentation speech and Dr. William T. Oppenheimer was made the custodian of the cup, which bore the following inscription: "To the board of health of the city of Richmond, retiring after ten years of faithful service, from those best able to value that service, the men in the department." On the reverse side of the cup were inscribed the names of the members of the board.

New Appointees on State Board.—Governor Stuart, June 1, in compliance with an amendment passed at the last session of the legislature, which provided for two additional members of the state board of health, named Capt. W. W. Baker, Chesterfield County, and Guy R. Harrison, D.D.S., Richmond, to serve for a term of four years on the board. Under the old statute, twelve physicians selected from the membership of the Medical Society of Virginia, one from each congressional district in the state, and two from the city of Richmond, constituted the state board of health. Senator West's amendment provided for the addition of two members, one a member of the State Dental Association and the other a layman.

WISCONSIN

Personal.—Dr. William W. Gregory was elected president of the newly organized board of health of Stevens Point, and Dr. C. Von Neupert, Sr., was reelected health officer.

Health Officers to Meet.—Health officers of Wisconsin and many physicians and laymen from outside the state will attend the third biennial conference of health officers in the state capitol, Madison, August 2 and 3. The program includes a wide range of topics relative to public health administration and questions of sanitation and hygiene.

CANADA

Restriction on United States Graduates Removed.—At its recent meeting the council of the College of Physicians and Surgeons of Ontario eliminated from its regulations the requirement that graduates of recognized medical colleges of this country must have attended "one or more full winter courses of lectures in one of the regular medical schools in Ontario" before being eligible to take the examination for a license to practice in that province. It is reported that a standing committee, consisting of the education committee and representatives of the College of Physicians and Surgeons of Ontario will select a list of "recognized" colleges.

Personal.—Capt. Jay Boyd, A. M. C., Capt. Gordon S. Foulds, and Capt. Walter J. Kirby compose the Niagara Camp Medical Board this year.—Lieut.-Col. Herbert J. Hamilton and Maj. Charles J. Currie, Toronto, are to compose the medical board in connection with the Toronto School for Instruction.—Capt. Charles E. Treble, Toronto, has been appointed to the hospital at Exhibition Camp, Toronto.—Dr. William Oldright has returned from Chicago to his home in Toronto.—George S. Gordon, Vancouver, B. C., has left for medical service abroad and will not return until after the war.—Col. John Taylor Fotheringham, Toronto, has been made a Companion of the Order of St. Michael and St. George.—Dr. Harold Y. McNaught, San Francisco, has been visiting his father in Toronto.

Hospital News.—Announcement is made of the creation of the Canadian Hospitals Commission as a branch of the Canadian Expeditionary Forces with more strict jurisdiction in connection with convalescent homes and military hospitals. Under this commission a new hospital unit has been

organized for the purpose of securing military discipline, administration and command. It will be divided into ten divisions, one for each military division in Canada. Each hospital or convalescent home will be in charge of a major and a subordinate officer subject to the Hospitals Commission in Ottawa. The new unit will be in charge of Lieutenant-Colonel Sharples, Quebec.—A new hospital in Port Hope, Ont., was opened, June 29. It was made possible by the bequest of Mr. John Helm.—Six wings of the Canadian Hospital at Bushey Park, England, have been completely furnished by the Canadian Red Cross. Each wing will bear the name of one of the king's children.

Ontario Medical Council.—The annual meeting of the Ontario Medical Council was held in Toronto the last week of June. Dr. Edmund E. King, Toronto, was elected president and Dr. H. Wilberforce Aikins, Toronto, was reelected registrar-treasurer. One of the outstanding features of the meeting having to do with medicine generally was the adoption of a resolution, proposed by Dr. Herbert J. Hamilton, Toronto, that the members of the Medical Council of Ontario desired to place on record their appreciation of the discovery of serum therapy by Dr. (now Sir) James A. Grant in the County of Carleton General Hospital, Ottawa, in 1861, and the credit only recently announced (*Lancet*, London, May 20). "We are really proud of the honor and glory achieved by our sons in the battlefield for king and country; and to gain the highest position in the world in medical science is a record alike creditable to Canada and our institutions of learning."

Clause 51 of the Ontario Temperance Act was fully discussed, the president claiming that it placed the medical profession in the province in the class of bartenders, as a physician could dispense either an ounce of whisky or a dozen of ale. The council decided to call the attention of the profession to this clause and the necessity of adhering to it with decorum and dignity. The fact that fifth-year medical men are engaged by contracting physicians and farmed out to the lumber camps in northern Ontario came in for extended discussion, and it was decided to refer the whole matter to the commissioner now inquiring into medical law and education in the province. The report submitted by Dr. Arthur Jukes Johnson, Toronto, stating that there is no immediate reason why midwives in Ontario should be licensed was adopted.

GENERAL

New Proctologic Officers.—At the annual meeting of the American Proctologic Society, held in Detroit, June 12, under the presidency of Dr. T. Chittenden Hill, Boston, the following officers were elected: president, Dr. Alfred J. Zobel, San Francisco; vice president, Dr. Granville S. Hanes, Louisville, Ky, and secretary-treasurer, Dr. Collier F. Martin, Philadelphia.

Bequests and Donations.—The following bequests and donations have recently been announced:

Yale University School of Medicine, New Haven, Conn., \$14,845, by the will of Norman B. Bayley.

For the equipment of a 500-bed base hospital to be used in the event of war with Mexico, a donation of \$50,000, to be placed at the disposal of Dr. Samuel Lloyd, New York, by Edward B. Close.

Columbia University, and Mt. Sinai Hospital, New York, each \$20,000; Presbyterian Hospital, New York, \$12,500; Stony Wold and Loomis sanatoriums, and New York Skin and Cancer Hospital, each \$10,000; St. Luke's Hospital and Montefiore Home and Hospital, New York, each \$5,000, and German Hospital and Dispensary, \$2,500, by the will of Emile C. Bondy.

Mayo Clinic Alumni Meet.—The first annual meeting of the Association of Resident and Ex-Resident Physicians of the Mayo Clinic was held in Rochester, Minn., June 9 and 10. A surgical clinic was given at the hospital, and in the evening papers were read. At the banquet the following officers were elected: president, Dr. Harold L. Foss, Danville, Pa.; vice president, Dr. Donald C. Balfour, Rochester, Minn.; secretary, Dr. William C. Carroll, St. Paul; treasurer, Dr. Arthur H. Sanford, Rochester, Minn., and governors, Drs. Edward S. Judd and William F. Braasch, Rochester, Minn., and Otis F. Lamson, Seattle.

Men Wanted for Public Health Service.—Additional medical men to examine refugees from Mexico and to care for Mexican prisoners in event of hostilities are being sought by the United States Public Health Service. Examinations for physicians and surgeons will be held in the principal cities of the country probably early this month, it is announced.

Typhus fever, smallpox, and yellow fever are to be guarded against particularly, and it is feared these diseases may be carried either by refugees who will be landed at American

ports or by Mexicans who may be brought across the border.

Fellowships in District Work.—The Harvard Medical School is reported to have established four fellowships in medicine, to be known as the Boston Dispensary Fellowships. Applicants must have graduated from a medical school of good standing and must have had a hospital internship or its equivalent. Appointments will be made jointly by the authorities of the Harvard Medical and of the Boston Dispensary. Application can be made to either of these bodies. The fellows will be expected to give a portion of their time to treating the sick in their homes in the district service of the Boston Dispensary, and a portion of their time to such study, teaching, laboratory, research or clinical work as may be assigned by the medical school. The stipend of a fellowship will be \$500 for part time, or \$750 for the physician's entire time. A physician desiring to pursue postgraduate study of a course in public health work might be enabled through such a fellowship to complete a course in one or two years while receiving at the same time valuable experience.

Confederate Surgeons Meet.—The nineteenth annual meeting of the Association of Medical Officers of the Army and Navy of the Confederacy was held in Birmingham, Ala., May 16. The old constitution was repealed and a new constitution adopted. The objects of the association were stated to be: to collect all data possible relating to the medical department of the army and navy of the Confederate states; to ascertain the military record of all officers and prepare a roster of same; to honor the memory of its deceased members, and otherwise to perpetuate the history of the medical department of the army and navy of the Confederate states. It was reported by the committee on roster that during the Civil War there were nominated by President Davis, and confirmed by the senate, one surgeon-general with rank of brigadier general of cavalry; 1,242 surgeons with rank of major of cavalry, and 1,994 assistant surgeons with rank of captain of cavalry, a total of 3,237 medical officers in the Confederate Army. The medical department of the Confederate Navy consisted of twenty-six surgeons, thirteen passed assistant surgeons, sixty-three assistant surgeons, and five assistant surgeons of war, a total of 107. The following officers were elected: president, Dr. Carroll Kendrick, Kendrick, Miss.; vice presidents, Drs. James C. Loggins, Ennis, Texas, and Edward H. Sholl, Birmingham, Ala., and secretary-treasurer, Dr. Samuel E. Lewis, Washington, D. C. The next meeting of the association will be held in Washington, D. C.

FOREIGN

Deaths in the Profession Abroad.—O. von Herff, professor of obstetrics and gynecology at the University of Basel, succumbed to sepsis from an operative infection, aged 60. He was born in Mexico of German parents and studied medicine first at Mexico City, concluding his course in Germany and serving as assistant at Giessen, Darmstadt and Halle before being called to the chair of obstetrics and gynecology at Basel in 1901. He was on the editorial staff of several specialist journals and published a number of articles on eclampsia and other questions of the day. He introduced the acetone-alcohol method of sterilizing the hands.—H. de Toledo Dodsworth, professor of physical measures in therapeutics at the University of Rio de Janeiro, aged 51. He was a member of the editorial staff of the *Brazil Medico*, was instrumental in the introduction of vaccination into Brazil, and took an active part in the stamping out of bubonic plague, and published numbers of articles on electrology, Roentgen diagnosis and other forms of physiotherapy.

WAR NOTES

Doctors Wanted for London Military Hospitals.—Dr. Joseph A. Capps, Chicago, reports that a cablegram from Sir William Osler states that first class physicians and surgeons are wanted at once for six months' service in London military hospitals. Liberal terms are offered. For further information communicate with any of the following committee: Drs. Richard C. Cabot, 1 Marlboro Street, and Henry A. Christian, C. Frothingham, Jr., and Francis W. Peabody, Peter Bent Brigham Hospital, Boston; Drs. Warfield T. Longcope, George E. Brewer and Karl Vogel, Presbyterian Hospital, New York; Drs. Wm. S. Thayer, 406 Cathedral Street, Joseph C. Bloodgood, John Hopkins Hospital, and Thos. R. Boggs, 21 West Chase Street, Baltimore, and Drs. Dean D. Lewis, Presbyterian Hospital, Arthur A. Small, 32 North State Street, and Joseph A. Capps, 122 South Michigan Boulevard, Chicago.

WORK AT A BASE HOSPITAL IN FRANCE

To the Editor:—After nearly two years of concentrated and unprecedented warfare, the service of the medical corps of European armies has become crystallized into a high degree of efficiency. Your readers may be interested in base hospital work of a general character with its smooth organization and trained corps, and no better example can be offered than the work and results of the Chicago Unit, British Expeditionary Force, France. When one speaks of a base hospital, it must be understood that distances within the "zone of the armies" in France are not great, the transportation is rapid and excellent in the special Red Cross trains brought over from England, and the methods of handling the wounded from casualty clearing stations to hospital beds has become finely systemized. On certain occasions the base hospital in France may find an enormous number of freshly wounded poured into its service, and then it becomes in reality a clearing hospital, accepting and dressing all patients, operating on as many as possible of the seriously injured, and turning them out in a few hours to hospital ships for transportation across the channel.

Such periods of stress call for the utmost effort on the part of all connected with the hospital; there is no cessation of work, and efficiency is gaged by the rapidity of the in and out flow of carefully but quickly treated wounded. To meet these demands there must be a careful system of distribution of cases, and large amounts of supplies, and the essential records must be made to aid the medical officers at the place of final distribution in the home land. Medical officers must be able to act intelligently and independently to a certain degree, in the wards under their care, and the operating room force must be tireless and snappy in procedure and diagnosis. To obtain this possible rapidity, and to obviate time consuming stretcher trips, serious cases are weeded out in the convoy of arriving wounded and kept in wards communicating directly with the operating theaters. The exact number of beds in these and all wards must be known and be before the medical officer in charge, and as the number of stretcher and ambulatory cases in any given convoy is known before its arrival, the distribution proceeds in a rapid, orderly manner.

We have found it essential to this rapid work to obtain the full details of name, regiment, number, etc., from the patients as soon as they are brought into the receiving hut, three or more officers working at the task, while all patients, after card and diagnosis entry, pass before the medical officer in charge for a final checking and for bed distribution. Soldiers tired by days of fighting and shellfire, the shock of wounds and transportation, when placed in bed without obtaining this much needed information, fall into prolonged sleep and will not be aroused to answer intelligently. With thirty bed wards the system works so smoothly that a convoy of 200 wounded men, for instance, can be brought to the hospital by motor ambulance from train, the essential details of the case recorded, and all be in their beds in assigned wards in an hour and a half. Imagine the confusion in an ordinary city hospital not prepared for such a rush of business if 200 patients were suddenly thrust on them.

In twelve hours following, the whole could be evacuated if necessary with wounds dressed, histories written and many of the seriously wounded operated on, and a fresh batch taken in.

So much for the first difference between the surgery of war and that of peace, the factor of military discipline explaining the rapidity and order of hospital service. We must then consider the types of wounds and other maladies that appear for attention, and possibly digress slightly to consider in general what may be expected after several days' hard fighting in modern trench warfare. Fauntleroy (Report under direction of the Bureau of Medicine and Surgery, Navy Department, Washington, D. C., 1916), has given a clear general view of the various types of missiles in use and their ballistics. The surgeon must care for projectiles from arms used in the trenches, such as rifles, hand grenades,

high explosive bombs, machine guns and asphyxiating gases. To these must be added the missiles from artillery fire, mainly high explosive 3-inch shells and shrapnel. The bayonet, sabers and the cavalry lance also cause wounds. The bullet of the Teutonic forces is ogivocylindric,* and at the present time has been reduced in size to about 8 mm. in cross section, with a weight of 10 gm. It has a high initial velocity but a lower sectional density than the bullet of the Allies, and is therefore considered ineffectual at ranges when the latter bullet is still dangerous. At short range, on account of the rotation induced by the rifling, it has theoretically great explosive effect, and is subject to deformation and fragmentary splitting when striking hard objects. In practice this rule does not hold absolutely. One finds rifle bullet wounds caused by close range fire which are cleanly penetrating even through the large bones without fragmentation, while I have removed bullets fired at long range which became broken and were stopped in the tissues after striking smaller bones, as the ribs, and had explosive effects. Various factors, moreover, as ricocheting, may affect any single gunshot wound; but generally at extreme ranges when a bullet enters and involves the soft parts alone the wound and entrance channel are the same size as the bullet. At close range the tendency is toward an explosive effect and complete in and out penetration of the missile. The wound of entrance is smaller, and the wound tract is funnel-shaped with the small end directed toward the entrance. This characteristic wound is doubtless influenced by the following conditions:

1. The tissues are unable to separate quickly enough to allow a high velocity bullet to progress through without pushing before it some pieces of clothing or the tissues it traverses, an accumulation of which in its flight produces a larger channel as it nears its exit.

2. If it strikes bone, bullet and bone fragments may act as secondary missiles to enlarge the wound at the exit.

3. Rotatory spin of the bullet from the rifling, together with some of the forward motion, is transmitted to the surrounding soft parts, as demonstrated some years ago in Horsley's experiments to cause a larger area of wound channel. This explains the comminution of bone and the frequent driving deep into the tissues of bony pieces at right angles to the wound tract.

The effects of missiles on bone will be considered at another time. Machine guns shoot the ordinary rifle service cartridge, and consequently cause wounds of the same character.

Artillery fire is used mainly with two types of shell, the 18-pound high explosive and the shrapnel. These shells have a muzzle velocity of nearly 2,000 feet per second, a range of 6,500 yards, and a flight duration of from eighteen to twenty-five seconds, exploding both by time fuse and contact. In a shrapnel casing, moreover, are placed irregular bullets some one-half inch in diameter, lead or iron, averaging over 300 in number, which on explosion are given a secondary velocity of 250 feet per second and scatter with the pieces of steel shell casing. Intense smoke accompanies their explosion from combustion of red amorphous phosphorus and powder so that they can be used as markers for directing further fire, making it possible to shell every square yard of a given area. Inasmuch as these shells can be fired at a rapidity of from fifteen to twenty-five a minute, one can imagine the rain of projectiles, the noise and force of explosions to which men in the trenches are subjected, and the necessity for dugout shelters in connection with the sand-bag protection in front of a trench. In surgical wounds caused by these shells we do not find so many of the bullets, but more often find the pieces of steel casing, so that the high explosive shell which by its concussion will hurl a man 30 feet in the air has become more generally used than the pure shrapnel shell. The mere force of its explosion may cause death to the soldier without producing any wound, or exposure to repeated shelling, often for several days' duration, may induce a condition known as shell shock or "shock shell" leading to extreme neurasthenia. The explosion has been measured to have a pressure effect of about

10 tons to the square inch in its direct path. Men may be so pressed on one side of the chest (cardiac) or the abdomen by the air vibration that death ensues from reflex causes, or they are found standing upright in trenches, dead with no wounds, possibly having been pressed against the trench wall and squeezed to death. Corresponding to the tremendous pressure of the explosion, there follows a relative vacuum formation in the vicinity, and it has been ingeniously suggested that this vacuum may cause death much as in caisson disease on sudden release from pressures of several atmospheres. The pathologic condition may be multiple areas of hemorrhage in the brain, or possibly the sudden release of pressure may cause the nitrogen suspended in the blood serum to come out of the solution as bubbles which block end arteries in the brain or impede heart action.

Shell and shrapnel wounds cause lacerations and contusions and destruction of tissue. The soft bullets tend to mushroom, bits of clothing and flesh are carried deep in, and infection usually follows.

Hand and rifle grenades cause similar wounds and are used at close range in the trenches where rifles cannot be employed. Dirt, clothing and fragments are carried into the tissues so that there are great destructive effects and infection is sure.

Bayonet wounds are often multiple, some are accidental and very few of the wounded reach the hospitals, because in close fighting which permits this type of offense, death is the usual result before any medical treatment can be offered. These wounds are in the chest, abdomen and groin, and are a penetrating stab. Fauntleroy states that they constitute, with the wounds of the cavalry lance, about 5 per cent. of the injuries, whereas among the 98,000 wounded in the Franco-Prussian War of 1870, there were only 600 thrust wounds. Sabers cause thrusting and slashing wounds, often multiple and placed about the head, left upper arm, and right forearm or elbow, whereas the thrusts of the cavalry lance are nearly always in the trunk.

Asphyxiating gases are mostly chlorine or bromine compressed to liquid form, and phosgene has been used in some mixtures lately. Because they are heavy, they roll along the ground surface and sink into the trenches. When inhaled in concentrated form, they may cause death at once; but in milder concentrations they cause cough, eye watering and dizziness. Every soldier on active duty is provided with a gas helmet or protection which aims to neutralize the toxic effects of the gas, and has in addition close fitting spectacles, which give protection to the eyes. After inhalation of the gases a bronchitis quickly develops, there is a hypersecretion of mucus, and the alveolar spaces are filled up. There may be found an edema of the glottis, or the heart suffers an acute dilatation from efforts to pump blood through the clogged lungs. Postmortem examinations verify these findings and show areas of bronchiectases. Young men with strong hearts give more promise of surviving exposure, and may last for three or four days before they succumb.

The men are cautioned not to exert themselves after being gassed, but to lay aside all equipment, loosen clothing, and lie quietly in a prone position to favor lung drainage. Treatment is given with oxygen gas, atropin and cardiac support. Occasionally there are serious burns from injuries incident to accidental premature explosions or from the flame projectors (*Flammenwerfer*), which throw a burning liquid nearly a hundred feet and cause deep sloughing of exposed parts.

In all wounds the most feared complications are gas infections from anaerobic bacteria, with which the highly fertilized soil of the fighting area teems, tetanus, and secondary hemorrhage from vessel softening. As a rule the men are in excellent physical condition to withstand battle and surgical shock and to exhibit recuperative powers, and have been trained for months for physical endurance. They have also been deprived of much alcoholic drink. Anti-tetanic serum is used in every case, each wounded man is given 1,500 units, and is marked on the forehead or wrist with a T by an indelible pencil, so that the base hospital knows of the injection in case the casualty card is lost.

Steel helmets have reduced the number of head injuries greatly, or else modified many of them into less harmful concussions and minor scalp injuries, on which I hope to report later.

KELLOGG SPEED, M.D., Chicago,
On active service with the British Expeditionary
Force in France.

LONDON LETTER

LONDON, June 19, 1916.

The War

THE ORGANIZATION OF THE PROFESSION IN RELATION TO THE ARMY AND THE NEEDS OF THE CIVIL POPULATION

As explained in a previous letter, compulsory military service now applies to the whole male population up to the age of 41, including physicians. The latter have the option of taking commissions in the Army Medical Corps. The question of deciding whether the needs for the civil population allow a physician to be called up is decided by the Central Professional Committee in conjunction with a local professional committee. The procedure is that when a physician is selected for service he receives a notification from the Central Professional Committee, and, if he is of any opinion that his personal or professional circumstances, or any other considerations, would justify his claiming to be left in his civil practice till a later date, or even throughout the war, he must communicate at once to the same central committee. He will then receive from the central committee a statement of its procedure for considering his case, and of any further information which they may require from him; and in due course the committee, after consulting the local committee, and after hearing the physician if he so desires, will make a final decision. In cases in which the physician is on the staff of a hospital or medical school in the London County area, the central committee will hand on the physician's application to the Committee of Reference (appointed by the Royal Colleges of Physicians and Surgeons for the consideration of such cases). If it is decided that the physician is not then to be taken, or not to be taken till some specified later date, he will be informed accordingly by the central committee; and in any event he will be given at least a month's notice of the date of commencing service. If, on the other hand, he is selected, he will be given by the War Office, on the date indicated to him by the central committee, a commission in the Army Medical Corps. His service will on that occasion be for a period not longer (unless he is willing) than twelve consecutive months. Before the war the physician was able at the end of the period of his commissioned service in the Army Medical Corps to return to civil life with no further obligations. But the military service acts make an important difference; for now, on his return to civil life, compulsion still applies to him, and, if he does not at once enroll again, so as to obtain the conditional immunity from calling up, he will necessarily be called up for ordinary service by the military authorities, and will be able to obtain exemption (if at all) from such service only through the procedure described below. He will come again into the position of being among those from whom the Central Professional Committee can select physicians for service in the Army Medical Corps. The physician under 41 who does not enroll voluntarily (under the scheme described in previous letters to *THE JOURNAL*) is liable to be called up for ordinary combatant service. If he desires exemption, his claim will come before the Central Professional Committee, which will decide whether or not he is to remain in civil practice. If it is decided that he should not, he will be offered a commission in the Army Medical Corps (unless considered unsuitable). So far his lot is not very different from the man who has voluntarily enrolled. But there are the differences that he loses the special arrangements as to pay, twelve month periods, and other privileges given to those who enroll voluntarily.

Physicians over 41 but not more than 45 are not liable to compulsory service but they are asked to enroll and undertake to accept a commission in the Army Medical Corps. Finally, the War Office has now extended the age for the entry of physicians into the Army Medical Corps. Men between 45 and 55 are required for whole time service in the United Kingdom so as to set free the younger men for service abroad. A certain number of physicians between the ages of 45 and 55 have volunteered for service abroad and are being sent to the Mediterranean.

THE HIGH PRICES OF FOOD

The price of food has been increased since the war, according to the government report, to the extent of 53 per cent. Comparison of the prices of meat, June 1, with those in July, 1914, shows that, while the increase in the prices of the better cuts of British meat average between 50 and 60 per cent., the cheaper cuts of imported meat have doubled in price. Bacon is nearly 40 per cent. dearer than in July, 1914, and fish averages 86 per cent. dearer. Increases of from 50 to 60 per cent. are recorded for potatoes, flour, bread, cheese and tea. The price of granulated sugar remained about two and a half times that prevailing immediately before the war. Milk and butter show advances of about 30 per cent., margarin an increase of 18 per cent. It is estimated that the average increase in the cost of living of the working classes, taking food, rent, clothing, fuel and light, etc., into consideration, between July, 1914, and the present time is about 40 per cent. However, in consequence of abundant employment at high wages, due to the great demand for munition workers and the scarcity of labor produced by the formation of a huge army, the working classes are better off than before the war. It is the middle and upper classes who are bearing the burden of the war. This increase of prices may be compared with those of Berlin since July, 1914, which amount to 119.8 per cent., and those of Vienna, amounting to 221.5, which, as far as one knows, are not compensated by any increase in wages.

CANADIAN PHYSICIANS ON WAR SERVICE

The patriotism and self-sacrifice which have led a large number of Canadian physicians, many of them holding leading positions, to throw to the winds flourishing practices, the result of years of labor, are remarkable. Among these men may be mentioned Colonel Adami, the distinguished pathologist of McGill University; Colonel Elder; Colonel McCrae; Colonel Archibald; Colonel Cameron, one of the best known surgeons in Montreal; Colonel Findley, professor of medicine in McGill University, and Major Meakins and Capt. Thomas Cotton, the cardiologists, who are now attached to the Hampstead Hospital for the Study of the Soldier's Heart. Toronto has sent, among others, Colonel Primrose, the well known surgeon, and Colonel Cameron; while from Kingston has come Colonel Fotheringham, and from St. John, Col. Murray MacLaren.

The Falling Birth Rate

The falling birth rate has exercised public men so much that in 1913 a national birth rate commission was formed by the National Council of Public Morals to report on its causes and effects. The commission included leading physicians, clergymen, philanthropists and social reformers. For the greater part of the time Bishop Boyd Carpenter was the chairman, and he was succeeded by Dean Inge, both eminent and well known churchmen. The evidence taken by the commission, with the report, forms a volume of 450 pages, which has just been published and must be regarded as the most authoritative work on the subject.

The commission considers the following propositions definitely established:

1. The birth rate has declined one third within the last thirty-five years.
2. The decline is not to any important extent due to alteration in the marriage rate, a rise in the mean age at marriage, or to causes diminishing the proportion of married women of fertile age in the population.
3. This decline, although general, has not been uniformly distributed over all sections of the community.
4. On the whole, the decline has been more marked in the more prosperous classes.
5. The greater incidence of infant mortality in the less prosperous classes does not reduce their effective fertility to the level of that of the wealthier classes. The following conclusions, although based on evidence less substantial than the previous ones, are also considered sufficiently well established:
6. Conscious limitation of fertility is widely practiced among the middle and upper classes, and there is good reason to think that in addition to other means of limitation, the illegal induction of abortion frequently occurs among the industrial population.
7. There is no reason to think that the higher education of women (whatever its indirect effects on the birth rate may be) has any important effect in diminishing the physiologic aptitude to bear children.

The commission criticizes the argument that an improvement in the birth rate would be facilitated by such conditions as

greater security and regularity of income, with insurance against unemployment among all classes of workers. This view, they point out, is not supported by statistics. Not only do the more well-to-do classes restrict their families more, but even among certain wage-earning classes the birth rate varies inversely with the income. The clerical witnesses were almost all opposed to the use of mechanical and chemical means to prevent conception, but there was not the same unanimity as to the morality of restricting the family in other ways. Some of the representatives of religion signed a minority report condemning mechanical and chemical preventives injurious to health, but making a reservation as to methods not injurious to health. A number of proposals of an economic character are also put forward to enable a larger population to be supported. They include a living wage, bonuses for families under certain conditions, relaxation of income tax, increased facilities for good education, adequate housing accommodation at reasonable rents, and measures to encourage the full development of natural resources both at home and beyond the seas. Mr. Long, the president of the Local Government Board, is about to receive the commission as a deputation, when the report will be presented to him.

British Science

In proposing a vote of thanks to Sir Andrew Fisher, Surgeon-General Sir Alfred Keogh, Director-General of the Army Medical Service, said that we had in this country as able and energetic scientific men as any in Europe, and were, in many respects, far in advance of the scientific men of the world for the simple reason that our men had the invaluable quality of initiative. It was our misfortune that our people did not take full advantage of our scientific work. Happily, there were some directions in which we had not failed in that sense, as he could testify from the experience he had gained in the work on which he was engaged in this war. We had drawn into the fold all the scientific men who could assist us, and what was the result? In our army, large as it was, there were, today, only twenty-two cases of typhoid fever, whereas if we had gone on in the old way there would probably have been 80,000, 90,000 or even 100,000.

PARIS LETTER

PARIS, June 15, 1916.

The War

COMPULSORY ANESTHESIA IN THE MILITARY SERVICE

In a previous letter I noted the instructions which the minister of war issued with regard to the refusal by soldiers of necessary operations or other treatment (*THE JOURNAL*, Aug. 21, 1915, p. 729). The right to refuse a cutting operation is recognized as absolute from a legal point of view because every such operation implies a certain risk. Is this true, however, for simple anesthesia not followed by operation? This question has been raised before the Académie de médecine by Dr. Reynier of the Faculté de médecine de Paris. He proposes to render compulsory the administration of chloroform to soldiers whenever the physician treating the case shall judge it necessary for the purposes of diagnosis or of treatment. At present it is not possible to compel a soldier to submit to anesthesia. For this reason it is often impossible to detect malingerers or to demonstrate the hysterical nature of certain contractures, and one is therefore often obliged to discharge men who might well be cured and who are perfectly fit to take their place in the ranks. Now, Reynier is of the opinion that, thanks to improved technique, the administration of chloroform presents no longer any real danger. In these conditions the respect for the individual will which rules in civil life cannot be held compatible with military discipline.

Professor Quénu remarked that postchloroformic sequelae are by no means negligible and that therefore we have no right to ignore the wishes of the patient. Professor Arminjon associated himself with this protest of Quénu's. Dr. Vaillard, inspector-general of the health service of the army, pointed out that it is not possible to compel soldiers to submit to anesthesia in the same manner as they must vaccination against smallpox or against typhoid, in the absence of a special law such as exists for these other cases. In view of the complexity of the question, it has been submitted, on the proposition of Dr. Delorme, inspector-general of the military health service, to a special commission.

LEAD POISONING FROM RETAINED FRAGMENTS OF BULLETS

At a meeting of the Société médicale des hôpitaux, Dr. Deper, of the Faculté de médecine de Paris, and Dr. Verpy

drew attention to the fact that symptoms of poisoning may develop in patients owing to absorption of lead from fragments of lead projectiles retained in the body, especially in the lungs. For this reason, though the diagnosis in such cases is sometimes difficult owing to the complexity of symptoms produced by the injury, the presence in the tissues of a lead projectile should not be neglected.

AMERICAN SURGICAL DRESSINGS COMMITTEE

The Surgical Dressings Committee, founded in the United States in October, 1914, to distribute surgical dressings gratuitously in the hospitals of France and allied countries, has established two sections in France, one at Bordeaux and the other at Paris. The latter is installed at rue de la Faisanderie, 118, in a large building kindly placed at the disposition of the committee by Mme. G. Coulon, and it has recently been visited by M. Justin Godart, undersecretary of state for the military health service.

Epidemic of Whooping Cough at Paris

A very serious epidemic of whooping cough has prevailed at Paris for some time, causing from twenty to twenty-five deaths a week instead of the mean rate of seven. At the Académie de médecine, Dr. Paul L. Tissier drew attention to the gravity of this epidemic and to the numerous cases which have occurred among adults. According to Tissier's own observations in this epidemic, the adult more often transmits the sickness to the child than the child to the adult, which is the contrary of what is usually the case. It is therefore necessary in the present circumstances to take precautions to prevent this contagion, especially in the case of soldiers on furlough who may propagate the epidemic among the troops at the front.

Death of Dr. Dubief

Dr. Fernand Dubief, deputy for the department of the Saône-et-Loire, and former minister, has died suddenly at the age of 66. He was formerly director of an asylum for the insane at Marseilles and afterward at Lyons. He was elected to the chamber for the first time in 1893. He was reelected at each of the general elections of 1898, 1902 and 1906. He lost his seat in 1910, but was again returned in 1914. He was minister of commerce in the Rouvier cabinet in 1905, and afterward minister of the interior in the same cabinet from Nov. 12, 1905, to March 14, 1906. Dubief had a large share in the preparation of the law concerning lunatics as well as in the elaboration of the tariff for medical fees for industrial accidents. The latter tariff is therefore known as the Dubief tariff.

Death of Dr. Rommelaere

The death is announced, at the age of 80, of Dr. Rommelaere, professor at the University of Brussels, and president of the administration council of that university.

BUDAPEST LETTER

BUDAPEST, June 14, 1916.

The War

EXAMINATION PRIVILEGES ALLOWED TO MEDICAL STUDENTS DURING THE WAR

The Minister of Public Instruction issued an order, March 6, 1916, according to which medical students who are fit for military service enjoy certain privileges during the war. Nominally students who have attended nine semesters and who entered military service up to January 7, this year, are entitled to pass their last two examinations during the period from March 15 to May 15. After passing these examinations they will be graduated, and promoted to the rank of medical doctor. The military authorities allow eight weeks' leave for this purpose on the production of a certificate signed by the dean, who gives this certificate to every one who can prove that he has finished nine semesters. In time of peace, every student must attend ten semesters, after which he is entitled to pass the two final examinations. If he has passed them successfully, he is given his degree, but receives his diploma only after spending one "practical year" in hospitals which are on the list of the university.

WAR MEETING OF THE ROYAL SOCIETY OF HUNGARIAN OCULISTS

At the suggestion of Emil Gross, professor of ophthalmology at the Budapest University, the Hungarian oculists will meet on Whitsunday in the Budapest Ophthalmologic Clinic, and will discuss questions pertaining to the domain of ophthalmology connected directly with the war: trachoma, the visual capacity from the point of view of fitness for ser-

vice at the front, and field injuries of the eyes. The committee of the society requested the war and home defense ministers as well as the army authorities to send to this sitting active and reserve military doctors, allowing them five days' leave to enable them to travel to Budapest for this occasion. Of course, the request was complied with; even the chief of the German imperial field sanitary service promised to send many oculists and others interested in ophthalmology who could be spared.

ETHICS OF FAMILY PRACTICE DURING THE WAR

The Budapest Medical Association passed the following resolution: If a doctor attends a family whose physician is engaged in field service, or if a doctor occupies a position in a club or a hospital where his predecessor is in the field, he must regard himself only as a locum tenens. To endeavor to get positions held by men with the army is a violation of war medical ethics. Half the income accruing from locum tenens work is due to the original holder of the position; of course, expenses can be deducted in full. The association requested the public through the newspapers to reserve the position of family physician or reliance doctor (*Vertrauensarzt*) to the original doctor, now engaged in field service, and to pay the locum tenens the same amount as they paid to the former.

THE QUESTION OF POPULATION

Dr. G. Winter, in a paper before the medical society, said that, owing to diminution in the number of births because of the war, obstetricians and gynecologists will have to regard as their special duty to do everything in their power to work against depopulation. They can do this in part by curing patients of gonorrhea and syphilis, which induce sterility in women, and in part by making propaganda against wilfully induced childlessness. The second task consists in maintaining the fetus during pregnancy, particularly in preventing spontaneous, artificial and criminal abortion. The third task is to protect the child at birth, by increasing the number of properly educated midwives, who take special care in preserving the child's life during labor, and immediately call the doctor if necessary. Our aim should not be to save mother or child, but to keep alive both mother and child. Finally, the mother should be taught how to live rationally while nursing the baby, and how to nourish children properly.

Epilepsy—A Cause for Divorce

According to a decision of the Royal Hungarian Curia, the highest court of justice, epilepsy interferes with the purpose and natural course of marriage. Therefore the person suffering from epilepsy should make known his condition to the other person before marriage. If he neglects doing so, then the other party is entitled to ask for divorce, and the court will separate all couples when application is made on this ground. Of course, it is necessary to prove that the person suffering from epilepsy knew about his illness before marriage.

The Number of Students in the Budapest University

In the second semester of 1915-1916, the Budapest Royal Scientific University had 3,067 students; in the same semester of 1913-1914 there were 7,513. The number of medical students amounted to 1,059 (in 1914, 2,994). The increase of the number of women students is noteworthy; in the present half year there are 739 enrolled, among them 266 medical students. In 1914 there were 564 female students, with 175 medical students.

Honor to Eiselsberg

Francis Joseph has conferred on Prof. Dr. Anton von Eiselsberg, knight, adviser to the court, and admiral surgeon major, the rank of Order of Leopold Cross with the war decoration. This is one of the highest orders with which a medical man can be decorated.

Vienna Housing Conference

February 7 and 8, the meetings of the conference on dwelling hygiene were held in Vienna. The conference passed a resolution to present a memorandum to the minister of public hygiene to introduce regular control of dwellings. For the time being this should be in the hands of the medical officers of the municipalities, but after the termination of the war, special committees should be formed to this purpose. Two inspections a year are planned, and will be restricted to town and city dwellings. The chief task of the controller will be to discover sanitary defects and to force house owners to repair them. If they do not do so, the medical officers will be empowered to have the repairs made at the expense of the house owner.

Deaths

Heber Wheat Jones, M.D., Memphis, Tenn.; University of Virginia, Charlottesville, 1869; aged 67; a Fellow of the American Medical Association; dean emeritus and professor of clinical medicine in the University of Tennessee, Memphis, and the College of Physicians and Surgeons, Memphis; for ten years president of the Tennessee State Board of Health and State Board of Medical Examiners and for eight years president of the Board of Health of Memphis; surgeon in the Tennessee National Guard with the rank of colonel; who was presented with a silver service by citizens of Memphis in 1898, and in 1905 was given a check for \$10,000 by the city for his services against yellow fever; one of the most noted sanitarians of the South; died at his home, June 26. At a special meeting of the Memphis and Shelby County Medical Society, resolutions of esteem and affection were adopted and members of the society were named as pallbearers for the funeral.

William Evans Casselberry, M.D., Chicago; University of Pennsylvania, Philadelphia, 1879; aged 57; a Fellow of the American Medical Association; formerly president of the American Laryngological Association and Chicago Laryngological Association; a member of the National Association for the Study and Prevention of Tuberculosis, American Climatological Association and Physicians' Club of Chicago and a fellow of the American College of Surgeons; one of the most prominent laryngologists of the United States; professor of therapeutics in Northwestern University Medical School from 1883 to 1894 and professor and emeritus professor of laryngology and rhinology since 1894; attending laryngologist and rhinologist to St. Luke's Hospital; died at his summer home in Lake Forest, July 11, from angina pectoris.

Julius Hayden Woodward, M.D., New York City; College of Physicians and Surgeons in the City of New York, 1882; University of Vermont, Burlington, 1882; aged 58; a Fellow of the American Medical Association; professor of diseases of the eye in the New York Post-Graduate Medical School and president of the Faculty Association of the institution; a member of the American Academy of Ophthalmology and Oto-Laryngology, American Laryngological, Rhinological and Otological Society, and American Otological Society; formerly professor of materia medica in the University of Vermont; died at his home, July 2.

Walter Gellhorn, M.D., Seattle, Wash.; University of Munich, Germany, 1904; aged 39; a Fellow of the American Medical Association; who was arrested at Kirkwall, Scotland, Dec. 9, 1915, while on his way to join the German Red Cross on the charge of having in his possession military plans and chemical formulas for the use of the German army, and had been held in Edinburgh Castle since that time, is reported to have committed suicide in the military prison at Edinburgh Castle, June 11.

David Ottawa Hancock, M.D., Henderson, Ky.; Kentucky School of Medicine, Louisville, 1891; aged 54; formerly a Fellow of the American Medical Association; a member of the Kentucky State Medical Association and its president in 1912; president of the Henderson City Board of Health and of the Henderson County Medical Association in 1906; died at his home, April 19, from nephritis.

Arthur T. Bodle, M.D., Bellaire, Mich.; Chicago Homeopathic Medical College, 1893; Hahnemann Medical College, Chicago, 1905; aged 57; a member of the Michigan State Medical Society; for twenty years physician to the Antrim County Home; member of the Kearney Board of Health; died from heart disease, June 1, while making a professional call.

Charles Frederick Nolen, M.D., Baltimore; University of Maryland, Baltimore, 1890; aged 47; a Fellow of the American Medical Association; well known as a specialist on diseases of the eye, ear and throat; ophthalmic surgeon to the Baltimore and Ohio System and assistant surgeon to the Presbyterian Eye and Ear Hospital, Baltimore; died, June 30.

Archibald M. Glass, M.D., Booneville, Ky.; University of Louisville, Ky., 1885; aged 53; a Fellow of the American Medical Association; secretary of the Owsley County (Ky.) Medical Society in 1915, and secretary of the Owsley County Board of Health; died at his home, June 21, from sarcoma of the throat.

Franklin Judson Cressy, M.D., Granite Falls, Minn.; College of Physicians and Surgeons, Keokuk, Iowa, 1877; aged

67; formerly a Fellow of the American Medical Association; a member of the Minnesota State Medical Association; died in St. Luke's Hospital, St. Paul, June 26.

Robert J. Gilliland, M.D., Easley, S. C.; University of Maryland, Baltimore, 1883; aged 55; formerly a Fellow of the American Medical Association; a member of the South Carolina Medical Association; died at his home, June 25, from cerebral hemorrhage.

Floyd Vernon Brooks, M.D., Washington, D. C.; Jefferson Medical College, 1877; aged 60; a member of the Medical Society of the District of Columbia; chief surgeon of the Chesapeake Beach Railroad and Washington Traffic Club; died at his home, June 25.

Frederick Buell Willard, M.D., Hartford, Conn.; University of Vermont, Burlington, 1900; aged 42; a Fellow of the American Medical Association and of the American College of Surgeons; died at his home, June 16, from peritonitis following appendicitis.

Louis Edward Niles, M.D., Springfield, Ohio; Dartmouth Medical School, Hanover, N. H., 1884; aged 54; a member of the Ohio State Medical Association and president of the Clark County Medical Society; died at his home, June 24, from pneumonia.

Reece Kelso Watkins, M.D., Spring City, Tenn.; University of Nashville, Tenn., 1871; aged 67; a member of the Tennessee State Medical Association; for more than thirty-five years a practitioner of Spring City; died at his home, June 25.

Amos W. Patterson, M.D., Indianapolis; Medical College of Ohio, Cincinnati, 1866; aged 76; formerly a Fellow of the American Medical Association; medical inspector of recruits during the Civil War; died at his home, June 26, from heart disease.

George Chambers, M.D., Saskatoon, Sask.; Eclectic Medical Institute, Cincinnati, 1866; for more than forty years a practitioner of Columbia, Mo.; and for the last two years a resident of Canada; died at his home, June 19, from senile debility.

Robert A. Hilton, M.D., Eldorado, Ark.; Louisville (Ky.) Medical College, 1894; aged 47; formerly a Fellow of the American Medical Association; a member of the Arkansas Medical Society; died in a hospital in Little Rock, June 24.

Mary Ann Chamberlin, M.D., Santa Cruz, Calif.; Homeopathic Medical College of Missouri, St. Louis, 1875; for sixty-four years a resident of the Pacific Coast and for the last thirty years of Santa Cruz; died at her home, June 26.

James Moore Donnelly, M.D., Troy, N. Y.; College of Physicians and Surgeons in the City of New York, 1876; aged 68; for nearly thirty years a practitioner and druggist of Troy; died at his home in North Troy, June 25.

Samuel David Booth, M.D., Oxford, N. C.; Medical College of Virginia, Richmond, 1867; aged 75; a member of the Medical Society of Virginia; a Confederate veteran; died at the home of his nephew in Oxford, June 28.

William Blundell, M.D., Paterson, N. J.; College of Physicians and Surgeons in the City of New York, 1861; aged 80; a member of the Medical Society of New Jersey; died at his summer home in Allensdale, N. J., June 30.

Nathaniel Alexander Orr, M.D., Belmont, N. C.; University College of Medicine, Richmond, 1904; aged 39; a Fellow of the American Medical Association; died at his home, June 21.

Milton H. Collins, M.D., South Charleston, Ohio; Medical College of Ohio, Cincinnati, 1881; aged 62; a member of the City Council of South Charleston for several years; died at his home, June 22.

Andrew M. Purinton, M.D., Kenduskeag, Me.; Dartmouth Medical School, Hanover, N. H., 1862; aged 78; superintendent of schools of Levant, Me., for twenty years; died at his home June 20.

David Thompson Cleland, M.D., Harlansburg, R. D. Newcastle, Pa.; Miami Medical College, Cincinnati, 1877; aged 44; died at his home, June 20, from pulmonary abscess following pneumonia.

Frank W. Wells, M.D., Owingsville, Ky.; University of Louisville, Ky., 1869; aged 68; died at his home near Owingsville, about June 20, from tuberculosis of the larynx.

Thomas S. Young, M.D., Partlow, Va.; Jefferson Medical College, 1852; aged 86; said to have been the oldest practitioner of Spottsylvania County; died at his home, June 18.

John S. Neely, M.D., Franklin, Ky.; University of Louisville, Ky., 1872; one of the oldest practitioners of Simpson County, Ky.; died at his home, June 19, from senile debility.

John Tyler Sweeny, M.D., Louisville, Ky.; Hospital College of Medicine, Louisville, 1906; aged 36; died at the home of his mother in Louisville, June 16, from tuberculosis.

James A. Conrad, M.D., Cleveland; Homeopathic Medical College of Missouri, St. Louis, 1877; aged 70; died at his home, June 7, from cerebral hemorrhage.

Grafton W. Gardner, M.D., Atlanta, Ga.; Oglethorpe Medical College, Savannah, Ga., 1861; aged 86; died at his home, June 19.

Coursin G. Oyler, M.D., Merwin, Pa.; Ohio Medical University, Columbus, 1893; aged 51; died at his home, June 19.

Walter Jay Bell, M.D., Atlanta, Ga.; Tulane University, New Orleans, 1891; aged 47; died at his home, June 17.

Marriages

CHARLES FREDERICK MAHONEY, M.D., Winthrop, Mass., to Miss Agnes R. Driscoll of East Boston, Mass., at South Boston, Mass., June 28.

WALTER IRWIN HUME, M.D., Louisville, Ky., to Miss Beulah Lee Thompson of Mackville, Ky., at Springfield, Ky., June 28.

CHARLES JOSEPH KICKHAM, M.D., Brookline, Mass., to Miss Mary Josephine Keating of Jamaica Plain, Boston, June 28.

DAVID PAUL WHITMORE, M.D., Rock Springs, Wyo., to Miss Eva Belle Barber of Spring Valley, Minn., June 28.

JAMES STRATTON CARPENTER, JR., M.D., Pottsville, Pa., to Miss Claire Beck Dechert of Schuylkill Haven, Pa., June 23.

HENRY WHITE BROUGHTON, M.D., Jamaica Plain, Boston, to Miss Mary Lawrence Leavitt of Exeter, N. H., recently.

LIEUT. AUGUSTUS B. JONES, M. C., U. S. Army, to Miss Ethel Treen Jones, at Jefferson Barracks, Mo., June 28.

ALFRED HERMAN C. CARTHAUS, M.D., Thiensville, Wis., to Miss Jennie Kaestner of Plymouth, Wis., June 22.

FRANK WALKER YOUNG, M.D., Hartford, Ala., to Miss Ida Berryman Bilbro, at Clanton, Ala., May 31.

JOSEPH ENGEL, M.D., Brooklyn, to Miss Adele R. Rubenstein of New York City, June 25.

THOMAS MORRELL ARMSTRONG, M.D., to Miss Helen F. Kennedy, both of Philadelphia, June 28.

RALPH E. ROBINSON, M.D., Belmont, N. Y., to Miss Mabel Gibbons of Wyoming, N. Y., June 29.

WALTER MITCHELL ATKINSON, M.D., to Miss Pearl Zell, both of Brockwayville, Pa., April 12.

JOHN OTIS CLETCHER, M.D., Anthony, Kan., to Miss Mary M. Putnam of Penfield, Ill., June 23.

HERBERT SCOTT PATTEE, M.D., to Miss Barbara Sutcliffe, both of Manchester, N. H., June 22.

LUDWIG FRANCIS LUBELEY, M.D., Ryegate, Mont., to Miss Marjorie Brislin of Butte, June 21.

ROBERT FOSTER FENNELL, M.D., to Miss Margarette Street, both of Guntersville, Ala., June 24.

THOMAS ARTHUR PETTEPIECE, M.D., Freeport, Ill., to Miss Wilma Pierce of Chicago, June 23.

JESSE JAMES BEATTY, M.D., Farragut, Iowa, to Miss Pearl Snyder of Trenton, Mo., June 21.

JOHN ROBERT WRIGHT, M.D., to Miss Maycie Worthington, both of Knoxville, Iowa, June 3.

MARTIN C. GAUGHAN, M.D., to Miss Margaret V. Conway, both of Pittston, Pa., June 12.

BURT HORACE HARDINGER, M.D., Gays, Ill., to Miss Elsie Warder of Chicago, recently.

HARRY CAESAR SOLOMON, M.D., Los Angeles, to Miss Maida Herman of Boston, June 26.

HAROLD WILLIAM NIMAL, M.D., to Mrs. Goldie Fogler, both of Indianapolis, June 23.

MILES MARTIN, M.D., to Mrs. Annie Paul MacNair, both of Boston, June 29.

SILAS C. BLAISDELL, M. D., to Miss Mary E. Rose, both of Brooklyn, July 1.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

WINE OF CARDUI SUIT

(Continued from page 142)

May 19, 1916, Morning

TESTIMONY OF DR. EFFIE L. LOBDELL (CONTINUED)

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

Dr. Lobdell stated that she had used *viburnum prunifolium* in her practice for nearly twenty-six years. She used Hayden's *Viburnum Compound* and also the dried extract in capsules. She gives either the dried extract in capsules or the fluidextract of *viburnum prunifolium* or combinations with various pharmaceutical preparations. She sometimes uses the solid extract for the convenience of the patient. She sometimes combines it with gelsemium and helonin and sometimes quinin. She practically always gives the *viburnum prunifolium* in combination.

Q.—Now I suppose that in your earlier practice you did use, as you say, Hayden's *Viburnum Compound*? A.—Yes, sir, I did.

Q.—Do you know what that is, doctor? A.—Well, in what way?

Q.—That is, what it contains? A.—Well, valerian, some valerian, and the *viburnum*, and the alcohol. It was for those effects I gave it.

Q.—What kind of *viburnum* does it contain, do you know? A.—*Prunifolium*, *viburnum prunifolium*.

Q.—Are you quite sure that Hayden's Compound contains any *viburnum prunifolium*? A.—Well, or the *opulus*, which is very much the same.

Q.—That is a different proposition. Do you know what it does contain? A.—I do not remember definitely now. I have not used it for about eight or ten years.

Q.—You have not used it for eight or ten years? A.—No, no, not since the pharmaceutical houses began making more accurate preparations; of course I have used those.

Q.—You did not consider that a very active preparation then? A.—No, sir, it was like all our preparations until the pharmaceutical houses perfected them.

Q.—What Hayden's *Viburnum Compound* contained, whether it contained *viburnum prunifolium* or not, you do not know, do you? A.—Well, I know that it contained *prunifolium*, but I know the family and I know the kind of drug. I know them in a general botanical way as well.

Q.—Well, but what kind of *viburnum* did it contain, doctor? Do you know what kind it contained, whether it had any *viburnum prunifolium* in it or whether it had simply *viburnum opulus* or not? A.—It was supposed to have *viburnum prunifolium*, because—

Q.—How is that? A.—It was supposed to have *viburnum prunifolium* in it.

Q.—I am not asking what it was supposed to have. I am asking whether or not you know. A.—Well, at that time the formulas were not given essentially to the public as they are under the Pure Food Act.

Q.—Well, you do not know then whether it had any *viburnum prunifolium* or not, do you, any *viburnum prunifolium* in it? A.—No, but I do remember that it was taught that it was *viburnum prunifolium*. I remember teaching it.

Q.—You remember that people supposed it had *viburnum prunifolium* in it? A.—Yes, sir, it was so taught.

Q.—How is that? A.—It was so taught.

Q.—Where? A.—At the College of Medicine, in the pharmaceutical department. I remember that very well.

Q.—Well, was the formula known in your day when you were in college, where it was taught? A.—I beg your pardon?

Q.—When was it that it was so taught? A.—It was taught in 1891 and before that when I was attending school, because I remember it was in our dispensary and I dispensed it as assistant.

Q.—It was a secret formula, doctor, was it not? A.—I beg your pardon?

Q.—It was a secret formula, was it not? A.—Well, I know, but then we were taught in a general way what they contained.

Q.—I understand, but I say it was a secret formula, was it not? A.—At that time it was not published.

Q.—Well, is it published now? A.—I do not know. I have not paid any attention to it in the last ten years.

Q.—All you know about whether or not there was any *viburnum prunifolium* in it is the reputation? A.—Yes, sir.

Q.—In connection with your use of Hayden's *Viburnum Compound* of *viburnum prunifolium*, is your experience based upon your use of it, that is, your opinion? A.—Yes, sir.

Q.—Entirely? A.—Yes, sir, in conjunction with my teaching.

Q.—What did they—what did your teaching show you? A.—That it was a correct thing to use and belonged to the class of antispasmodics proper for women.

Q.—And the experience which you have had in your practice has borne that out, has it? A.—Yes, sir.

Q.—So that the opinion which you have given as to the value of *viburnum prunifolium* is based upon your experience? A.—Yes, sir; and the best of my intention in its use.

Q.—And you say that you have never used it alone, but have always combined it with other drugs like quinin and gelsemium and drugs of that character? A.—Except as I have used those preparations merely dissolved in water, but of course they are the combinations.

Q.—They are the combinations? A.—Yes, sir.

Q.—Now do you know, doctor, what the recognized dose of *viburnum prunifolium* is, of the fluidextract of *viburnum prunifolium*? A.—It would be from probably fifteen drops to a teaspoonful.

Q.—From 15 drops to a teaspoonful? A.—Yes, sir, well diluted.

Q.—In other words, it is from 15 to 60 drops? A.—Yes, sir, well diluted.

Q.—And if a teaspoonful is 60 drops it would be from 15 drops to 60 drops? A.—Yes, sir.

Q.—Now, don't you know that the official dose of *viburnum prunifolium*, the fluidextract of *viburnum prunifolium*, is from 30 to 60 drops?

Mr. Walker:—That is objected to. I don't know that there is any official dose. What is the official dose? Everybody gives a different dose here. We have had all kinds of doses.

THE COURT:—Find out first whether there is an official dose.

Mr. T. J. Scofield: Q.—Is there any such thing known as an official dose? A.—An official dose is merely the average dosage which is put on the bottle for the convenience of reference.

Q.—How about your pharmacopeias? Do they give any doses which are considered official? A.—I consider that their dosage is merely a suggestion and not a rule.

Q.—Well, you know then what the pharmacopeia gives, do you, as the dosage? A.—Yes, sir.

Q.—What is the dosage?

Mr. Walker:—That is objected to.

A.—I do not know accurately.

Mr. Walker:—The pharmacopeia will show what it is.

The Witness:—What pharmacopeia do you mean?

Mr. T. J. Scofield: Q.—Well, the United States.

Mr. Walker:—That is objected to.

THE COURT:—The book will show.

Mr. T. J. Scofield:—I suppose it will.

The Witness:—That is empirical.

Mr. T. J. Scofield:—If she knows what an official dose is—

The Witness:—It is not necessary to know the official dose. You always have your reason for giving it, and your indications for how much to give.

Q.—How, then, do you determine what the dose will be? A.—On the age of the patient and on the condition which you are going to relieve, whether it is an acute condition, or a chronic condition, whether you want to have an immediate effect and a tonic effect.

Q.—So that the question in determining the dosage, the question of the age of the patient, and the effect which you wish to obtain, cuts a figure in the dosage? A.—Absolutely. We have a rule for it.

Q.—And also the condition of the patient that you expect to reach by the medicine? A.—Yes, sir.

Q.—So that you would not use as much with children as you would probably with adults or grown people? A.—Naturally.

Q.—And with young girls you would not use so much of it as you would with married women, probably? A.—It depends on the acuteness of the condition.

Q.—It depends altogether on the condition? A.—Yes, sir.

Q.—So that in one condition which you might find a patient to be in, you would give a larger dose of it— A.—Yes, sir.

Q.—Than you would in others? A.—Yes, sir.

Q.—And that dose would range all the way from 15 drops to 60 drops? A.—I would try to give the largest dose first, and then taper it down.

Q.—How about the question of the trouble being acute or chronic? Would that make any difference? A.—Yes, sir.

Q.—Tell us about that, doctor? A.—Well, in an acute case where you would want an immediate result, why you would give a much larger dose first, and then discontinue as you got your physiological action. If you wanted it for a chronic condition, you would try to get an average dose which would continuously—give you a continuous effect.

Q.—Then, if I understand you, in the first case which you cited, or in acute cases, you would vary the dose from day to day, and time to time, in accordance with the condition? A.—The directions would so order.

Q.—And you would give the largest dose first? A.—Yes, sir.

Q.—And then taper it down as you observed the effect of the medicine and the condition of the patient. Is that right? A.—Yes, sir, I would lengthen the interval of the giving of it, or the amount, either one.

Q.—Then you would depend upon the condition of the patient—depending upon that whether or not you would lengthen the time between your doses which are given? A.—Yes, sir.

Q.—And you would also change and vary the size of the dose? A.—Yes, sir.

Q.—Why would you do that? A.—Because we know about, in a relative way, how much physiologically the individual will need. We try to correlate our knowledge of what we are giving with what the human body can take care of.

Q.—Then, if I understand you right, doctor, you do not think that any medicine like *viburnum prunifolium* should be given in the same doses under varying conditions, without any change, to young girls and married women, and women in after life, through the menopause? A.—If an average dose was given, it would be harmless.

Q.—Do you think that it would produce results? A.—Yes, sir, it would produce the result, yes, but it would not produce harmful results because that is more or less limited.

Q.—Do you think that that would be good treatment, doctor, as you have described what constitutes good treatment? A.—If your patient—yes, I think it would not be bad treatment, at least it is better than doing nothing.

Q.—In all cases? A.—Well, I think we are just considering the average case.

Q.—What do you mean by the average case? A.—Well, the majority of cases which are symptomatic and not organic.

Q.—The majority that are symptomatic and not— A.—Organic.

Q.—And not organic? A.—Yes, merely functional.

Q.—In your experience, in your practice, do you find many cases where you would want to simply give an average dose in that way running along through the sickness, or would you want to treat it as you have described? A.—In that class of cases because they are what are called ambulatory cases, they merely come to the office, and go back and forth and report. They are not bed cases. They practically do as they please anyway.

Q.—Were you through, doctor? A.—Yes, sir.

Q.—What would you call an average dose of the fluidextract of viburnum prunifolium, as you give it? A.—Why, from five to ten grains would have no deleterious effect.

Q.—I am speaking of the fluidextract, doctor? A.—Oh, the fluid-extract?

Q.—Yes? A.—Oh, I should say the equivalent of 15 or 30 drops would be an average dose, would be one that could be continued indefinitely.

Dr. Lobdell stated that 15 per cent. of the diseases of the pelvic organs require surgical treatment; that she gives surgical treatment if the patient needs it. She never determines on operation under a month or six weeks, during which time the patient is under observation and examination. She considers such an examination necessary. She examines the patient from one to two or three times a week, before determining the character of the treatment and this is necessary and the patient has a right to expect it. The patient would not know whether or not she needed an operation. Dr. Lobdell stated that usually the patient knew that she had something wrong but an examination of the secretions is necessary to determine the exact difficulty. Dr. Lobdell stated that these germ conditions are easily communicated. The witness stated that nephritis is a complication of pregnancy which she treats. When a patient comes in, she determines whether the patient is pregnant. She then examines the urine and the vaginal tract to see if there are any obstructions or any discharges or any malformations. She considers the examination of the urine an important routine measure.

Q.—And in that way you determine whether there is any albuminuria there, I suppose? A.—Well, that is not important.

Q.—You say that is not important? A.—No, sir, that is not specially important. We—we determine it and watch it, but that of itself is not important.

Q.—What do you say? A.—We determine it and watch it, but that of itself is not important—is not specially important.

Q.—Well, what is albuminuria? A.—It is merely a symptom—it is the presence of the albumin in the urine, and it may be due to a number of things, you know.

Q.—Yes. Well, I am not referring to the mere fact that there may be evidence of albuminuria, which you say is merely a symptom, but isn't the rest of it important to a woman that is pregnant? A.—Well, we have to first ascertain where it is caused. It may be merely in the bladder, due to the presence of pus cells in the bladder; and we get a certain per cent. in that; and we have to eliminate the bladder albumin. That is a little different than the other. Then the kidney albumin may be transitory. We have to watch to see if it is peculiar to that patient. Some patients have albumin just ordinarily, and it does not make much difference.

Q.—Do you give any treatment for it when it is a kidney condition? A.—I give them general treatment, or a special treatment, a treatment based on the general condition of the patient. I pay no attention to the albumin itself, except by hygiene and general treatment.

Q.—How often do you go through that process of making an examination of the urine? A.—Till I have determined—sometimes every day for a week—sometimes the entire quantity that is eliminated in any given 24 hours, and then after that at frequent intervals till I determine—after that I just control it.

Q.—Suppose your patient's feet commenced to swell and she becomes drowsy and has a good deal of headache; what do you do? A.—Diet her, put her on baths and rest.

Q.—What is that for? A.—Elimination through the skin.

Q.—You recognize the fact that the kidneys are not eliminating sufficiently, do you? A.—If she has—

Q.—I say, you recognize the fact— A.—Yes, sir.

Q.—that the kidneys are not doing their duty— A.—Yes, sir.

Q.—their full duty to the patient? A.—Yes, sir, that they are not equal to their burden.

Q.—Now, do they have any inflammation of the retina as a result of that condition? A.—Oh, yes.

Q.—You determine that by such an examination? A.—No, sir—after an ophthalmoscopic examination.

Q.—Well, by some examination by some one? A.—Yes.

Q.—Don't you look on that as a serious condition, and a dangerous condition? A.—Well, serious, but not necessarily dangerous.

Q.—Do you recognize that convulsions are liable to occur? A.—Yes, sir, but if you are ready for them, they are not so dangerous as they used to be.

Q.—Don't you think it would be a better thing, doctor, to prevent them, if you can do it, rather than try to be ready for them if they come? A.—Yes, sir.

Q.—And the necessity of treatment of some kind for that condition comes by reason of your examination— A.—Yes, sir.

Q.—from time to time, during pregnancy? A.—Yes, sir, you are responsible for that patient's condition.

Q.—Now, in those cases, what kind of a diet do you give? A.—Oatmeal and milk—a very simple diet, with eliminants and anything that will—things that would keep the skin active and keep them eliminating freely.

Q.—You put them on what you might call a bland diet? A.—Yes, sir—

Q.—One that is not stimulating? A.—Sometimes stimulating, sometimes we have to have stimulating—depending on what condition arises.

Q.—Well, it is not a stimulating diet? You do not give any stimulating diet? A.—Well, I give champagne sometimes, and things of that sort, in those cases.

Q.—Is it not true that, as a rule, where you find patients with nephritis, you rather put them on a thin milk diet? A.—No, not necessarily.

Q.—Well, you do it often, don't you? A.—Nothing that will deplete the strength or the tonic condition of the patient. We have to be very careful to avoid that. She must have enough muscle tone for her labor.

Q.—Doctor, don't you know, or is it not true, that in practically all those cases which are referable to kidney conditions which manifest themselves throughout pregnancy—kidney inflammations, that you tell your patients to cut out all stimulating matters? A.—Well, albuminuria is not necessarily an inflammation of the kidney.

Q.—I am talking about kidney inflammations. I have passed from the albuminuria. A.—I beg your pardon.

Q.—Don't you tell them to cut out all stimulating foods and drink? Mr. Walker:—When?

The Witness:—I don't recognize—in the inflammation of the kidneys that I know of, they are all infections of the kidneys. I know of no inflammation of the kidney not an infection.

Mr. T. J. Scofield: Q.—How is that, doctor? A.—I know of no inflammation of the kidney not an infection.

Q.—I say, whatever you may call it, I do not care whether you call it kidney trouble coming from infection or what—under those conditions, when women are pregnant, don't you have them cut out all stimulating food and drinks? A.—Why, the—unless they seem to me—if they seem to me to need anything stimulating, I don't entirely; depending so much on their habits, you know—I have so many patients in the foreign population, who are accustomed to those things, that I don't make a great difference between what they are accustomed to, and what they have enforced on them, you know.

Q.—Well, suppose they are not foreign people. You say you have a great many of them, and don't like to make too great a change in their diet or treatment. Suppose they are not in that class. Suppose they are people who have not been accustomed to the use of those things. Do you tell them to cut out stimulating food and drinks, or not? A.—I prescribe the diet for them that they shall have. I write out or give them definite details.

Q.—Won't you answer the question, doctor? Do you tell them to eliminate stimulants, both in food or drink, or do you not? A.—I cut out tea and coffee and things of that sort, and put them on milk diet and on bland foods.

Q.—Do you tell them to go ahead and drink champagne and beer? A.—No, sir, not beer; but I let them have the light wines.

Q.—Do you know what the amount of alcohol contained in light wine is— A.—Oh, yes.

Q.—as compared with the alcohol contained in beer? A.—Of course it is very much less, but it is a different kind. The combinations in the fruit wines are not contraindicated, I think.

Q.—You don't mean to say—you say "contraindicated"? A.—Yes, contraindicated.

Mr. T. J. Scofield: Q.—Well, is there any difference in ethyl alcohol— A.—Oh, yes.

Q.—Whether it is from fruit or corn? A.—Oh, yes; I think there is.

Q.—What is the difference? A.—Well, in the fruit alcohols, it would be by their own fermentation—

Q.—I am asking you about ethyl alcohol? A.—Well, the ethyl alcohol I am only familiar with has—I have used it in—I know it is a very high per cent. of alcohol; whereas, the fruit alcohols run about seven to ten or twelve per cent.; even less.

Q.—Now, don't you know, doctor, that all alcohol that you get from any wine or beer, or in any other sort of liquors, is ethyl alcohol? A.—Probably is essentially, synthetically, but—

Q.—What is it? A.—It probably is essentially and synthetically, but it makes a great deal of difference as to how it acts, what you use it for.

Q.—Whether or not alcohol comes from grapes, or whether it comes from corn, makes a difference in its action? A.—Yes, because you only use just—you could drink quite a good deal of wine and get but very little, and there would be other things with the wine that would compensate—if you took the ethyl alcohol, you would just take a little bit for a specific purpose.

Q.—So far as the amount of alcohol that the wine contains is concerned, you get the same effect, do you not, from that alcohol, that you get from the same amount of alcohol in some other drink? A.—No, I think you get a better effect.

Q.—Why is that? A.—Well, you would get the addition of the other ingredients with it.

Q.—Doctor, I am not referring to that. I am speaking of the alcohol effect, so far as the alcohol itself produces an effect, be that great or small. The alcohol effect is the same from one kind of alcohol or another, is it not—ethyl alcohol? A.—It probably would be. They are exactly the same thing.

Q.—And I suppose the dilution, the manner in which it is conveyed to the stomach, or the dilution, the only effect is the local effect—isn't that true? A.—That would probably be true.

Q.—If it is much diluted, why, it does not affect the stomach, does it, so much? A.—It is more quickly eliminated.

Q.—Well, now, when the alcohol—no matter whether it is from wine or beer or whisky, or from Wine of Cardui, or how much it is diluted; when it is absorbed into the blood, the quantity being the same, the effect is the same, is it not—the alcohol effect? A.—It is not absorbed; it is oxidized, except for about a very small per cent.

Q.—Where is it oxidized? A.—Immediately it is taken into the circulation.

Q.—It is absorbed, is it not, before it is taken into the circulation, or it would never get there? A.—It is not absorbed as pure alcohol.

Q.—Why? A.—Because it is mixed with the fluids of the stomach, and whatever else may be in the stomach, and it is—it simply goes in as part of whatever else happens to be along with it.

Q.—You do not mean to say that the juices of the stomach will change the effect of alcohol, do you? A.—Oh, no, but it mixes with it, and—

Q.—Yes? A.—Yes, and—

Q.—But, so far as the alcohol is there, whatever the alcohol effect is, it is produced, is it not? A.—No, sir; because it would have either a local or a general effect, and a local effect, if it is well diluted, would be transitory. It would just go on very readily; whereas, if it is pure alcohol taken in, it would have a very irritating local effect.

Q.—Now, when it enters the circulation it enters as alcohol, doesn't it? A.—Yes, sir, it enters as alcohol.

Q.—What becomes of it then, doctor? A.—It becomes oxidized and eliminated through the kidneys and the skin.

Q.—Where is it oxidized?

A.—In the circulation.

Q.—What does it become? A.—It ends.

Q.—What is that? A.—It simply does not—it is a neutral that has no special, specific—

Q.—What is it broken up into, and what does it form? A.—It is not broken up into anything; it is synthetic in itself.

Q.—It is? A.—Yes, sir, as far as I know.

Q.—Is it not burnt up in the system? A.—Sir?

Q.—I say, is it not burnt up in the system? A.—Oh, there is a product of combustion, yes.

Q.—Is that what you mean by oxidization? A.—Yes, sir.

Q.—Now, what is formed by the oxidization of alcohol? A.—Carbon.

Q.—What do you say? A.—Carbon.

Q.—What kind? A.—Just carbon. I think that the chemical—I do not remember, but I think the chemical formula is CH—but I don't just remember.

Q.—When you say carbon, do you mean charcoal?

Mr. Walker:—I object to that.

The Witness:—No, that is different.

Mr. T. J. Scofield: Q.—You said carbon. What is it? A.—Energy and heat.

Q.—That is the result of the oxidization, is it not? A.—Yes, sir—

Mr. Walker:—I object to that. It is immaterial.

The Witness—that is the result.

THE COURT:—I think you have gone far enough in this.

Mr. T. J. Scofield:—Well, I want to find out about the alcohol and the way it goes.

THE COURT:—The witness has told you.

The Witness:—I am not an expert chemist.

THE COURT:—The witness has told you what she thought it was.

To which ruling of the Court the defendants, etc., excepted.

Mr. T. J. Scofield: Q.—You say you are not an expert chemist?

The Witness:—No, sir.

THE COURT:—You were asking her what the ash is that is left.

The Witness:—There is no ash.

Mr. T. J. Scofield:—Let me ask just one other question which is not chemical, I think, your Honor.

Q.—Whatever the effect of the alcohol may be, and whatever becomes of it after it gets into the circulation, it exercises its alcoholic effect—A.—There is practically none left.

Q.—before it leaves the stomach; doesn't it? A.—Yes, sir; it is a diffusible stimulant.

Q.—It exercises its effect before it is oxidized, doesn't it? A.—Its immediate effect—

Q.—Yes, but I say— A.—that is on the nerves, not the—

Q.—Well, it exercises its alcoholic effect before it is oxidized, doesn't it? A.—Yes, sir, very rapidly.

Mr. T. J. Scofield:—Doctor, do you agree with the statement that gonorrhea is often—or that leukorrhea is often due to gonorrhea? A.—There is a leukorrhea which remains after gonorrhea has been treated.

Q.—Well, now, will you kindly answer the question, doctor?

Mr. Walker:—I submit that that is an answer.

THE COURT:—It is partially answered.

Mr. T. J. Scofield: Q.—Do you agree with the statement that leukorrhea is often due to gonorrhea? A.—Is often due?

Q.—Yes, often due? A.—Yes, I agree.

Q.—Well now, doctor, assuming that you have a case of leukorrhea, which is due to gonorrhea, would you recommend the use of such a medicine as Mr. Walker called your attention to on your direct examination, and expect that medicine to cure the disagreeable and disgusting affliction—

Mr. Walker:—That is objected to.

Mr. T. J. Scofield: Q.—And restore the female organs—

Mr. Walker:—Objected to.

Mr. T. J. Scofield:—Wait till I get through. You have so often asked me to do that.

Mr. Walker:—Pardon me, I thought you had finished.

Mr. T. J. Scofield: Q.—And restore the female organs to health?

Mr. Walker:—Now I object to it.

THE COURT:—You may ask the witness her opinion, Mr. Scofield.

Mr. T. J. Scofield: Q.—Well, what would be your opinion, doctor? A.—Any medication would be merely part of the treatment.

Q.—I did not get your answer; it is difficult to hear here. A.—Any medication would be merely part of treatment for anything of that sort.

Q.—Well, I suppose, of course, you would tell her to keep her bowels open and give particular attention to diet; you would do that, wouldn't you? A.—Yes, sir, but—

Q.—You probably would tell her to take some douches, too, wouldn't you? A.—Yes, sir; those are matters of toilet.

Q.—Yes, those are matters of toilet. But now, can you answer the question—what do you say about that, doctor—in your opinion would the use of such a medicine as Mr. Walker has called your attention to, cure the disagreeable and disgusting affliction, and restore the female organs to health?

Mr. Walker:—Now, pardon me, but—

The Witness:—We never use the word "cure," I think.

Mr. T. J. Scofield: Q.—I am using it now. I say do you think it would cure, or wouldn't it? A.—It would not cure—ethically we do not use the word "cure," as I understand it.

Q.—I am not finding fault with you about how you use it ethically. I am quoting it from a book that Mr. Walker called attention to. Now, I am asking you what you would say as to the word "cure" in that connection, and as a part of the question which I have propounded? A.—As a physician I would say no.

Mr. Scofield then asked the witness her opinion of certain advice given in the Home Treatment Book for Women assuming that Wine of Cardui contains 48 drops of alcohol and the extractives from 30 grains of carduus benedictus and 3 grains of viburnum prunifolium. Objection was made to the question on the ground that the witness had stated that she did not know anything about carduus benedictus.

The question was then recast omitting the carduus benedictus and objection was made to this as it eliminated one of the contents of the medicine.

Mr. T. J. Scofield: Q.—Doctor, assume that a medicinal solution contains the extractives from 3 grains of viburnum prunifolium extracted in a 20 per cent. menstruum of alcohol, and that it contains also the extractives from 30 grains of another herb or thistle, and that the characteristic of the second herb or thistle is that of a simple bitter, with some slight hepatic action. I will ask you to state whether or not, in your opinion, that tablespoonful doses of that preparation, containing 48 drops of alcohol and such extractives as this question suggests, should be taken three or four times a day on the first approach or sign of the coming change of life and continued throughout the entire period?

Objection was made but overruled.

Mr. T. J. Scofield: Q.—What do you say, doctor, to that question? A.—Taken as it would naturally be, while the patient was also taking food, it would have practically no deleterious—no deleterious effect. I can see that it would have no deleterious effect.

Q.—I am not asking that doctor. I am asking you whether, in your opinion, such a medicinal solution should be given three or four times a day on the first appearance of the change of life, and if it should be continued throughout the entire term, as a regular routine, during the menopause?

Mr. Walker:—I object to it for the same reason.

THE COURT:—She may answer.

To which ruling of the Court the plaintiff, etc., excepted.

The Witness:—It is so indefinite it is impossible to answer.

Mr. T. J. Scofield: Q.—Very well. I will ask you then—what do you mean by "so indefinite it is impossible to answer"? A.—In the first place, a physician cannot conceive of the beginning of the change of life as being a definite thing any more than the ending of a change of life would be a definite thing. In fact, the women now-a-days don't have change of life; they don't fall into the habits of distress and invalidism that was formerly the rule.

Q.—That is your experience now, is it? A.—Yes, sir; we don't even call it that any more.

Q.—What do you call it now? A.—Making the turn, is the expression used.

Q.—Making the turn? A.—Yes.

Q.—All right. Now then, doctor, I am not asking you what physicians can conceive or what they cannot conceive, but whatever they call it, I don't care anything about that. I am asking you to assume

certain things; then I am asking whether or not, in your opinion, however they may ascertain when the change of life is approaching, or whatever they may call it; is it your opinion, as a physician and surgeon, that that solution should be given three or four times a day, every day, as a routine proposition, to every woman, throughout the change of life, the menopause, or the turn of life, as you call it? A.—I really cannot answer that. It is too much of a question.

Q.—Well, you can say whether you think it ought to be done, or whether you think it ought not, can't you? A.—I don't think it can be given an opinion.

Q.—What is that? A.—It could not be given an opinion, because an opinion would be purely a personal expression.

Q.—Well, that is what I am asking you. I am asking for a purely personal expression? A.—I don't wish to give it.

Q.—You don't wish to give it? A.—No, sir.

Q.—Why, doctor? A.—Because I have not any definite idea about it. I would hear somebody else doing it, and have an opinion; but just to give an opinion off-hand, I could not do it; I haven't an imagination for it.

Q.—And you are averse then, to going on record one way or the other? A.—I am averse to going on record.

Q.—One way or the other? Either way? A.—At all.

Q.—Now, doctor, if you had a case of a married woman who was suffering from sterility, and the sterility was due to some abnormal condition in the female pelvic tract; would you advise the use of such a medicinal solution as I last described to you— A.—That would depend on whether—

Q.—Wait a minute. —for it, without first learning the underlying cause of the sterility? A.—If the patient came to me, I would, of course, ascertain the cause.

Q.—What did you say? A.—If a patient came to me, I would ascertain the cause.

Q.—You would first ascertain the cause? A.—Yes, I would first have to have the patient.

Q.—And that would be ascertained by an examination of such a character as you might conduct? A.—Naturally.

Q.—Doctor, do you agree that sterility is sometimes due to such wasting, weakening diseases as consumption, malaria, diabetes and Bright's disease? A.—The vital organs are quite independent of the accessory organs, and therefore might not necessarily be affected.

Q.—Doctor, I am not asking whether it would necessarily be affected. I am just simply asking you—you say not necessarily; that means it may. Now, please answer the question. Do you agree with the statement that sterility is sometimes due to such wasting, weakening diseases as consumption, malaria, Bright's disease and diabetes? A.—It would be in a case of tuberculosis, because menstruation itself stops rather early in tuberculosis and—

Q.—Now, how about malaria? A.—I do not—we do not have much malaria here. I have never had much malaria.

Q.—You have not had much experience with it? A.—No, sir.

Q.—How about diabetes? A.—Well, diabetes during the childbearing age is fatal to that—but if the diabetes was a complication of the pregnancy I would not know much about it—I could not tell.

Q.—How about hookworm? A.—I have only seen one case of hookworm, and it did not interfere with her.

Q.—How about Bright's disease? A.—Well, it would depend on the stage of the Bright's disease entirely.

Q.—Well now, doctor, what I am going to ask you is—I am asking you if you think it sometimes is produced by any or all of these different conditions?

Mr. Walker:—I object to it on the ground it has already been answered and explained, as to each condition.

THE COURT:—She may answer.

Mr. Walker:—And also that it is immaterial.

THE COURT:—She may answer.

To which ruling of the Court the plaintiff, etc., excepted.

Mr. T. J. Scofield: Q.—Well, doctor, assume that in the Cardui—or in Home Treatment for Women, as copyrighted by the Chattanooga Medicine Company, and which is sent on application to women, on page 41, in the 1912 edition and in the 1913 edition, assume that it is stated there that sterility is sometimes due to such wasting, weakening diseases as consumption, malaria, diabetes and Bright's disease; have you an opinion—

Here plaintiff's counsel objected and, after some argument, were sustained.

Q.—Doctor, under the heading of "Sterility" in the Home Treatment for Women, to which I called your attention a few minutes ago, it is said, and referring to the question of the treatment of a condition of sterility—I read as follows: "Women suffering from wasting, weakening diseases, such as consumption, malaria, diabetes, Bright's disease, etc., are often barren." Do you agree with that statement, doctor? A.—Yes, sir.

Q.—Will you tell the jury your opinion of the value of such a solution as I have lastly called your attention to in effecting a cure of sterility when due to any one of the four causes mentioned in the preceding question?

This question was objected to but the witness was permitted to answer.

A.—If it would build up the general nutrition of the patient to a point where she would physiologically become pregnant, it would.

Mr. T. J. Scofield: Q.—Doctor, just a moment. Will you please answer the question first. I am not asking for your reasons.

Mr. Walker:—She did.

Mr. T. J. Scofield:—I am asking whether or not you have an opinion.

THE COURT:—Well, let the answer be that she has an opinion. Now, give the opinion, Doctor.

The Witness:—My opinion is if it built up the general nutrition of the patient so that she became physiologically naturally pregnant, it would.

Mr. T. J. Scofield:—I move to strike out the answer, if the Court please.

THE COURT:—It may stand.

To which ruling of the Court the defendants, etc., excepted.

Mr. T. J. Scofield:—Have you an opinion as to whether or not that solution will do that thing, whether it will build up that system in all those diseases and conditions?

Mr. Walker:—I object to it.

THE COURT:—She may answer.

Mr. Walker:—What solution is he talking about, Judge?

THE COURT:—The very one the witness had in mind when she said if it effects certain things it will be of value.

The Witness:—The last question, please.

Mr. T. J. Scofield: Q.—The question is, do you think it would build them up if they had consumption, Bright's disease—

Mr. Walker:—That is not the question.

Mr. T. J. Scofield: Q.—(Continuing) —malaria or diabetes? A.—It might and it should.

Q.—You think it would? A.—It should, if it is supposed to be, what you say—

Q.—What did you say? A.—If it is a tonic, it should.

Q.—You think it would build them up, so that the consumptive effect, tubercular effect, would be overcome?

Mr. Walker:—That is not what she said.

The Witness:—It has been known to do it.

Mr. T. J. Scofield: Q.—What is that? A.—The tonics have been known to do it.

Q.—I am talking about this medicine, doctor. A.—That is, your medicine, that is that which you have in the hypothetical—

Q.—What was the medicine which I described? A.—The medicine containing several ingredients in alcohol solution.

Q.—What were they? A.—Just in the—I don't remember just now, but I am willing to—

Q.—Oh, you don't remember. Then I don't suppose you can answer the question. Now, doctor, you have testified to something here at puberty, and as to the use of medicines for girls? A.—Yes, sir.

Q.—You have said, haven't you, that 90 per cent. of all girls who pass through the period of puberty, from girlhood to womanhood, go through it with pain and suffering? A.—Yes, sir.

Q.—And then you mean, I suppose, to say by that that 10 per cent. do not? A.—Yes, sir, about 10 per cent. do not.

Q.—The 10 per cent. go through normally and naturally? A.—Yes, sir.

Q.—A physiological process, merely? A.—Yes, sir.

Q.—And the other 90 per cent. go through in sickness? A.—Well, now, we don't call it sickness.

Q.—Very well—with pain and suffering? A.—Yes, with discomfort.

Q.—Now, bearing in mind that it is purely a physiological process with 10 per cent. of the girls who go through it without these discomforts, what is your opinion as to whether every girl, including the ten per cent., should take the medicinal solution to which I called your attention a while ago, at the time of puberty, during the whole period of puberty? A.—Well, the period of puberty is about as indefinite as the period of the menopause.

Q.—Well, whatever it is, what is your notion about it, if the 10 per cent. that you say—with whom you say it is practically a physiological action, who go through it normally, naturally, without those discomforts that the other 90 per cent. have—what is your opinion as to whether such a medicine as I described to you in the question a while ago, should be taken by the 10 per cent. or by any of the 10 per cent. throughout all the period of puberty? A.—I don't conceive that it would be taken by any who did not need it.

Q.—Well, that does not answer the question. What is your opinion as to whether it should be given to them during the whole period of pregnancy—or puberty, I mean? A.—Naturally not.

Q.—You say not. Now, doctor, on the question of menorrhagia, it is said in the Ladies' Birthday Almanac of 1907, on page 23, that "Flooding is always a sign of danger." Do you agree with that? A.—Yes, sir.

Q.—"The best treatment is complete rest in bed." Do you believe in that? A.—Yes, sir.

Q.—"And Wine of Cardui three times a day." Assuming that Wine of Cardui is the solution, medicinal solution to which I have directed your attention in these inquiries which I have been making, do you believe that this is the best treatment in all cases of flooding, regardless of the cause which produced the flooding? A.—I am not testifying as to the Wine of Cardui as a medicine.

Q.—I am not asking that—

THE COURT:—You may assume, Madam, that the Wine of Cardui is the medicine that Mr. Scofield called your attention to that you said would or would not have certain effects on certain diseases.

The Witness:—Any remedy of that kind might be tried at this time logically.

Mr. T. J. Scofield: Q.—Well now, that is not what I am asking you, doctor. I am asking you whether or not you believe that such a solution as that is the best treatment in all cases of flooding, regardless of the cause which produces the flooding? A.—I don't think a physician can answer that question.

Q.—You don't? A.—No, sir.

Q.—Who else could answer it? Do you think the Chattanooga Medicine Company with its advertising counsel could answer that question?

Mr. Walker:—That is objected to.
THE COURT:—Objection sustained.

To which ruling of the Court the defendants, etc., excepted.

Mr. T. J. Scofield: Q.—Do you think that a layman, one who is not a physician and experienced in the practice, could answer it?

Mr. Walker:—That is objected to.
THE COURT:—Objection sustained.

To which ruling of the Court the defendants, etc., excepted.

Mr. T. J. Scofield: Q.—Do you think then, that a lady who was reading an advertisement in an almanac—

THE COURT:—Let us not pursue that. It is not a proper question.

Mr. T. J. Scofield:—Very well, your Honor.

To which ruling of the Court the defendants, etc., excepted.

Mr. T. J. Scofield: Q.—Who could answer such a question, doctor?

Mr. Walker:—Objected to.
THE COURT:—If she knows.

Mr. T. J. Scofield: Q.—If you know.

A.—The patient herself.

Q.—The patient herself? A.—Yes.

Q.—Could she tell what the underlying cause was of her trouble?

Mr. Walker:—That is objected to. He has been over that ground before.

THE COURT:—I think you have covered that.

Mr. T. J. Scofield:—Not with this, not on the question of menorrhagia, your Honor.

THE COURT:—Very well, go ahead.

Mr. T. J. Scofield: Q.—The question is addressed specifically to whether or not this medicinal solution is the best treatment in all cases of menorrhagia regardless of the cause that produces the menorrhagia. Do you think the patient could tell what the cause of the menorrhagia or flooding might be? A.—She would have an idea as to the cause, from her own experience, leading up to her illness.

Q.—I am asking whether she could tell the cause? A.—Sometimes, not definitely, but—

Q.—Sometimes? A.—Yes, sir.

Q.—In all cases? A.—No, sir, all are not informed—

Q.—What are the different things that produce menorrhagia or flooding, doctor? A.—It may be constitutional or local.

Q.—Well, what are the constitutional things? A.—The constitutional would be anything that depleted the character of the blood so that it did not coagulate properly or that the—well, syphilis is a frequent cause, and, of course, cancer is one of the very late causes.

Q.—What is the last thing you said there? A.—Cancer.

Q.—Cancer? A.—Yes, sir.

Q.—Now, I suppose, doctor, it is true that this flooding might be produced by any one of many kinds of inflammations, might it not? A.—Yes, sir.

Q.—It might be by endometritis, might it not? A.—Yes, sir.

Q.—By metritis? A.—Less so by metritis.

Q.—And by salpingitis? A.—Yes, salpingitis would produce it.

Q.—Ovaritis? A.—Yes, sir.

Q.—Pelvic cellulitis? A.—Yes, sir.

Q.—Pelvic peritonitis? A.—Yes, sir.

Q.—Inflammatory adhesions of the pelvis? A.—Yes, sir.

Q.—Fibroids? A.—Yes, sir.

Q.—Uterine polypi? A.—Yes.

Q.—And ovarian tumors? A.—Yes.

Q.—And uterine cancers? A.—Yes.

Q.—Displacements, both anteversion and retroversion—and anteversion and retroversion? A.—To some extent, yes.

Q.—Inversion? A.—Yes, sir.

Q.—And uterine prolapse? A.—Yes, sir, in some.

Q.—And foreign materials that might be in the uterus? A.—Yes.

Q.—Enlarging and thickening of the mucous lining of the membranes? A.—Yes, sir.

Q.—And other foreign matters? A.—Yes, sir.

Q.—Following miscarriage, for instance? A.—Yes, sir.

Q.—It might be due to a retained placenta? A.—Yes.

Q.—It might be due to systemic disorders? A.—Yes, I think.

Q.—Hemophilia? A.—Yes.

Q.—Malaria? A.—Yes, sir.

Q.—Pellagra? A.—I am not familiar with pellagra.

Q.—Consumption? A.—Yes.

Q.—Uterine fibrosis? A.—I beg pardon?

Q.—Uterine fibrosis? A.—Yes, sir. It is usually associated with other forms of—

Q.—Arteriosclerosis of the vessels? A.—Yes—well, I think that is—

Mr. Walker:—I don't hear you.

Mr. Loesch:—I could not hear your answer.

The Witness:—So far as I know.

Mr. T. J. Scofield: Q.—And visceral disturbances?

Mr. Loesch:—What did you say about arteriosclerosis.

The Witness:—About that—well, that is not usually present until rather late in life, and you would not find it except in—

Mr. T. J. Scofield: Q.—Even though late in life, might it be due to that? A.—If it was at the menopause—

Q.—Yes. Now, visceral disturbances, it might be due to that, might it not? A.—Yes, sir.

Q.—Such as heart disease, liver disease, kidney disease? A.—Yes, sir.

Q.—Now then, how many cases of that kind do you think that such a medicinal solution as I have mentioned to you would constitute the best treatment, for the condition of flooding—without regard to which one of these causes may have produced it—any of them? A.—It would not be contraindicated.

Q.—I am not asking you whether it would not be contraindicated—water would not be contraindicated, would it? I am asking you whether or not now, having gone over the whole limit or line of these things that might produce that flooding, whether it is your opinion that such a medicinal solution as I have called your attention to is the best treatment in all of these cases of flooding, regardless of the cause which produced it? A.—No, sir.

REDIRECT EXAMINATION BY MR. WALKER

Q.—Are you regular—do you practice the regular school? A.—Yes, sir.

Q.—Now, you spoke in your direct examination about the length of time you would take in order to ascertain whether or not an operation was necessary? A.—Yes, sir.

Q.—What is the purpose of that? A.—To eliminate and exclude any other conditions than the one which I think is the cause.

Q.—State whether or not, doctor, in this modern day, at least in the last three or four years, there are less surgical cases than medical cases—I am not asking the proportion—but is the tendency of medicine to get away from surgery and to medicine?

Mr. T. J. Scofield:—What is that?

The Witness:—Yes, sir; conservation.

Mr. Walker: Q.—What was it you said about champagne; I did not understand it. You said something in answer to counsel on the other side, about champagne. I did not just hear what that was. A.—It is one of the most desirable forms of alcohol that we have to use, where we can use it, where the people can afford it.

Q.—Do you distinguish between alcohol as alcohol, and alcohol with drugs? A.—Yes, sir, I do.

Q.—What did you mean when you said about the drugs—the compensation of drugs when used with alcohol? A.—It would offset any disadvantages, and they were probably improved in their usefulness.

Q.—Now, doctor, is it a fact that women suffering from wasting, weakening diseases, such as consumption, malaria, diabetes or Bright's disease, are often barren? A.—Yes, sir.

Q.—Isn't it a fact they are often barren when they don't suffer from those diseases? A.—Yes, sir, it is not uncommon.

Q.—Take the medicine, the hypothetical medicine that Brother Scofield gave you, if you remember anything about it, with viburnum and this other stuff that had some effect, in 20 per cent. alcohol, his stuff—I don't remember what it was—and state whether or not it would hurt the other ten per cent. of girls at puberty, if they took it? A.—It would be negligible, in my opinion.

Mr. Walker:—That is all.

Whereupon an adjournment was taken until the same day, May 19, 1916, at 2 o'clock p. m.

May 19, 1916, Afternoon

TESTIMONY OF MR. JOHN F. BROWNELL

The court met pursuant to adjournment. Mr. John F. Brownell was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Brownell testified that he lives in Franklin Parish, Louisiana. He has known Dr. A. J. Reynolds of Fort Necessity, La., for about six years.

He has not talked with Dr. Reynolds about the testimony in this lawsuit. He had a conversation with Dr. Reynolds in West End Butcher shop in Winsboro, in December. The witness stated that Dr. Reynolds told him if he knew anybody who was using Wine of Cardui in place of whisky, he could get pretty good pay if he would come over here and swear to it.

The witness says he did not tell Dr. Reynolds that he had been selling Wine of Cardui and had to quit it and that his wife drank it all the time. Mr. Brownell is now a farmer. He quit merchandising in 1914. At that time he kept a store in Lydiaville about 8 miles from Fort Necessity. He sold Wine of Cardui in 1912. He bought three dozen bottles in 1912 and the last bottle was sold in 1913. Later he ran a store just below Lydiaville. He has not sold Cardui since 1914. The witness knows Mark B—. Mark B— came to his store and asked for something to drink about a year and a half ago. Alsip M— was with him. B—, according to the witness, took down a bottle of Blackberry and Ginger Tonic and took a swallow out of it. Mr. Brownell stated that there was not a bottle of Wine of Cardui in the store at that time. The witness identified a carton of blackberry and ginger tonic. The witness had three or four bot-

bles of this in his store. Mr. Fowler read the label on the bottle:

"Scott's Blackberry and Ginger Tonic. 22 per cent. alcohol. For Diarrhea, dysentery, cramps in the bowels, colic and cholera morbis. Tablespoon every three or four hours. Price 75 cents a bottle."

Attorneys for the defendants waived the cross-examination.

May 22, 1916, Morning

TESTIMONY OF MR. DANIEL COIT CAMPBELL

Mr. Daniel Coit Campbell was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Daniel Coit Campbell testified that he resides in Chesterfield, six miles south of Ruby. He has known Dr. Robert M. Newsom for two or three years.

There was read to the witness the testimony of Dr. Newsom to the effect that the witness drank Wine of Cardui, that his horse ran away, that he lost his right ear, that he had a concussion, that he is paralyzed on his right side and that he is under treatment now. Mr. Campbell stated that he never drank Wine of Cardui. He had a runaway at a time when he was drinking. He bought Manola. The witness stated that his right ear was not cut off and exhibited it to the jury. He had suffered an injury on his right side. Dr. Newsom treated him. The witness does not even remember smelling Wine of Cardui.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that on the day of the runaway he was mighty near drunk and had been drunk about all day. He drank corn whisky and Manola in the morning. Manola is a medicine. Chesterfield is in a dry state. The witness stated that he obtained the corn whisky from J. H., a mail carrier. He drank some with J. H. He testified that he was driving, went around a curve fast and was thrown out of the buggy and was unable to get up. The first thing he can remember was somebody sewing his ear—sewing it back on. Mr. Campbell testified that the corn whisky was given to him. It was yellow corn whisky, as far as he remembers.

TESTIMONY OF MR. W. G. WHITE

Mr. W. G. White was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. White testified that he resides in Chesterfield, S. C. He has been in the drug business for nearly four years. He knows Coit Campbell, the previous witness, and remembers the incident of the runaway. Mr. White testified that on that morning Mr. Campbell came in and bought a bottle of Manola, about an hour and a half before the accident.

Mr. White sells Wine of Cardui in his drug store. He has known Dr. Newsom for about five years, and testified that the general reputation of Dr. Newsom for truth and veracity is not good, and that he would not believe him under oath. The witness testified Campbell had bought Manola on previous occasions but had not bought Wine of Cardui.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

Mr. White testified that there are three drug stores in Chesterfield. He has been working for the Chesterfield Drug Co. Previously he worked in Timmons ville, about fifty miles from Chesterfield. The witness graduated from the Charleston Medical College after two years' study in pharmacy. He testified that Manola is a tonic put up by the Manola Company in St. Louis, and that it contains 18 per cent. alcohol.

Q.—How long have you been selling Manola? A.—For several years.

Q.—That is a dry territory, isn't it? A.—Yes.

Q.—But you sell intoxicants in violation of the law nevertheless, do you? A.—No.

Q.—You do not? Are you allowed to sell that stuff? A.—Yes, sir.

Q.—Do you sell Wine of Cardui? A.—Yes.

Q.—Do all the drug stores there sell Wine of Cardui? A.—Yes.

The witness testified that on the morning of the runaway he saw Mr. Campbell. Mr. Campbell had been drinking. When Campbell bought the Manola the witness had an idea what he wanted to do with it. He did not drink it in the

store but took it outside. The accident happened in Chesterfield about a block from the store and he went up to the scene of the accident. He remained there just a few minutes and went back to the store. He did not see Dr. Newsom at the accident. He did not look over Campbell as the crowd was so heavy around him. He saw Campbell later in the day at the hotel.

Q.—The fact that you had sold him this Manola, if that is what you call it, and that this accident occurred, did not give you any concern at all? A.—No. I had nothing to do with his drinking it at all.

Q.—How is that? A.—I had nothing to do with him drinking it at all.

The witness has known Dr. Newsom about five years. Dr. Newsom was in the senior medical class when the witness was in the senior pharmacy class. Dr. Newsom has a drug store of his own. The drug store is in Ruby, which is about six miles from Chesterfield.

The witness knows about thirty people in Ruby, which is a town of about 100. He does not know the reputation of Dr. Newsom in Ruby, where he resides, but he does know his reputation in Chesterfield. He stated that in Chesterfield there are three drug stores and in Ruby there is one. There are also general stores in Ruby. He does not recollect any general stores where they sell Wine of Cardui.

Q.—How many people have you heard say anything up at Chesterfield, about Dr. Newsom's reputation? A.—I do not know.

Q.—Well, about how many? A.—I don't know how many have said it.

Q.—Who did you ever hear say anything about it? A.—I have heard the doctors in the town.

Q.—Who? A.—Some of the doctors in the town.

Q.—What doctor? A.—Well, I don't have to say.

Q.—Well, you do have to say. I want to know who it is.

THE COURT:—Answer the question. A.—It was Perry.

Mr. T. J. Scofield:—What Perry? A.—W. J. Perry.

The witness also heard Dr. Glover of Chesterfield speak of Dr. Newsom. Mr. White came to Chicago following a visit to Chesterfield by Miss Ervin some time ago. He has been here two days. He was accompanied from Chesterfield by Mr. Levy, Dr. Perry, Mr. Coit Campbell and Mr. W. A. Watson. The witness' expenses for coming to Chicago were paid by Mr. George T. Levy, a lawyer from Sumter. He expects to receive compensation for his services. Mr. Levy spoke to him about coming to Chicago.

Mr. T. J. Scofield: Q.—Who is that? When did you first talk to Levy about it? A.—I did not talk to him till he called up over the phone.

Q.—That was before you left Chesterfield? A.—Yes.

Q.—What did you tell the Court a while ago and this jury that nobody ever talked to you about coming up here except Miss Ervin, for? That was not true, was it? A.—He called me up to come.

Q.—That was not true, was it? A.—I don't know.

Q.—You don't know whether it was true or not? What is your reputation for truth and veracity down there?

Mr. Fowler:—That is objected to.

THE COURT:—Objection sustained.

To which ruling of the Court the defendants, etc., excepted.

REDIRECT EXAMINATION BY MR. FOWLER

The witness stated that Dr. Newsom is well known around Chesterfield. Chesterfield is connected by a branch line with Ruby, and also by county roads.

RECROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness testified that he could not distinguish between a reputation for truth and a reputation for veracity, and that the reputation of Dr. Newsom was bad both for truth and veracity.

TESTIMONY OF MR. W. A. WATSON

Mr. W. A. Watson was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Watson testified that he lives in Chesterfield, S. C. He knows Dr. Newsom and Mr. J. S. McGregor. Mr. McGregor worked in the drug store in Ruby. Dr. Newsom had an office near the drug store. Mr. Watson stated that neither Dr. Newsom nor Mr. McGregor had ever seen him drinking Wine of Cardui. He has never taken a drink of

Wine of Cardui in his life unless it was for medicine and he did not know what it was. He did not know there was any alcohol in it. The first time he saw a bottle of Wine of Cardui out of the carton was about three weeks ago when he asked to look at one to see how it looked, and after he had heard Dr. Newsom's testimony in the trial.

The witness testified that he has never mixed any Cardui with coca cola, and that there was never any coca cola bottles in the drug store. He stated he had drunk glasses of coca cola at the fountain in the drug store. He stated that the first one who talked to him about coming to Chicago was a man whose name he has forgotten. Later a woman talked to him about coming to testify and then another man named Mr. Levy who brought him here.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

Mr. Watson testified that he drinks a little sometimes and has been drunk on occasions.

Q.—That is a dry territory down there? A.—Yes, sir.

Q.—So when you get anything to drink you have either got to get moonshine whisky or something from a drug store, haven't you? A.—No, sir, they don't get any around there in the drug store that I know of. I never got any from them. I never got any liquor at any drug store there.

Q.—But you get Manola and stuff like that? A.—I have bought some bitters of one kind or another around the drug stores.

Q.—What kind of bitters have you bought? A.—Hostetter's?

Q.—And what else? A.—Well, I believe I bought some Peruna at another time.

Q.—What else? A.—I don't know, sir.

Q.—Well, you bought whatever there was to sell? A.—Whatever I could find of that, some bitters of one kind or another.

Q.—Different sorts of tonics and bitters? A.—Yes, sir.

Q.—And you can get drunk on them all right? A.—No, sir, I didn't particularly get drunk on that. Sometimes I would buy that after I had been drinking liquor, drink a few bitters.

Q.—Well, you take the liquor and the bitters, and those two would do the work, wouldn't they? A.—Well, I didn't—it didn't make me drunk. I bought it just the same to help my feelings a little.

Q.—Do you get the moonshine whisky down there? A.—Well, I can order—we can order whisky down there.

Q.—I say, do you get moonshine whisky? A.—Moonshine whisky?

Q.—Or corn whisky? A.—Corn whisky?

Q.—Yes? A.—Yes, we get corn whisky.

Q.—Where do you get that? A.—Jacksonville, Florida, or anywhere we order it from.

Q.—Is it red or white? A.—Red or white?

Q.—Yes? A.—Either kind you order.

Q.—You get whatever you want? A.—Yes, sir.

Q.—You can get red eye or white whisky there, is that right? A.—Oh, yes, sir.

Q.—Now, the white whisky is moonshine whisky or corn whisky, isn't it? A.—I don't know what you call moonshine whisky.

Q.—You said you never drank Wine of Cardui that you know of, that is right, is it? A.—Yes, sir, I never drank none that I know of.

Q.—What is it? A.—I never drank any Wine of Cardui.

Q.—Didn't you say a while ago you didn't ever drink any that you knew of? A.—I said I had never drank it.

Q.—Is that what you said? A.—Yes.

Q.—When you get full, do you know what you are drinking? A.—Yes, I know what I am drinking.

Q.—All the time? A.—Yes, sir, I know what they call it.

Q.—You know what they call it? A.—I know whether it is whisky or whether it is bitters or Cardui.

Q.—You don't know whose bitters it may be. It might be Hostetter's Bitters, or it might be Peruna? A.—It might be Hostetter's Bitters or Peruna or whisky. I know Hostetter's Bitters and Peruna and whisky apart. I know the difference in them.

Q.—You know them as you see them, but I say, when you are drinking, when you are full, you don't pay much attention to what is on the bottle? A.—Well, I think I know what I am drinking.

Q.—Well you say you generally know what you are drinking? A.—I generally know what I am drinking.

Q.—Do you mean that? Is it true all the time you take a drink, do you know what it is? A.—Well, I know something about it. I claim to think I know something about what it is, you know. I ain't no analyzer at all. I could not tell exactly, but I go by the label that is on it.

Q.—In drinking liquors, do you get—you say you get drunk. Do you have protracted sprees? A.—Well, I have been tight.

Q.—How long would you stay that way sometimes? A.—I take sometimes a little nap of sleep, or something like that. I have stayed tight off and on, a day or two.

Q.—You read, do you? A.—Read? No, sir, I got no learning. Very little learning, can't read much.

Q.—Can you read anything? A.—I can read a little, not much.

Q.—Could you read what is on the label of the bottle? A.—Yes, sir.

Q.—You think you could read that, could you? A.—Oh, yes, I can read anything like liquid bitters, or Hostetter's or something like that.

Q.—Can you read "Hostetter's Bitters" and tell it by reading it? A.—I can see it on the bottle, and know what it is.

Q.—Can you pick up a bottle— A.—No, sir, I cannot read all that is on it.

Q.—You cannot read it all. All right. Now, can you sign your name? A.—Yes, sir, I can, not with a pen. I am nervous, and I ain't got no learning. I can write my name, though.

TESTIMONY OF MR. R. T. MCCREIGHT

Mr. R. T. McCreight was called as witness for the plaintiff.

DIRECT EXAMINATION BY MR. FOWLER

Mr. R. T. McCreight testified that he is in the drug business in Ruby, S. C. Dr. Newsom is president of the drug company, and has been since 1911. Mr. McCreight owns the controlling interest in the drug company. He is secretary and treasurer and carries on the business. He generally has one clerk.

The witness does not know of selling Wine of Cardui to W. A. Watson. He may have sold some to Loney Watson. He does not recall selling any to Coit Campbell. He has not sold coca cola in bottles. The only purchase of Wine of Cardui which he remembers was twelve dozen bottles purchased when he first came to the drug store in 1913. The last of that twelve dozen were sold three or four days before he came to Chicago as a witness. Mr. McCreight is a brother-in-law of Mr. McGregor.

Q.—I read you this, testified to by McGregor: "Do you know about how much of it he sold a month? Answer. Why, he would sell something like a gross. He would buy it in twelve dozen bottles at a time, a gross at a time. Question: A gross at a time, and how long would a gross last, how soon would he sell it? Answer: About 30 days as I remember." Now, is that true or not?

Mr. T. J. Scofield:—I object to the form of that question.

Mr. Fowler: Q.—State whether or not there was sold in this store over a gross of bottles of Wine of Cardui, within 30 days?

Mr. T. J. Scofield:—That is objected to.

Mr. Fowler: Q.—Or within 45 days.

Mr. T. J. Scofield:—That is objected to.

THE COURT:—What is the objection?

Mr. T. J. Scofield:—If he wants to ask him how much was sold, I don't object to it.

Mr. Fowler:—I am contradicting your witness.

THE COURT:—What is the most that you ever sold in any one month? A.—We have not sold anything like a gross. I think we average something like five or six bottles a week maybe.

Dr. Newsom told the witness that his testimony (Dr. Newsom's) had been published in THE JOURNAL.

Mr. Fowler:—What did he say about the testimony, as there given?

Mr. T. J. Scofield:—That is objected to, if the Court please.

Mr. Fowler:—I will state to your honor what I desire.

THE COURT:—He may answer.

To which ruling of the Court the defendants, etc., excepted.

Mr. Fowler: Q.—Go ahead. A.—He told me that he had read his testimony, and he did not realize that he had testified to what he had, until he read his testimony.

Mr. T. J. Scofield:—Now, if the Court please, I move to strike out his answer.

THE COURT:—On what ground?

Mr. T. J. Scofield:—Because it is hearsay, and no foundation laid for it, and it is highly improper, in my judgment.

THE COURT:—Why, very frequently hearsay evidence is made use in impeachment of a witness.

Mr. T. J. Scofield:—It is entirely immaterial, if the Court please.

THE COURT:—Well, the weight of it is a question for the jury. He said he did not realize what he testified to—what he did.

To which ruling of the Court the defendants, etc., excepted.

Mr. Fowler: Q.—Did he state to you in what respect he did not realize what he testified to?

Mr. T. J. Scofield:—I object to that, if the Court please, because that is hearsay, it is immaterial, and no foundation laid for it.

THE COURT:—State what the doctor said about his testimony.

Mr. T. J. Scofield:—I object to the Court's question.

To which ruling of the Court the defendants, etc., excepted.

The Witness:—Well he—sir, he told me how he was sorry that he brought the Ruby Drug Company into it—

Mr. Fowler:—Brought who into it? *A.*—Ruby Drug Company and myself. He told me that it worried him more than anything that had ever happened in his life.

Mr. T. J. Scofield:—Now then, I move to strike out all that Dr. Newsom is supposed to have said.

THE COURT:—Is that all he said?

The Witness:—That is about all I remember.

THE COURT:—That answer may stand.

To which ruling of the Court the defendants, etc., excepted.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

Mr. T. J. Scofield asked that everything that the witness stated that Dr. Newsom is supposed to have said be stricken out on the ground that it is hearsay. The Court stated that it was immaterial and ruled that it might stand.

Mr. McCreight stated that he did not remember selling any Wine of Cardui to Coit Campbell, but his clerk may have sold some. He has sold Wine of Cardui to Loney Watson. He does not know how many bottles the clerk may have sold.

REDIRECT EXAMINATION BY MR. FOWLER

The witness identified a signature as the genuine signature of Dr. Newsom. *Mr. Fowler* endeavored to introduce an affidavit made by Dr. Newsom since leaving Chicago after testifying for the defendant. The Court ruled that this could not be introduced.

TESTIMONY OF MR. SPENCER SELLERS

Mr. Sellers was called as witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Spencer Sellers testified that he resides in Ruby, S. C. His wife's name is Louise. His business is farming. He knows Dr. Newsom, who treated his wife about three years ago for female trouble. Dr. Newsom made several visits. He did not operate on her. *Mrs. Sellers* has taken Wine of Cardui, the last time about eighteen months ago. She has taken eight bottles, the witness stated, on the advice of Dr. R. M. Newsom. She took the Wine of Cardui according to the directions on the bottle. The witness stated that Dr. Newsom told him to get the Wine of Cardui and give it to his wife. This Dr. Newsom did in his drug store in Ruby. The witness stated "she was regular and her periods were scanty." He has been married eight years. He stated that his wife was apparently well when she quit taking Wine of Cardui and has been well ever since. The witness has never seen his wife drink Wine of Cardui from the bottle. She would take a tablespoonful three times a day.

The attorneys for the defendant waived the cross-examination.

TESTIMONY OF DR. W. J. PERRY

Dr. W. J. Perry was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Dr. W. J. Perry testified that he resides in Chesterfield, S. C. He has been a practicing physician since 1905. He knows Dr. R. M. Newsom. He considers his reputation for truth and veracity in the community where he resides as bad, and he would not believe him on oath.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

Dr. Perry stated that Dr. Newsom sometimes practices in Chesterfield, but his home is in Ruby. *Dr. Perry* used to do a good deal of practice in Ruby. He has known Dr. Newsom four or five years. *Dr. Perry* stated that he does both emergency surgery and medicine. He has been practicing medicine since 1900. He was licensed to practice in 1905. He practiced five years before he was licensed. He is a graduate of the Atlanta College of Physicians and Surgeons in 1900. He could not get a license to practice medicine based on that graduation. He took the state board examination in 1905.

Q.—But you had been practicing five years in violation of the law? *A.*—Well, if—

Q.—Answer the question. You either had or had not been practicing five years in violation of the law? *A.*—Yes, sir, I suppose I had.

Mr. Fowler:—Now, explain, doctor.

The Witness:—Sir?

Mr. Fowler:—If you have any explanation to make, make it.

Mr. T. J. Scofield:—Well now, I was asking him—

Mr. Fowler:—He started to explain a moment ago, and you stopped him.

Mr. T. J. Scofield:—If there is anything else you want to say, say it.

The Witness:—Well, there was no objection raised—there was no objection raised from the profession.

Q.—Yes. Nobody kicked about it? *A.*—No, sir.

Q.—So you went ahead and practiced medicine in violation of the law? *A.*—Yes, sir, I suppose you would call it violation of the law.

Q.—Now, do you mean to say by that that the state officials did not catch you at it; is that what you mean to say? *A.*—Well, I did not try to hide it.

Q.—You never were prosecuted, anyway? *A.*—No, sir, I was not prosecuted.

The witness knows Dr. Newsom. He has met him two or three times in consultation. Once he called Dr. Newsom in, and once Dr. Newsom called him in. He cannot remember exactly when. Probably some three or four years ago. He has not been an associate of Dr. Newsom socially or otherwise for the last year or two.

Q.—Are you on good terms with Dr. Newsom? *A.*—Now?

Q.—Yes? *A.*—I speak to him, yes.

Q.—That is not what I ask you. I asked you if you were on good terms with him? *A.*—Well, we greet each other—speak when we pass. I cannot say that I love him.

Q.—Do you know whether he loves you? *A.*—I don't expect he does.

Q.—You don't expect he does? *A.*—No.

Q.—The fact is that there is some sort of grievance between you and Dr. Newsom, is there not? I am not asking what it is, I am asking you if that is not the fact? *A.*—Well, I did not think he treated me right in the case I met him on.

Q.—I did not ask you to tell what it was. I say you are mad at Dr. Newsom, are you? *A.*—Mad with him?

Q.—Mad at him, angry at him, or with him? *A.*—No, sir, I am not angry at him.

Q.—You are not angry with him? *A.*—No, sir.

Q.—You were, were you not? *A.*—At one time I was worried about some things I had heard him state, yes.

The witness then gave the names of persons whom he had heard say things about the reputation of Dr. Newsom for truth and veracity. He mentioned Mr. R. D. McCreight, Mr. J. D. McGregor, Rev. A. B. Smith of Wexford, Dr. Funderbuck of Mt. Croghan; Mr. Wiley Watson, Dr. Vaughan at McBee; Dr. Ingram at McBee, and Coit Campbell.

The witness stated that he had a falling out with Dr. Newsom three or four years ago and that he has heard the majority of these things since that time. He stated that Dr. Newsom has a very good practice, and that he does not think Dr. Newsom has a larger practice than any other doctor practicing around there. The witness testified that Miss Ervin asked something about Dr. Newsom. The witness understands that Miss Ervin represents the Chattanooga Medicine Company. He first saw Miss Ervin five or six weeks ago. Mr. Levy arranged for the witness to come to Chicago.

The witness is president of the Chesterfield Drug Co. This drug company sells Hostetter's Bitters, Peruna, Wine of Cardui, Manola and the whole line.

The witness is not a member of the medical society of the State of South Carolina. He stated that there are doctors in his county who are members of the state society.

REDIRECT EXAMINATION BY MR. FOWLER

The witness stated that a county medical society was recently organized at Cheraw. He was invited to go in but did not do it. He stated that he is acquainted in Patrick, S. C., but he is not acquainted with the name McNab.

TESTIMONY OF DR. C. A. GLOVER

Dr. C. A. Glover was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Dr. C. A. Glover testified that he resides at Chesterfield, S. C., and he has lived there since December, 1915. He previously lived at Ashford, Ala. He knows a few of the people in Ruby. The witness knows practically all the people in Chesterfield and has practiced some in Ruby. He has been in Dr. Newsom's home. The witness considers the general reputation of Dr. Newsom in the community for truth and veracity as bad, and he would not believe him on oath.

The witness lived in Ashford from August, 1910, until November, 1915. He graduated in the Atlanta School of Medicine. He is acquainted with Frank Sellers, of Cottonwood, Ala., and considers the general reputation of Frank Sellers for truth and veracity as bad and he would not believe him on oath. He knows Josh Granger, but has had no dealings with him.

Dr. Glover has prescribed Wine of Cardui three or four times. He prescribed for his wife when she was troubled with dysmenorrhea. He has been married five years. He prescribed Wine of Cardui for his wife about three years after he was married. Previously he had given her practically everything he knows with only temporary relief. He obtained equally as good results and practically better with the Wine of Cardui than any other remedies. He stated that his wife has Wine of Cardui at home and still uses it occasionally. She begins five or six days before the period and takes it through the period.

Dr. Glover also prescribed Wine of Cardui for E. W., who suffered amenorrhea and scanty menstruation mostly at her periods. Before using Wine of Cardui he gave her ovarian extract, hydrastis, ergot, iron tonics of various kinds, strychnin and arsenic with practically no result. He testified that he began to use Wine of Cardui about January, 1915, and the patient is practically well. She did not know what she was taking as he did not prescribe it in the original bottle. The patient is now all right. He last saw her on Wednesday previous to testifying.

The witness also prescribed Wine of Cardui for Mrs. F. McK., who suffered with dysmenorrhea; she is a school teacher. She had been married five years. He began treating her after she was married, giving her viburnum and various viburnum compounds, H. V. C., and hydrastis. He sometimes used deodorized tincture of opium and advised rest in bed during the period. He obtained very little results, stating that the patient was sick for a week at each period. In 1912 or 1913 he began to give Wine of Cardui, but she did not know what she was taking at the time she commenced taking it. She knows it now and keeps it on hand in the original bottle. While he was prescribing Wine of Cardui he also gave her cardo-septic tablets as a local application. He considers the results good. Since that time the patient has been able to teach school and does not lose any time. She had leukorrhea before but has not leukorrhea now.

The witness also prescribed Wine of Cardui to Miss M., 13 years of age, who had been suffering with amenorrhea. She had never menstruated. He first gave her ovarian extract, ergot, hydrastis, and Jamaica dogwood. The patient would have pains in the stomach and nervous attacks, and would faint. He did not secure any results with the previously mentioned remedies. For four or five months he gave her Wine of Cardui and the patient is all right today. "Whether Cardui did it or not, she is all right." He does not know whether or not she is still taking Wine of Cardui.

The witness stated that he does not know a man by the name of Bob Cook, who ran a drug store in Ashford.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

On cross-examination the witness stated that he graduated at the Atlanta School of Medicine. He took the Alabama Board and passed it. He took the examination one time. He did not take any other examinations elsewhere.

The witness has been married about five years and has one child. He testified that his wife suffered with dysmenorrhea and he does not know the cause. He thinks the principal cause is endometritis. She also had leukorrhea. He does not know the cause of these conditions. He tried to find out and made an examination with a speculum. He did not use a microscope. His wife has no discharge now to amount to anything. The witness stated he did not think it necessary to make a microscopic examination. His wife has endometritis to some extent. Mrs. Glover was also examined by Dr. Moody of Dothan, Ala. He knows that Dr. Moody did not use a microscope to examine the discharge. The manifestation of endometritis is a leukorrhea discharge, he believes. Dr. Glover stated that the leukorrheal discharge has not been

bad in the last two years, but Mrs. Glover still has it to some extent and also some pain. He stated that the following conditions may produce endometritis: gonorrheal infections, lacerations, retroflexion and retroversion, prolapsus, ovaritis and infections of the fallopian tubes.

The witness examined his wife's uterus and found it in the proper position with no lacerations. He was not able to find any evidence of infection in the tubes. He thinks that by palpation of the ovaries and the tubes he could determine that everything was right in the tubes. The ovaries are all right as far as he knows. He undertook to palpate the ovaries, and so far as he knew they were normal. He stated that he probably could not palpate the ovaries if they were normal, and finally, he knew the ovaries were normal because he could not palpate them. He stated that if there is any active inflammation of the ovaries they may be palpated. Dr. Glover believes that if there is an active inflammation of the ovaries they would probably be inflamed, tender and sensitive and that they might not be palpated in every case. He thinks Mrs. Glover's condition was a simple endometritis. The cervix of the uterus was small and he believes that the small cervix set up the endometritis from irritation. He stated that very likely there would be some form of infection with it. He knows that Mrs. Glover did not have specific infection. He has not examined the cervix for some time. He last examined it about a year ago and found it larger than on the first examination. He does not know what caused it to contract in the first place nor what caused it to enlarge. The witness stated that a woman could have a contracted cervix after giving birth to a child. He believes that she could have painful menstruation without a contracted cervix. In treating his wife he used douches of normal salt solution and of cardo-septic. He also used H. V. C. and hydrastis.

Q.—What is H. V. C.? A.—H. V. C. is some form of viburnum, in which there is a little oil of anise and cloves, and alcohol—

Q.—What is that? A.—H. V.—Hayden's Viburnum Compound.

Q.—What is Hayden's Viburnum Compound? A.—I just mentioned it, that it has alcohol and viburnum and oil of anise, and oil of cloves, aromatic—

Q.—How do you know it has? A.—That is what it has on the bottle—I don't know.

Q.—What is the viburnum? A.—Viburnum opulus.

Q.—Viburnum opulus? A.—Yes, sir.

Q.—How much alcohol is in it, do you know? A.—No, sir; I certainly don't.

Q.—It is a proprietary medicine, is it not? A.—It is a proprietary medicine.

Mr. Fowler:—Your Honor, I think this is going beyond cross-examination.

Mr. T. J. Scofield: Q.—In what size doses did you give it? A.—A teaspoonful in hot water every two or three hours, according to the indications, whether you get relief or not.

Q.—What else did you give her? A.—I gave her ergot; hydrastis.

Q.—What did you give the ergot for? A.—For a tonic—uterine tonic.

Q.—What doses did you give it? A.—About 15 drops, three times a day.

Q.—Ergot, fifteen drops three times a day? A.—Yes, sir.

Q.—That is the medicinal dose, is it? A.—That is the tonic dose.

Q.—On what theory did you give her ergot? A.—To increase the congestion of the pelvic organs—increase the blood supply and tone it up, as a general tonic—which it is supposed to do.

Q.—Doesn't it do just—doesn't it have just the opposite effect, Doctor? A.—No, sir; that is in the tonic doses—it increases it, hydrastis—

Q.—On a contracted cervix what would be the effect of ergot, in—

THE COURT:—Mr. Scofield, this witness does not appear as an expert, you know. He is testifying about facts.

The Witness:—I am testifying to what I know.

Mr. T. J. Scofield:—I do not know whether he is or not. Your Honor, but I know he is testifying to certain things that he professes to have done.

THE COURT:—Yes.

Mr. T. J. Scofield:—And the reason why he did it.

The Witness:—I can give you—

Mr. T. J. Scofield: Q.—Now, as to the physiological action of those things that he used, I think I am entitled to an answer.

The Witness:—I do not know the physiological action of everything—every drug I use. I use a heap of things. I don't know the component parts of Wine of Cardui, for that matter. I know it has done good. I use anything that is good. I try out—and will give it a trial—I am not a "patent medicine" man, or anything like that; but I know what I used—

Mr. T. J. Scofield: Q.—I am not asking you—

Mr. Fowler:—Let the witness finish.

Mr. T. J. Scofield:—I am not going to sit here and listen to a speech of that kind.

Mr. Hough:—You should listen to his explanation.

Mr. T. J. Scofield:—I am objecting to that sort of an answer and move that it be stricken out.

Mr. Hough:—Finish your answer.

Mr. T. J. Scofield:—I am objecting, if the Court please, to any such answer.

THE COURT:—The witness said he did not know what was in a great many drugs which he gave, but he was willing to give anything a trial—that is what I think he said.

Mr. T. J. Scofield:—What I am inquiring about is the physiological action—

The Witness:—I don't know. I don't know the physiological action of all things.

THE COURT:—Well, he says he don't know.

The Witness:—I am not supposed to know.

Dr. Glover testified that the first one he gave Wine of Cardui to was Mrs. F. McK. He did not know what was in the Wine of Cardui. He was trying to see whether it was any good. Wine of Cardui was sold in the drug stores in which he was interested, but he is not interested in any drug store now. He prescribed the Wine of Cardui, but not in the original bottle.

An adjournment was taken until 2 o'clock the same day.

May 22, 1916, Afternoon

TESTIMONY OF DR. C. A. GLOVER (*Continued*)

Dr. C. A. Glover resumed the stand as a witness on behalf of the plaintiff in rebuttal.

FURTHER CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that he is testifying concerning three patients to whom he gave Wine of Cardui. In two cases they were girls with amenorrhea, who were thirteen or fourteen years old. He does not know how long they had been troubled with the condition before he treated them. He stated that he did not know what the cause of the amenorrhea was in either of the cases. He did not try to find out the cause but treated them for the symptoms. He thinks the cause in one case was anemia caused by chlorosis, perhaps from malaria. He treated this patient with quinin, strychnin and arsenic. He did not give her Wine of Cardui until he had given her these tonics. He did not know whether or not the quinin did any good because he did not examine her blood.

Besides the quinin he gave her Warburg's tincture. He thought that she needed medicine besides that to remove the malarial element. He does not think that removal of the cause allows the conditions to right themselves. Dr. Glover stated that he did not know the cause of the amenorrhea in the second case. He gave her 2½ or 3 grain doses of ovarian extract three times a day. He stated that the ovarian extract increased the secretion of the ovary. He stated that there is an internal secretion of the ovary but the medical profession does not know what it is. It is an internal secretion like that of the suprarenal glands. Because the treatment was not doing her good he gave her Wine of Cardui—just to see what it would do. The patient got better, but he would not swear that the Wine of Cardui did the work.

There are 1,200 people in Chesterfield; the witness knows most of them. He also knows a few people in Ruby. He met Dr. Newsom once since moving to Chesterfield. He has no personal acquaintance with Dr. Newsom and does not want to know him. He gave the names of the people whom he has heard speak of Dr. Newsom's reputation for truth and veracity. He also gave the names of the people whom he heard speak of Frank Sellers' reputation for truth and veracity. He then gave the names of the people whom he heard speak of Josh Granger's reputation for truth and veracity.

The witness stated that the only ones with whom he spoke about coming to Chicago were Mr. Levy and someone from Bowling Green, Ky.

REDIRECT EXAMINATION BY MR. FOWLER

The witness stated that someone had corresponded with him from Bowling Green, Ky., about coming to Chicago.

This was at the time when he lived in Ashford. He answered the letter and they sent him a blank to fill out. Later Dr. Moody at Cottonwood told him about the suit.

The witness testified that he was giving quinin three or four months before he gave Wine of Cardui and the girl had not gotten any better in the meantime.

TESTIMONY OF MR. CLARENCE L. GOLDSTEIN

Mr. Clarence L. Goldstein was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Goldstein testified that he resides in Oakdale, Tenn., and he has known Joe Cooper for ten or twelve years. The witness is an engineer on the C. N. O. & T. P. Railway. He has been an engineer for two years and two months.

The witness testified that he did not tell Joe Cooper that he drank Wine of Cardui. He never tasted it that he knows about. He has seen it in bottles. He does not know that Wine of Cardui has alcohol in it or anything about its ingredients. He stated that six or eight months ago Joe Cooper told him that there was a gentleman in Oakdale to see him about coming up as a witness.

The witness testified that when Cooper came back to Oakdale after having been in Chicago he asked Mr. Goldstein would he give him a statement that he had drank Wine of Cardui and did not know what it was. The witness stated that no one had ever offered him any money to testify for the defendant.

Mr. Scofield offered the record to show that Joe Cooper had not testified that the witness had drank Wine of Cardui. He had stated that Mr. Goldstein had drank whisky.

THE COURT:—I think that part of it may stand. I think you ought to be in a position, gentlemen, to point out in the record what you are trying to impeach the former witness on, because it ought not to be necessary for it to be all read over here. You ought to know, it is your witness.

Mr. Fowler:—Your Honor, I did not know. I know he testified to that particular thing.

THE COURT:—Unless you are prepared to show about Cooper offering him money, I shall sustain the objection.

Mr. Walker:—I am only talking from recollection.

THE COURT:—I will give you an opportunity to show me that, if you have it there.

Mr. Fowler:—You can cross-examine. I don't remember that he was examined about it.

Mr. T. J. Scofield:—There is nothing to examine on, your Honor, that is all. So that answer to that question—is that in or out?

THE COURT:—It is in, if the question was asked in the record and it is out, if it was not.

Mr. Walker:—Then we will examine the record, and tell your Honor whether it is there or not. If it is not there, it ought to be out.

(Cross-examination waived.)

TESTIMONY OF MR. W. J. JOHNSON

Mr. W. J. Johnson was called as witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. W. J. Johnson testified that he lives in Oakdale. He has been engaged in business for 14 years, and has known Joe Cooper 10 or 11 years. He considers Joe Cooper's general reputation for truth and veracity as bad, and he would not believe him on oath.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness testified that Joe Cooper has been a barber for three or four years. He has been working pretty steadily at this job for the last three or four years. He thinks Cooper owns his shop. The witness does not shave in Cooper's barber shop. Joe Cooper lives on one side of the Emory River and the witness lives on the other side. Joe Cooper is a married man with one child. He occasionally buys goods from the witness. He owes the witness some money, which the witness lent him some six or seven years ago. Joe Cooper is a poor man.

REDIRECT EXAMINATION BY MR. FOWLER

The witness testified that he is a member of the City Council. He stated that his judgment as to the reputation of

Joe Cooper is not biased by the fact that Joe Cooper owes him money.

TESTIMONY OF MR. T. J. LYNCH

Mr. T. J. Lynch was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Lynch testified that he is a road foreman of engines for the C. N. O. & T. P. R. R., and resides in Oakdale, Tenn. He has lived in Oakdale for nine years and has known Joe Cooper for eleven years. He considers Joe Cooper's reputation bad and would not believe him on oath.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness testified that he has had dealings with Joe Cooper. He lent him a fish net once and Joe Cooper would not pay for it. Joe Cooper has done some barber work for the witness. Joe Cooper owes him about \$6, and the witness paid him for the barber work. The fish net transaction occurred three or four years ago. The witness has not felt unkindly to Joe Cooper since, but he does not think he is honest. He mentioned several persons who had spoken to him about Joe Cooper's reputation.

REDIRECT EXAMINATION BY MR. FOWLER

The witness stated that he had also heard other persons speak about Joe Cooper's reputation.

RECROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness named several others whom he heard talk about Joe Cooper. Following the appearance in Oakdale of a man from the Chattanooga Medicine Co., the witness and others were talking about Joe Cooper's reputation. The witness testified that he paid his own expenses to Chicago and he expects the Chattanooga Medicine Co. to pay him back and to pay him a per diem.

TESTIMONY OF MR. H. J. ELLIS

Mr. H. J. Ellis was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Ellis testified that he resides in Ashford, Ala. He is a druggist and has been living there for three years. He knows Josh Granger, and has known him for three weeks. He considers Josh Granger's reputation for truth and veracity as bad. He is not well enough acquainted with him to say that he would not believe him on oath. The witness obtained his knowledge of Granger's reputation from Dr. Granger, who is a distant relative of Josh Granger, and from Mr. Gresham. The witness did not know anything about Granger's reputation before three weeks ago.

Mr. Scofield moved that the evidence be stricken out. The Court stated that it could stand for what it is worth—that is, the three weeks' reputation.

The witness stated that he knows nothing about the reputation of Mr. Sellers.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness testified that he knows nothing about Josh Granger except what the gentlemen mentioned have said.

THE COURT:—Let me ask a question. Were you investigating for yourself or did somebody come up and confide in you that this man did not tell the truth? A.—No, sir, I was not investigating for myself.

Q.—How did it happen that this came up? A.—It came up when we were reading the American Medical Journal, reading his testimony.

Q.—Who was reading it? A.—Dr. Granger and several other fellows, Dr. Glover.

Q.—Where was this, in lodge meeting or in the railroad station or the general store, or where was it? A.—It was in the drug store at home.

Q.—How many people were there? A.—Why, I suppose there was three or four standing around.

Q.—And the information you got about this man was received at that time? A.—Yes, sir.

Q.—And only from the people that were in the drug store at that time? A.—People that actually know him. I did not, only I had met him.

Q.—The information came from the people that were in the drug store at that time? A.—Yes, sir.

Mr. T. J. Scofield: Q.—Was Dr. Glover there? A.—Yes, sir.

Q.—That is the doctor who was on the witness stand a while ago? A.—Yes, sir.

Q.—Did he have THE JOURNAL there? A.—Really I do not know, sir. I don't know where THE JOURNAL came from, but it was there.

Q.—It was there? A.—Yes, sir, I do not know even who it belonged to.

Q.—In that conversation Dr. Glover took part? A.—No, sir, he did not.

Q.—Well, he was there present? A.—He was there present.

Q.—Dr. Glover has not been living—how long did Dr. Glover live in that town? A.—Well, he lived there about three years since I came there. He came there—I came there three years ago. He was there then and I understand that he was there two years prior to that time.

Q.—He is not living there now? A.—No, sir.

Q.—But he had come down there, had he, from up at Chesterfield? A.—Yes, sir.

Q.—And was there that evening when this conversation was going on? A.—Yes, sir.

The witness testified that Mr. E. A. Wheatley arranged for him to come to Chicago. Mr. Wheatley sent him a telegram about four days ago.

TESTIMONY OF MR. G. M. GRESHAM

Mr. G. M. Gresham was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Gresham testified that he resides in Cottonwood, Ala., and has lived there seventeen or eighteen years. He has known Frank Sellers ten or twelve years. He considers Frank Sellers' general reputation for truth and veracity as bad, and he could not believe him on oath.

The witness is now in the livery business. He was formerly a druggist. He knows Bob Cook, who kept a general store. Bob Cook died in 1903. The witness testified that when he kept a drug store he sold perhaps a half gross of Wine of Cardui a year. He does not know anything about the sales that Sellers' made. Sellers' was a small general store.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

Mr. Graham testified that he ran a drug store from 1903 until 1912. He sold Wine of Cardui during that time at \$1 a bottle or six bottles for \$5. Mr. Sellers was with his father about five miles out in the country. He used to come into town. He would come in and get soda water, Manola, coca cola or Wine of Cardui or anything he wanted to get. He would not sell him pure alcohol, and he does not think that he ever called for alcohol. Frank Sellers is a farmer; he formerly taught school. He teaches practically every winter. Mr. Sellers' father still operates a little store in the country. Practically all general stores in that region sell Wine of Cardui.

The witness testified that Frank Sellers kept a little business in Cottonwood, which ran a few months and "went bursted and smuggled the goods out." People have been talking about him since that time. Afterwards the people located the stock of groceries and took them back. More talk concerning his reputation for truth and veracity has occurred since this lawsuit than before. The witness read about Mr. Sellers' testimony in the Montgomery Advertiser and the Dalton Eagle. The witness gave the name of various persons who talked about the testimony.

Dr. Ellis asked the witness to come to Chicago. The witness expects to be paid for his expenses and to receive a per diem. Mr. Gresham stated that when Dr. Ellis called him up he told him that he (Dr. Ellis) was working for the Wine of Cardui people. The witness told Dr. Ellis that Mr. Sellers was a crook and he had best let him alone. The witness made this statement owing to the fact that Mr. Sellers broke up the business and on his evidence in this suit as a witness, which was read to him from THE JOURNAL.

REDIRECT EXAMINATION BY MR. FOWLER

On redirect examination the witness stated that when Mr. Sellers broke up he took the goods from the store and delivered them to other houses. Further questions along this line were ruled out by the Court.

RECROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness testified that Mr. Sellers is still employed by the school directors as a schoolteacher.

TESTIMONY OF MR. H. B. WILLIAMS

Mr. H. B. Williams was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Williams testified that he is in the automobile business in Ashford, Ala., where he has lived for 14 years. He was deputy sheriff for four years. He knows Frank Sellers. He considers his reputation for truth and veracity in that section as pretty bad. He does not believe he would believe Mr. Sellers on oath.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

Q.—You say you don't believe you would? A.—I don't believe I would, no, sir.

Q.—Why do you hesitate, Mr. Williams? A.—Well, the reputation that he bears right in his community and in his home section.

Q.—Well, I know, but why do you hesitate, I say, about it? A.—Well, I wanted to look into it before I went to put a man's oath down.

Q.—What? A.—I wanted to look into it before I put the man's oath down.

Q.—Sure, you wanted to know? A.—I wanted to feel that I was right about it.

TESTIMONY OF MR. DOW HARRELSON

Mr. Harrelson was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Harrelson testified that he resides in Charleston, S. C. He knows J. Reed McCoy who lives in St. Charles, which is about 55 or 60 miles from Charleston. The witness testified that McCoy did not at any time see him drink Wine of Cardui. He stated that he has never drunk Wine of Cardui. Attorneys for the defendant waived the cross-examination.

TESTIMONY OF MR. WILLIAM MARBURY (colored)

Mr. William Marbury was called as witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. William Marbury testified that he resides in Sylacauga, Ala. He was raised in Kellyton and left there about six months ago. He used to work for Mr. Hester. The witness was known in Kellyton as "Button." The witness was the only colored man in Kellyton called "Button." He knows Dr. Maxwell. He stated that Dr. Maxwell never saw him drink Wine of Cardui.

The witness testified that he does not drink whisky or anything like it. The attorneys for the defendant waived the cross-examination.

TESTIMONY OF MRS. E. E. GILLIAND

Mrs. E. E. Gilliland was called as witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mrs. E. E. Gilliland testified that she has lived in Kellyton for ten months. Her maiden name was Sally Bailey. So far as she knows she is the only Sally Bailey that married a Gilliland. Her husband's name is Edward. Before marriage she taught school. The witness knows Dr. Maxwell. He did not treat her in 1912.

The witness is now taking Wine of Cardui. She began taking it in February or March. When Dr. Maxwell took care of her last December nothing was said to him about Wine of Cardui. She first told Dr. Maxwell that she was taking Wine of Cardui the first of the week before he came up here. She has not taught school since she was married. She stated that it was not mentioned between her and Dr. Maxwell how much Wine of Cardui she was taking. She first took three tablespoonfuls a day, and after that two tablespoonfuls a day. She considers that she is in better condition than when she first began to take it.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness testified that her health is not as good as it ought to be and has not been good for some time. Her health has been bad for several years. She first began taking Wine of Cardui in 1911. She took about five bottles. She did not take any in 1912 or 1913 that she remembers of. She may have taken one or two bottles, but never more than that at one time. In 1916 she commenced taking it again—during the last of February—and is still taking it.

DEPOSITIONS

Some depositions were then read and an adjournment was taken until Tuesday, May 23, 1916.

(To be continued)

Correspondence

The Prone Trendelenburg Position

To the Editor:—In performing proctectomy following coe-cyctomy, with or without partial sacrectomy, the patient is placed prone in the shape of an inverted V, the buttocks at the apex. This position is usually, but erroneously I believe, called the reverse Trendelenburg. I am writing to suggest that it be called the prone Trendelenburg, a name which more accurately describes the relation of the two positions—one supine, the other prone.

HERMAN B. GESSNER, M.D., New Orleans.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

AROMATIC SPIRITS OF AMMONIA

To the Editor:—The query of Dr. W. R. T. concerning aromatic spirits (THE JOURNAL, July 1, 1916, p. 65) recalls to my mind an incident which happened to me a few years ago. As I was returning from my vacation, the train on which I was traveling through New England struck a carriage containing an elderly couple. The man was not seriously injured, but the woman was pulseless and in a state of profound shock. They were both put in the baggage car and the train sped on its way toward the next town. In the interval I gave hypodermic injections of digitalis and strychnin. When we arrived at the town the local doctor, who had been summoned by telegraph, was there to meet us. He stepped aboard the train, felt the woman's pulse, opened his medicine case, poured out some yellowish liquid into a glass, gave it to the patient, who was by this time beginning to recover consciousness, and stepped back saying with dramatic fervor, "Now you can move her with perfect safety." I was eager to learn what this wonderful remedy was which could so suddenly banish the evils of shock, and so I looked over his shoulder as he replaced the bottle in his medicine case. It was labeled "aromatic spirits of ammonia."

I wish to point out that not only is the quantity of ammonium carbonate in the aromatic spirits of ammonia too small to have any stimulant action as Dr. T. points out, but that ammonium carbonate in any dose when given by the stomach can have no appreciable effect on the circulation. Being a crystalloid substance it is at once absorbed into the intestinal veins and carried directly to the liver, where it is broken up into urea. So many physiologists have confirmed the fact that ammonium salts are changed in the system to urea that one must regard it as a demonstrated fact. If the ammonium carbonate is injected subcutaneously it is carried to the heart before it reaches the liver, and hence may exercise a stimulant action on the circulatory apparatus. I might also point out, however, that the stimulant effects of ammonium salts even when injected into the circulation are extremely fugacious, lasting not more than five or ten minutes.

Any stimulating effect which may be observed after the oral administration of aromatic spirits of ammonia is due either to a psychic effect or to its local irritant action on the gastric mucosa, just as the irritation by ammonium carbonate, in the form of smelling salts, of the mucous membrane of the nose may reflexly excite the medulla. If the stimulant action of ammonium carbonate administered by the mouth is due to its local irritant effect on the mucous membrane of the stomach, it is evidently a matter of minor importance whether the irritant is alcoholic or ammoniacal or a combination.

HORATIO C. WOOD, JR., Philadelphia.

PASTEURIZATION OF MILK BY FLASH AND HOLDING METHODS

To the Editor:—One of our dairymen plans to put in a pasteurizing plant to care for his milk. He finds there is a difference in opinion as to the temperature and length of time of heating that is considered effective pasteurizing. Before investing he wishes to be sure that he can get the best results from such a plant. Can you give me this information or refer me to some authority?

CHARLES C. ALLEN, M.D., Austin, Minn.

ANSWER.—"Flash" pasteurization consists in heating to a temperature of from 178 F. (Pennsylvania law for pasteurization of dairy by-products) to 185 F. (Michigan law). "Holding" pasteurization employs a lower temperature for a longer period (Michigan law, 145 F. for thirty minutes). The holding process is usually considered safer and more desirable for the pasteurization of whole milk. The U. S. Department of Agriculture has published a number of bulletins dealing with pasteurization, and many of them are available for free distribution.

Medical Education and State Boards of Registration

Colorado April Report

Dr. David A. Strickler, secretary of the Colorado State Board of Medical Examiners, reports the oral, practical and written examination held at Denver, April 4, 1916. The total number of subjects examined in was 8; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 7, of whom 2 passed and 5 failed, including 1 drugless practitioner. Fourteen candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Georgetown University	(1915)	82.1
John A. Creighton Medical College	(1915)	88.5

College	Year Grad.	Per Cent.
Northwestern Medical College, St. Joseph	.....(1887)	*
University Medical College, Kansas City	.....(1893)	*†
Lincoln Medical College	.....(1909) 71.1; (1910)	72

College	Year Grad.	Reciprocity with
Cooper Medical College	.....(1911)	California
Chicago College of Medicine and Surgery	.....(1915)	Wisconsin
Northwestern University	.....(1905)	Louisiana
College of Physicians and Surgeons, Chicago	.....(1910) (1912)	Illinois
Keokuk Med. Coll., Coll. of Phys. and Surgs.	.....(1906)	Oklahoma
State University of Iowa, College of Medicine	.....(1909)	Iowa
University of Maryland	.....(1912)	N. Carolina
Barnes Medical College	.....(1897)	Missouri
St. Louis University	.....(1913)	Missouri
Washington University	.....(1906)	Illinois
Bellevue Hospital Medical College	.....(1891)	Penna.
Medical College of Ohio	.....(1897)	Ohio
Jefferson Medical College	.....(1913)	Penna.

* No grade given.

† Graduation not verified.

The following questions were asked:

ANATOMY

1. Discuss the composition and structure of a typical long bone. 2. Describe the articulations of the femur. 3. Give complete anatomic description of biceps and triceps muscles. 4. Describe the course and distribution of either the brachial or middle meningeal artery. 5. Describe the lateral sinus. 6. Describe the axilla. 7. Discuss the lymphatic system of the mammary gland. 8. Describe the cerebrospinal fluid, including its habitat (that is, where it is found). 9. What do you understand by the motor area of the brain? 10. Discuss and compare inguinal and femoral hernia.

PHYSIOLOGY

1. Define reflex action. Illustrate. 2. Describe the phenomenon of muscular contraction. 3. Give a general outline of the physiology of the cerebrum, and a minute description of the location and functions of the motor area. 4. How does the eye accommodate for objects at different distances? 5. Mention the properties and functions of the several blood corpuscles. 6. What do you understand by blood pressure, and blood velocity? 7. Give the physiology of respiration, describing the respiratory movements and their innervation; the intrapulmonic and intrathoracic pressure, and the changes in air and blood. 8. Define, classify, name and give action of enzymes. 9. Name five ductless glands, mention their secretion and give the function of each. 10. Give the physiology of menstruation.

CHEMISTRY

1. What is dialyzed iron? 2. What are the properties of hydrocarbons? 3. How is litmus paper made, and what are its uses? 4. How does chemistry assist in diagnosing disease? Give one example and explain it in detail. 5. Describe the chemistry of respiration. 6. What is a chemical antidote? Name one and write the reaction. 7. Give two chemical tests for carbolic acid. 8. What is the composition (chemically) of normal human blood? 9. The alkalinity of the blood is due to what chemicals? 10. What is Gmelin's test (for bile pigments)?

TOXICOLOGY

1. What is a poison? 2. How may poisons be classified? Give examples in each class. 3. Antidote for silver nitrate poisoning. How does it act? 4. Upon what theory are eggs given in case of poisoning with corrosive sublimate? 5. What are chemical antidotes for poisoning with: (a) mineral acids; (b) caustic alkalies? 6. How do chemical and physiologic antidotes differ in their action? Illustrate each. 7. What are alkaloids? Give the antidote to practically all of them, explaining its action. 8. Differentiate between cholera morbus and acute arsenical poisoning. 9. Give usual causes and symptoms of chronic arsenical poisoning. 10. What are the symptoms of phosphorus poisoning? How distinguished from acute yellow atrophy of liver?

SYMPTOMATOLOGY

1. Give the symptoms, clinical course, diagnosis and complications of acute chorea. 2. Give the symptoms of paralysis agitans. 3. Discuss uremia. 4. Discuss the anomalies of urinary secretion. 5. Discuss the anomalies of thyroid secretion. 6. Discuss purpura. 7. Discuss anemia. 8. Discuss the affections of the myocardium. 9. Discuss jaundice. 10. Give the symptoms, course and complications of scarlet fever.

PATHOLOGY

1. Define sarcoma, carcinoma, epithelioma, endothelioma. 2. Give the pathology of gastric ulcer. 3. Describe the morbid anatomy of tabes dorsalis. 4. Name the animal parasites in Colorado: (a) on the body; (b) in the intestine. 5. Describe the tumors of the mamma. 6. Describe

inflammation of the uterine adnexa. 7. Give the morbid anatomy associated with hemorrhage from the alimentary tract. 8. Describe uterine hydatid mole. 9. Describe uterine tumors. 10. Describe anaphylaxis, leukocytosis, Widal test.

SURGERY

1. Give the signs, symptoms and differential diagnosis of cholelithiasis. 2. Describe the different forms of intestinal obstruction. Give signs, symptoms and differential diagnosis. 3. Give the diagnosis of hemorrhage of the middle meningeal artery. 4. Describe hip-joint disease. 5. Describe Pott's fracture. 6. Describe chronic ulcer of the leg. 7. Give the differential diagnosis of injuries at the shoulder. 8. Describe subphrenic abscess, giving causes, signs and symptoms. 9. Name the herniae of the abdomen. Describe any two. 10. Define arthritis, bursitis, synovitis.

OBSTETRICS

1. Describe local maternal changes at end of first half of pregnancy. 2. Give your method of conduct of a normal labor. 3. Describe mechanism of labor in an L. O. A. 4. Name the positive signs of pregnancy. 5. Discuss puerperal insanity. 6. Diagnosis and treatment of placenta praevia at the eighth month. 7. Indications and contra-indications for use of forceps. 8. (a) How would you control post-partum hemorrhages? (b) How deliver the after coming head? 9. (a) Describe the clinical course of extra-uterine pregnancy. (b) Differential diagnosis of ectopic pregnancy. (c) What would you carry in your O. B. bag? 10. (a) Describe briefly your conduct of the puerperium. (b) Name the three most frequent causes of hyperemesis gravidarum.

New York January Report

Mr. H. H. Horner, chief of the Examinations Division of the Board of Medical Examiners of the State of New York, reports the written examination held at Albany, Buffalo, New York and Syracuse, Jan. 25-28, 1916. The total number of subjects examined in was 8; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 146, of whom 93 passed, including 1 osteopath, and 53 failed, including 1 osteopath. Four candidates were licensed through the endorsement of credentials and six were granted reregistration licenses. The following colleges were represented:

College	PASSED	Year Grad.	Total No. Licensed
University of California	(1913)	1
Howard University	(1911)	1
University of Louisville	(1912)	1
College of Physicians and Surgeons, Baltimore	(1915)	2
Johns Hopkins University	(1910) (1914)	2
University of Maryland	(1910)	1
Harvard University	(1914) (1915, 2)	3
Detroit College of Medicine	(1913)	1
University of Michigan Medical School	(1913)	1
University of Michigan Homeo. Med. School	(1915)	1
Albany Medical College	(1913) (1914) (1915, 3)	5
Columbia University, College of Physicians and Surgeons	(1912) (1913, 2) (1914) (1915, 5)	9
Cornell University	(1914)	1
Fordham University	(1912) (1913, 2) (1914, 3) (1915, 4)	10
Long Island College Hospital	(1913) (1914, 2) (1915, 5)	8
New York Homeo. Med. Coll. and Flower Hosp.	(1914, 4) (1915, 7)	11
New York Med. Coll. and Hosp. for Women	(1915)	1
Syracuse University	(1915)	3
University and Bellevue Hospital Medical College	(1911) (1914, 2) (1915, 9)	12
University of Buffalo	(1914) (1915, 2)	3
Eclectic Medical College, Cincinnati	(1914)	1
University of Oregon	(1912)	1
Jefferson Medical College	(1912) (1915, 2)	3
University of Pennsylvania	(1913) (1914)	2
Woman's Medical College of Pennsylvania	(1915)	1
Vanderbilt University	(1912)	1
Baylor University	(1905)	1
University of Vermont	(1914) (1915)	2
Medical College of Virginia	(1910)	1
University of Berlin	(1914)	1
University of Naples	(1907)	1

FAILED

University of Alabama	.....	(1909)	1
Chicago College of Medicine and Surgery	.....	(1914)	1
Illinois Medical College	.....	(1898)	1
Tulane University of Louisiana	.....	(1913)	1
Baltimore Medical College	.....	(1913)	1
College of Physicians and Surgeons, Baltimore	.....	(1912)	1
Johns Hopkins University	.....	(1910) (1911)	2
University of Maryland	.....	(1915)	1
Harvard University	.....	(1905) (1907) (1908)	3
Tufts College Medical School	.....	(1904) (1905)	2
Detroit College of Medicine	.....	(1911)	1
Albany Medical College	.....	(1914, 4) (1915, 3)	7
Columbia Univ., Coll. of Phys. and Surgs.	.....	(1913) (1915)	2
Eclectic Med. Coll. of the City of New York	.....	(1910)	1
Fordham University	.....	(1913, 2) (1915)	3
Long Island College Hospital	.....	(1912) (1915)	2
New York Homeo. Med. Coll. and Flower Hosp.	.....	(1912) (1914, 3) (1915, 5)	9
Niagara University	.....	(1898)	1

University and Bellevue Hospital Medical College....	(1913)	1
University of Buffalo.....	(1911) (1914) (1915)	3
Jefferson Medical College.....	(1913)	1
Medico-Chirurgical College of Philadelphia.....	(1915)	1
University of Pennsylvania.....	(1890) (1912)	2
Woman's Medical College of Pennsylvania.....	(1915)	1
McGill University	(1902)	1
University of Naples.....	(1905)	1
Syrian Protestant College, Beirut.....	(1912)	1

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Georgetown University	(1912)	New Jersey
Eclectic Medical College, Cincinnati.....	(1914)	Ohio
Medical College of Virginia.....	(1914)	Virginia
University College of Medicine, Richmond.....	(1907)	Virginia

Book Notices

INFANT MORTALITY. By Hugh T. Ashby, B.A., M.D., M.R.C.P., Visiting Physician to the Manchester Children's Hospital. Cloth. Price, \$3.25. Pp. 229, with illustrations. New York: G. P. Putnam's Sons, 1915.

The deaths of large numbers of the male population in the nations abroad as a result of the present war has caused more attention to be given to the prevention of infant deaths. The birth rates of England, France and Germany have been steadily diminishing notwithstanding the fact that more and more attention is being continually given to prenatal care. The author has studied the subject not only in some of the large manufacturing centers of England, but also in some of the large cities of the United States. In preparing this book he has kept in mind wholly the relation of this subject to the public, and has laid less stress on medical and technical aspects. Ashby considers this subject one which must be attacked chiefly from the social side. The physician can act as an instructor in pointing the way. He says:

The duty of bringing up children belongs to the mothers, and whatever we do we must not be too ready to relieve them of their responsibility; we can, however, do much to see that the rights of the children are not ignored and that the mothers have the opportunity given them of learning how best to rear their children.

The author shows how closely the prevention of infant mortality is interwoven with every social subject. Poverty, alcoholism, lack of education, bad housing, are equally if not more important causes of infant mortality than imperfect hygiene. The book is written in simple language.

CONSTRUCTION, EQUIPMENT AND MANAGEMENT OF A GENERAL HOSPITAL. By Donald J. Mackintosh, M.V.O., M.B., LL.D., Medical Superintendent of the Western Infirmary, Glasgow. Second Edition. Cloth. Price, \$6. Pp. 164, with illustrations. Chicago: Chicago Medical Book Company, 1916.

The thirteen chapters of this book deal, respectively, with the receiving department, the medical ward, the surgical ward, the special ward, the nursing staff for each unit, medical officers, outpatient department, kitchen, laundry, nurses' home, semipermanent hospital construction, and provision for nervous and mental diseases. A concise statement of the essentials of a hospital are given, and forms are submitted for use in the admission and care of patients, for bed-books, registers, monthly reports regarding utensils, linen, dressings, and also inventories of outfits for operating amphitheater and wards. Plans are given for the admission department or receiving ward, a maternity department, medical and surgical ward units, outpatient department, dietetic kitchen, laundry and nurses' home. A large insert gives a statistical study of sixty-six hospitals of Great Britain. The book will be useful to those interested in the planning, construction or management of hospitals.

CLINICAL LABORATORY TECHNIC FOR NURSES. By Anna L. Gibson, R.N., Matron of the Boston City Hospital Relief Station. Cloth. Price, \$1.25 net. Pp. 194, with illustrations. Boston: Whitcomb & Barrows, 1916.

This book gives concisely and simply all the tests and laboratory technic concerning which a nurse should be informed. A glossary of terms is included and also diet tables for nephritis and diabetes.

Miscellany

Glycerin and Alcohol Not Detoxicants of Phenol

M. I. Wilbert of the Hygienic Laboratory, U. S. P. H. S., remarks (*Pub. Health Rep.*, April 28, 1916, p. 1046) that there are probably few official drugs regarding which more misleading statements have been made than phenol (carbolic acid). Various substances, fixed oils, glycerin, diluted sulphuric acid, the soluble sulphates of the alkalis and alkali earths, have been recommended as antidotes or prophylactics of phenol poisoning. Glycerin, for instance, was early observed to lessen the caustic local action of phenol on the skin, and hence it was erroneously inferred that a mixture of phenol and glycerin would be a safe, nontoxic substitute for phenol. As a matter of fact, glycerin will not prevent the production of gangrene or the absorption of phenol. The other substances mentioned have also been found inefficient as detoxicants for phenol, and in many instances distinctly harmful. The value of alcohol as an antidote for phenol poisoning has been scientifically disproved by several investigators (see Clark, T. W. and Brown, E. D.: *THE JOURNAL A. M. A.*, March 17, 1906, p. 782; Macht: *Bull. Johns Hopkins Hosp.*, April, 1915, p. 98). Notwithstanding, even as late as 1915, the fallacy that ethyl alcohol is an antidote to phenol has been embodied in state laws designed to restrict the sale of phenol. Wilbert reports the results of experiments made in the Hygienic Laboratory by Albert F. Stevenson and Rose Parrott to determine the germicidal value of mixtures of phenol and alcohol and of phenol and glycerin, and appends an abstract of a report by Dr. Liston Paine on the effect of alcohol on the toxicity of phenol. It appears that in the presence of water neither alcohol nor glycerin has any detoxicating effect on phenol. Ethyl alcohol, indeed, increases the solubility of phenol in water; it makes the resulting solution more antiseptic and also more toxic. This agrees with the results of Macht (*Bull. Johns Hopkins Hosp.*, April, 1915, p. 98), who found that alcohol given after the ingestion of phenol actually hastened death. Reliance on alcohol and glycerin to neutralize the toxic effects of phenol, in short, is likely to do harm. The exemption of mixtures of phenol and glycerin or phenol and alcohol from legislation restricting the sale of phenol is to be deplored. It is desirable that the fallacy involved should be corrected as speedily and widely as possible.

The Problem of the Chronic Alcoholic *

It is generally acknowledged that society has failed in its handling of the problem of the chronic alcoholic. Arrest does not cure drunkenness; the habitual drunkard is unimproved by the cycle of imprisonment, release, fresh debauch, arrest and reimprisonment through which he passes again and again. Dr. V. V. Anderson (*The Alcoholic as Seen in Court, Boston Med. and Surg. Jour.*, April 6, 1916, p. 492), in a study of 100 "repeaters" (total number of arrests for the group, 1,775), emphasizes the cause of this failure, namely, disregard of the fact that the problem is medical as well as social. Only 10 per cent. of these alcoholics were steadily employed; 49 per cent. were not self-supporting when at large. All of them were, of course, a charge on society for the expenses of their arrest, conviction and maintenance while serving their sentences. That society pays a high price for the luxury of maintaining these chronic inebriates is obvious. Anderson found that 56 per cent. of them had a mental level below that of a child of 12; 74 per cent. were mentally subnormal, and all manifested impairment of the nervous system. Thirty-seven were feeble-minded, seven insane, seven epileptic, thirty-two possessed a psychopathic constitution, and the remaining seventeen showed alcoholic deterioration. Fifty of Anderson's subjects were steady drinkers, and fifty periodic. Of the steady drinkers only 2 per cent. were rated as of adult intelligence, and only 14 per cent. had a mental level above 12 years. The periodic drinkers possessed a higher level of intelligence and general

capacity, but their unstable natures prevented them from making use of such faculties as they possessed. Anderson concludes that the steady drinker needs prolonged medical care and custodial treatment. The periodic drinker, while he does not need prolonged confinement, does require to be incorporated back into society by means of well directed medical and social service methods of treatment. All, since they suffer from conditions in general regarded as medical problems, should be given the care and treatment accorded to the physically or mentally defective, rather than the ordinary penal treatment afforded them in the past.

Better Reporting of Communicable Diseases

In a discussion of the prevalence of communicable diseases in New York State in 1914, F. M. Meader, director of the division of communicable diseases of the State Board of Health, in *Health News* says that in the group comprising scarlet fever, measles, whooping cough and typhoid fever, the least number of deaths occurred from scarlet fever, the number being 687, of which 452 were in New York City. Deaths from this cause have decreased since 1908, when the number was 1,668. Whooping cough was next lowest, with 730 deaths. This disease has shown a fairly uniform number of deaths since 1908. Measles comes next with a total of 839 deaths, 559 of which occurred in New York City. The highest figure for this disease since 1908 was 1,284, in 1910. Typhoid fever stands highest in the group with 878 deaths, 334 of which occurred in New York City. In a discussion of the question of the completeness of the reporting of these diseases, it is shown that the death rate per hundred cases in New York State was: for scarlet fever, 3.1; for whooping cough, 6.3; for measles, 1.8, and for typhoid fever, 16.0. These rates compare favorably with an average for twenty states and the District of Columbia as tabulated in *Public Health Reports*, Jan. 16, 1914, wherein the rates were shown to be: for scarlet fever, 3.8; for measles, 1.5, and for typhoid fever, 15.1. Meader believes, however, that these rates are all too high on account of the incompleteness of reporting cases everywhere. He says that intensive studies of the actual fatality rate in typhoid fever show that it is about 11 per cent., and if this rate held in New York State in 1914 it would show 2,500 cases unreported. The error would be much greater for measles and whooping cough on account of the well known laxity in reporting these diseases. Better compliance with the law is necessary to determine the actual status of these diseases.

Lead Poisoning in House Painters

The reports of the British departmental committee, appointed to investigate the dangers of the use of lead compounds in the painting of buildings, has been published by the United States Department of Labor, as Bulletin 188. The danger to painters using lead paints was proved, the principal source of poisoning being dust. This dust arises in two ways: first, during the mixing of dry white lead with oil, and, second, in the dry rubbing down process. The former source of danger is daily becoming less with the increasing use of ready mixed paints. Dry rubbing down, however, cannot be diminished, and it seems to have been the opinion of the majority of competent witnesses that, although there would be little or no technical objection to wet rubbing down, it would be extremely difficult, if not impossible, to enforce this regulation. This results from the fact that a great deal of house painting work is carried on in private houses, the invasion of which by public officers for the enforcement of regulations would be resented. After considering the laws enforced in other countries, the commission recommends drastic legislation. The enactment of a law prohibiting the importation, sale or use of any paint material containing more than 5 per cent. of its dry weight of soluble lead compounds is the principal recommendation of the committee. Certain exemptions are provided for, such as those for artists' colors. In these cases, regulations insuring adequate precautions can easily be enforced. To give adequate time for paint makers and others to adapt them-

selves to new conditions, the committee recommends that the new legislation should not come into force for at least three years. Attention is drawn in the report to possible dangers from health arising from paint materials other than lead, such as turpentine or turpentine substitutes.

Medicolegal

Enjoining from Practicing Without License — Chiropractic — "Harmless" Treatments

(*Board of Medical Examiners vs. Freenor (Utah)*, 154 Pac. R. 941)

The Supreme Court of Utah affirms a judgment for the plaintiff, enjoining the defendant, a chiropractor, from practicing medicine within the state until he obtained a license. The court says that the first point sought to be made was that the alleged and found facts, if they constituted practicing medicine within the meaning of the statute, were criminal, and not invasions of property rights, and that equity would not lend its aid by injunction to restrain mere violations of public or penal statutes, except so far as it might be incidental to its enforcement of property rights or other matters of equitable cognizance. But Section 1737 of the Compiled Laws of Utah of 1907 provides that any person practicing medicine, surgery or obstetrics within the state contrary to law may, at the instance of the board of medical examiners, be enjoined therefrom by the district court, until he shall have been by said board lawfully admitted to practice; and, unless prevented by some constitutional provision, which was not claimed, the court thinks the legislature had the power to change, abolish or enact rules of equity, and hence it is of the opinion that the court, by reason of the statute, had jurisdiction to proceed as it did.

Taking up the question of whether or not the defendant practiced medicine within the meaning of the statute, the court says that the statute is not restricted to prescribing, giving, administering or applying drugs, medicine or other agency or remedy. It is broad and unrestricted, and by its language was intended to be so. The defendant's statements that he did not "diagnose any disease" or "the patient," that "he had nothing to do with the diseased part," and that all he did was "to look at the spine and vertebrae—analyze the spine—to ascertain whether there was any displacement or subluxation or any other abnormal condition of the vertebrae," and "whether there was pressure or an impingement of the nerves, or an interference with vital energy or force, or a hindrance of the normal flow of life energy producing the disease," were mere evasions and confusions of what, in fact, was diagnosis to ascertain the cause of the disease or ailment. So were his statements, "I don't treat the sick or ailing; I merely adjust their spine," etc. It is difficult to understand how removing, or attempting to remove, the cause of an ailment is not treating, or attempting to treat, the ailment itself. Whatever merits or demerits the system of chiropractic may have, it is but egotism to assert that it is the only system which seeks to ascertain and remove causes of disease or ailments, and on that ground to claim it distinguishable from all other systems of treatment.

It was said that, if such a system as practiced by the defendant did no good, it did no harm, and that it was unlike administering powerful drugs or performing surgical operations from which ill consequences may follow unless in the hands of the skilful. However, that his treatments might be harmless would be no reason to permit him to violate the law. The statute does not say that one may operate on or treat an ailment of another so long as he does him no harm or shall not make him worse. But this oft-repeated statement does not bear scrutiny. Much harm may come to one afflicted with an ailment and seeking professional advice or aid from one incompetent to give it. There are many ailments in their acute stages which, if correctly diagnosed and properly treated, yield most readily, but, if not recognized and not properly treated, become, in their chronic stages, most stubborn and unyielding. It needs no argument to show the harm that may result by one without knowledge of

ophthalmology attempting to treat some acute and virulent disease of the eye by attributing the cause of the disease to a subluxed vertebra of the neck causing "nerve pressure," not that the manipulation to reduce the pretended subluxation might itself do harm, but that in the meantime the disease, for want of recognition and proper attention, may have progressed to a stage where it no longer can be arrested.

Insanity from Drugs as Defense to Crime — Effect of Prescription

(*Perkins vs. United States (U. S.), 228 Fed. R. 408*)

The United States Circuit Court of Appeals, Fourth Circuit, in reversing a conviction of manslaughter, says that the chief rules of law applicable to the case were these: 1. Insanity, to be available as a defense, must reach the degree of failure to understand the difference between right and wrong. 2. Drunkenness is not an excuse for crime, but the long-continued use of alcohol or other drugs, even though voluntary, may produce delirium tremens, or other mental derangement violent enough to amount to insanity, and make its victim not responsible under the law. 3. Intoxication, or delirium, from a drug used with knowledge that it is likely to produce intoxication or delirium obviously stands on the same footing as intoxication from alcohol. 4. A patient is not presumed to know that a physician's prescription may produce a dangerous frenzy. But he is bound to take notice of the warning appearing on a prescription, and this obligation is, of course, stronger if he reads the prescription. If, for example, in this case, the prescription itself, or the realized effect of the first dose of the chloral, or both together, warned the defendant before he had lost control of himself that he might be thrown into an uncontrollable frenzy, then he would be guilty of murder or manslaughter according to the view the jury might take of the circumstances. If, on the other hand, the defendant had good reason to infer from the terms of the prescription or the oral instructions of the physician, or from the effect of the first dose, or from all these together, that he would fall into unconsciousness from a larger dose, then he would not be legally responsible for acts committed in a violent frenzy which he had no reason to anticipate. If he was so frenzied by a portion of the medicine innocently taken under the direction of the physician that he was thrown into a mental state which placed him beyond his own control and beyond the realization of what might be the ill effect of an overdose, he would not be legally responsible. In this case it appeared that the defendant, on a voyage from New York to Charleston, killed another passenger. Before starting on the trip, he consulted a physician, who, fearing that he was on the verge of delirium tremens, prescribed phenacetin and caffeine citrate for his headache, with the direction that if one powder failed to relieve, it was to be repeated in four hours, and, as a sedative for his nervousness, 2 ounces of chloral hydrate in solution, 1 teaspoonful, containing 15 grains, to be taken every six hours, to be stopped after three doses. It is not correct to say, as a general proposition, that a man without expert knowledge is presumed to know the effect of chloral, or of other drugs, if he knows what it is, that is, what it is made of. In such an instruction, however, there was no harmful error in this case, because the defendant had express warning from the physician's prescription not to take more than a certain quantity. He knew it was a drug that would affect the nerves, and he was notified by the terms of the prescription that serious results would follow an overdose. Unless the dose, taken in good faith under the physician's prescription, threw him into a state of uncontrollable delirium, he could not be allowed to take the risk of an overdose and visit the consequences on his fellow passengers. A distinction broadly made, as it was in this case, between insanity produced by disease coming as an act of God and that produced by a man's own voluntary act is not sound, for real mental disease amounting to insanity, as distinguished from ordinary intoxication, excuses, even when brought about by voluntary dissipation or other vice. Something of the lower court's views is to be found in the report in *THE JOURNAL*, Sept. 18, 1915, p. 1053.

Society Proceedings

THE AMERICAN ASSOCIATION OF IMMUNOLOGISTS

Third Annual Meeting, held in Washington, D. C., May 11-12, 1916
(Concluded from page 149)

Localization of a Streptococcus in Animals from a Case of Recurring Neuritis and Myositis

DR. EDWARD C. ROSENOW, Rochester, Minn.: A streptococcus having peculiar properties was isolated from the dead pulp of the left upper first molar in the region where the attacks of pain usually began. The streptococcus was also demonstrated in the sections and isolated from the infiltrated deep fascia and muscles of the left side of the neck. A similar streptococcus was isolated from the pharynx and stool. This streptococcus was found to have elective affinity for the pulp of teeth, dental nerves and muscles of animals. It was repeatedly isolated from and demonstrated in the experimental lesions in animals whose blood was sterile; the lesions were again produced on reinjection, and the streptococcus again isolated. Many animals appeared to be in pain, and one rabbit had marked pain and tenderness over the left upper jaw. This affinity was proved to be absent in the diphtheroid and *Bacillus fusiformis* also isolated from the pulp of the tooth, and in the streptococcus broth culture filtrate. Streptococci from other sources rarely cause lesions in the pulp of teeth and dental nerves. The phagocytic power of the patient's blood following the attack over the strain from the tooth was twice that of comparable normal blood. These results would appear to warrant one in drawing the conclusion that the attacks of pain in the face in this patient were due to a streptococcus infection of the sheaths of the dental nerves, and that the pain, swelling, and tenderness and spasm of the muscles of the neck were due to myositis and fibrositis, the result of infection by this streptococcus. The demonstration of living streptococci in the pulp of the tooth and in the fascia and muscle during quiescent periods is significant and may explain the recurrence of the attacks. The cavity in the tooth, judging from the character of the filling and the bacterial flora, was unable to heal for mechanical reasons. This appeared to afford a culture medium for the growth of the streptococcus. From stimulation of the defensive mechanism in the patient during the attacks, active growth appeared to be held in check and the symptoms disappeared in consequence, only to reappear later from recurrence of active growth and localization of the streptococci when the immunity was low. The improvement in the patient since the extraction of the tooth appears to be due to the removal of this focus and to prolonged artificial stimulation of the defensive mechanism by means of autogenous vaccines, which it is hoped will lead to the destruction of all the streptococci in the muscle and dental nerves, and result in the ultimate recovery of the patient.

Analysis of Cases Changing to Wassermann Positive After a Wassermann Negative Period of Twelve Months or Over

DR. LOUIS A. LEVISON, Toledo: An analysis of the results of the Wassermann tests in sixteen cases shows that a negative Wassermann, even though obtained over a considerable period of time, cannot be considered as a criterion of cure. All the cases were late or advanced when they received competent treatment. They received mercury either in small and inefficient amounts, some not at all, at the time when treatment could have been of value. Many cases coming under my observation which have been treated intensively from the very start with salvarsan and mercurial injections have gone over one year with negative Wassermanns, and this group stands in sharp contrast to this series of late cases. It may be said, then, that a long continued negative Wassermann period in an early case that has been treated well from the beginning is a much better criterion of cure or permanent arrest than a similar Wassermann negative period occurring in a late or advanced case.

Diagnosis and Treatment of Septicemia

DR. EMIL AEDERHALDEN (Translated from the German by Dr. Oscar Berghausen, Cincinnati): We have made blood cultures in fifty cases having symptoms resembling clinically septicemia. Of these, 57 per cent. were positive, the streptococcus being the prevailing organism. Of twenty-three patients with a positive blood culture, 74 per cent. died and 26 per cent. recovered. Of seventeen patients with a negative blood culture, 35 per cent. died and 65 per cent. recovered. Ordinarily in this series a low white count indicated a bad prognosis. The differential white count is of the greatest importance. When the polymorphonuclear count approaches 90 per cent., particularly when the white count is low, the prognosis becomes grave. In most of these cases the antistreptococcic serums obtainable on the market were employed; in none was a cure reported. In thirteen of the cases, autogenous vaccines were employed in addition to the regular symptomatic treatment, and of this number seven recovered. These patients should be given plenty of fresh air and should be fed as liberally as possible without deranging the digestion. The hot pack is indicated in septicemia marked by high temperature and erythema, and in the absence of more serious complications, with stimulation before and after the pack. Digitalis may be employed to enforce the heart's action in the beginning, though we cannot thereby prevent the onset of endocarditis. Of the antipyretics, quinin is the most important and should be used in small doses and often. Apparently good results have been obtained by hypodermoclysis. The continued use of autogenous vaccines is justified. Spinal puncture is indicated when symptoms of meningismus develop.

Treatment of Pulmonary Tuberculosis by Tuberculin

DR. A. N. SINCLAIR, Honolulu, H. I.: No attempt has been made by us to classify the cases, because as soon as classification is attempted, considerable opportunity for error is offered. Out of 309 cases in which no tuberculin was used, 27.2 per cent. of all cases treated either were arrested, or the patients were able to return to their former occupations; while out of 506 cases treated with tuberculin, 50.1 per cent. of the patients were enabled to resume their former occupations. Another proof of the value of tuberculin is the almost immediate and continuous improvement that has occurred in many cases in which the patients did not receive treatment at Leahi Home but who were given tuberculin treatment. Failure in the use of tuberculin may rest on three factors: on the tuberculin itself; on the dosage, and on the selection of unfavorable cases. The dosage should be regulated, not by the "rule on the bottle method," but by the immunizing method. The production of antibodies to the tubercle bacilli is accomplished more safely and just as certainly by continued small doses as by large ones. I never go above 1/300 and rarely above 1/500 mg.

Value of Tuberculin in the Treatment of Tuberculous Lymphnoditis

DR. GEORGE P. SANBORN, Boston: In lymph node tuberculosis, tuberculin is particularly indicated for its specific effect as a stimulus to the formation of antibodies which the immunizing mechanism appears to lack in this form of tuberculosis. At the Boston City Hospital, all cases receive inoculations of tuberculin bacillus emulsion. The initial dosage in children is from 1/50,000 to 1/25,000 mg.; in adults, from 1/20,000 to 1/10,000 mg. Both human and bovine tuberculin is used. The increase in dosage was gradual. Constitutional reactions are avoided as far as possible. The patients' condition of living is practically the same during the treatment as during the period when the lymph nodes are developing. In 83 per cent. of the cases there was a diminution in the size of the nodes; one or more nodes broke down in 33½ per cent.; one or more nodes developed during treatment in 20 per cent.; surgical procedures were necessary in 11 per cent.; there was a gain in weight in 60 per cent. of the cases. There has been a demonstrable improvement in at least 83½ per cent. of the cases treated. Recurrence took place in eight cases.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

July, XII, No. 1, pp. 1-108

- 1 *Reliability of Electrical Diagnosis of Tetany. J. B. Holmes, Baltimore.
- 2 *Electrocardiographic Studies of Congenital Heart Disease. H. McCulloch, Washington, D. C.
- 3 *Diphtheria in First Year of Life. J. D. Rolleston, London.
- 4 Metabolism Study of Case of Diabetes Insipidus. J. Rosenbloom and H. T. Price, Pittsburgh.
- 5 *Etiology of Chorea. J. L. Morse and C. Floyd, Boston.
- 6 Curved Lines of Suction. M. Kasahara, Japan.

1. **Diagnosis of Tetany.**—The appearance of cathodal opening contractions under 5 ma. (and in the absence of certain conditions already mentioned) in children under 5 years of age Holmes claims is pathognomonic of tetany. Cathodal opening contractions are, however, not infrequently absent in cases of clinical tetany. The appearance of anodal opening contractions with less current than that causing anodal closing contractions, and under 5 ma. during the first six months of life is probably pathognomonic of tetany in all cases; their appearance with less current than that causing anodal closing contractions and under 2 ma. is probably pathognomonic up to the fourth or fifth year; thereafter it is of little significance. The appearance of a Chvostek phenomenon under 2 years, in the absence of birth trauma, indicates tetany; under 4 or 5 years of age it is highly suggestive of tetany; its appearance in the highest grade (Grade 3, Escherich) is suggestive throughout childhood. After 3 years the Chvostek phenomenon is not infrequently found in milder grades in apparently normal children. The occurrence of any one of these symptoms in association with a clinical history of tetany is to be considered conclusive evidence of tetany. The determination of the electrical values is an extremely useful, but not always an infallible, means of diagnosing active or latent tetany in childhood. It is most useful in infancy. Like other clinical tests, this one has definite limitations that must be recognized.

2. **Congenital Heart Disease.**—Twelve cases of congenital malformation of the heart, from which electrocardiograms were obtained by McCulloch, he says, are confirmatory of the relation between right ventricular preponderance and the type of curve mentioned by Einthoven, in which there is a small R wave and a deep S wave in Lead I and a large R wave and a small S wave in Lead III. They also show that this type of curve is not diagnostic of a congenital malformation, as has been supposed, and that all congenital malformations do not show this type of electrocardiogram. That is, if the congenital malformation is of such a nature that a right ventricular hypertrophy results, one will obtain this type of a curve. If the malformation is not associated with this secondary hypertrophy, this type of electrocardiogram fails. McCulloch also studied four cases of pulmonary stenosis, five cases of defects of the interauricular or interventricular septums, two cases of patent ductus arteriosus, and one case of right ventricular atrophy.

3. **Diphtheria.**—This paper is based on a study of 2,600 consecutive cases of diphtheria seen by Rolleston in the course of the last twelve years. Of these, only twenty patients, or less than 1 per cent., were in the first year of life. Nearly twice as many occurred during the second half as during the first six months of the year. Particularly remarkable is the high percentage of cases with nasal involvement. Whereas of the total 2,600 only 668, or 25.6 per cent., showed any localization of diphtheria in the nose, thirteen cases, or 65 per cent., of the infants under 1 year showed nasal diphtheria either alone or in association with other diphtheritic lesions elsewhere. On the other hand, the disease was by no means confined to the nose, even in some of the youngest infants, as an equal number of children showed some faucial membrane. The unusual frequency of cutaneous diphtheria is also striking, namely, 15 per cent., as compared with 1.1 per cent. in the total 2,600 cases. In two cases the skin in the immediate neighborhood of the

mouth or nostril was affected, and in one, the labium majus and skin around the anus. In only four was the larynx affected, in three of whom faucial membrane was also present. One required tracheotomy and died, the other three recovered. In only three out of the twenty cases could the source of infection be detected. Three patients showed unmistakable signs of congenital syphilis. None of the cases had immediately followed measles. The incidence of paralysis among the 2,600 patients of all ages was 19.8 per cent. On the other hand, bronchopneumonia, which was noted in only 1.2 per cent. of the patients of all ages, occurred in six of the twenty cases, or 30 per cent., five of which terminated fatally. The high mortality in the twenty cases—nine deaths, or 45 per cent.—was thus mainly due to bronchopneumonia, which caused five deaths; cardiac paralysis, responsible for two deaths, and congenital syphilis for two.

5. Etiology of Chorea.—Twenty-six children, eleven boys and fifteen girls, were studied by Morse and Floyd, their ages varying between 3 and 11 years. One of the children died of chorea and several had a very severe type of the disease, but the course was mild or moderate in the remainder. Lumbar puncture was done twenty times in nineteen of the cases. The cerebrospinal fluid was perfectly clear in every instance. The pressure was apparently slightly increased in one instance. It was normal in all the others. A fibrin clot was never formed. The number of cells per cubic centimeter was counted in ten cases, and was, respectively, 2, 5, 7, 8, 10, 10, 10, 18, 24 and 25. There was, therefore, a slight increase in the number of cells in three of the ten cases, or 30 per cent. The cells were all mononuclear in every case. Lumbar puncture had no noticeable effect on the symptoms, either for better or worse, at the time or later, in any instance. The investigations made by the authors show that syphilis plays no direct part in the etiology of chorea. The results suggest that a micro-organism or a group of micro-organisms may be the cause of chorea. They seem to show that if chorea is caused by a micro-organism, the source of infection is ordinarily in the tonsils or teeth. They tend to confirm the belief that there is an intimate relation between chorea, rheumatism and endocarditis.

American Journal of Orthopedic Surgery, Boston

June, XIV, No. 6, pp. 319-380

- 7 Subastragalar Arthrodesis in Lateral Deformities of Paralytic Feet. D. P. Willard, Philadelphia.
- 8 Intraperitoneal Inoculation of Animals; Its Diagnostic Value in Orthopedic Surgery. M. S. Henderson, Rochester, Minn.
- 9 Present Methods in Treatment of Infantile Paralysis. H. W. Orr, Lincoln, Neb.
- 10 Critique of Causes and Treatment of Perthes' Disease (Osteochondritis Deformans Juvenilis). F. C. Kidner, Detroit.
- 11 Case of Multiple Cartilaginous Exostoses. H. W. Marshall, Boston.

American Journal of Roentgenology New York

June, III, No. 6, pp. 293-350

- 12 Roentgen Ray Idiosyncrasy. G. M. Mackee, New York.
- 13 Physical Aspect of Roentgen Ray Measurement and Dosage. J. S. Shearer, Ithaca.
- 14 Value of Lateral View of Hip. P. M. Hickey, Detroit.
- 15 Cause and Prevention of Constitutional Effects Associated with Massive Doses of Deep Roentgentherapy. G. E. Pfahler, Philadelphia.
- 16 Roentgen Observations on Duodenum with Special Reference to Lesions Beyond First Portion. J. T. Case, Battle Creek, Mich.
- 17 Case of Osteosarcoma of Head of Femur. J. C. Hubbard and A. W. George, Boston.
- 18 Two Cases of Ureteral Calculus Presenting Unusual Symptoms Undiagnosed for Long Time. G. E. Pfahler, Philadelphia.
- 19 Convenient Method of Marking and Mounting Dental Films. A. R. Metz, Chicago.
- 20 Left Sided Appendicitis. J. T. Case, Battle Creek, Mich.
- 21 Warts as Source of Error in Search for Calculi. J. T. Case, Battle Creek, Mich.

15. Abstracted in THE JOURNAL, Nov. 6, 1915, p. 1670.

American Journal of Tropical Diseases and Preventive Medicine, New Orleans

June, III, No. 12, pp. 625-664

- 22 *Employment of Rat Poison as Measure for Preventing and Exterminating Plague. T. Kitano.

22. Rat Poison in Exterminating Plague.—When the plague has appeared in different parts of Japan, rat poison has often been employed with varied success, but the man-

ner in which this has been done in Yokohama, that is, continued distributions of large quantities of the poison to every house throughout the whole city, and especially the use of phosphorus poison, has never been tried anywhere before. Kitano reports the details of this work. His conclusions are as follows: The use of phosphorus in the preparation of rat poison is the most effective. The effect of the arsenic rat poison, if the material be changed with the seasons and the taste of rats, is next to phosphorus rat poison. Sulphonal and calcium sulphate are not perfect in their effect for rat poison. If plague ridden rats eat these rat poisons they die so soon that the bacteria cannot widely spread. The effect of the phosphorus rat poison lasts more than twenty days, the arsenic rat poison lasts more than that. The distribution of this rat poison when compared with other preventive measures is simple and economical and it does not interfere with commercial and industrial enterprises. The more widely this rat poison is distributed to every house the better are the results. Kitano found no rat in the localities in which rat poisons were distributed several times to every house therein. The cleansing and disinfection of the houses is quite needless after the distribution of the rat poisons. As a means of preventing the plague the employment of rat poison is superior to any other measure. In Yokohama the plague was entirely stamped out within six months. The phosphorus used was soaked into bread and cut into pieces, containing 0.025 gm. of phosphorus per piece.

Boston Medical and Surgical Journal

June 29, CLXXIV, No. 26, pp. 925-970

- 23 *Etiology of Diseases of Circulatory System. T. C. Janeway, Baltimore.
- 24 Respiratory Exchange, with Description of Respiration Apparatus for Clinical Use. F. G. Benedict and E. H. Tompkins, Boston.
- 25 *Diagnosis of Periosteal Sarcoma with Roentgen Ray. F. J. Cotton, Boston.
- 26 Further Experience in Treatment of Intracranial Hemorrhage in Newborn. R. M. Green, Boston.

23. Diseases of Circulatory System.—Janeway urges (1) the education of the public to consider "rheumatism" a serious disease, particularly in childhood, and to seek competent medical advice at once; and the education of the medical profession to treat even the mildest rheumatic fever in bed with large doses of salicylates from the earliest possible moment; (2) the provision of convalescent hospitals for the necessarily protracted after-care of cases of acute inflammatory disease of the heart and of patients recovering from myocardial insufficiency; (3) the development of suitable employments for cardiac patients, and of the social and economic machinery necessary to placing them in such employments, and (4) general hygienic measures, including the promotion of temperance.

25. Diagnosis of Periosteal Sarcoma with Roentgen Ray.—A case of bone thickening, showing in the roentgenogram a picture of slight cortical erosion only, the presence of light stalactite-like threads of bone, perpendicular to the bone surface, strongly suggests sarcoma.

Bulletin of Medical and Chirurgical Faculty of Maryland, Baltimore

June, VIII, No. 12, pp. 225-245

- 27 Dispensary Abuse and Certain Problems of Medical Practice. J. W. Williams, Baltimore.

Canadian Medical Association Journal, Toronto

June, VI, No. 6, pp. 481-576

- 28 Ontario Medical Association. H. B. Anderson, Ontario.
- 29 Acute Mammary Carcinoma. G. E. Learmonth, High River, Alberta.
- 30 Suppurative Otitis Media. E. H. White, Montreal.

Cleveland Medical Journal

May, XIV, No. 5, pp. 315-376

- 31 Occupational Mortality Experience of 94,269 Industrial Workers—Metropolitan Life Insurance Company, 1911-1913. L. I. Dublin, New York.
- 32 Some Medical and Surgical Fallacies Concerning Gastro Intestinal Derangements. N. Rosewater, Cleveland.

Iowa State Medical Society Journal, Des Moines

June, VI, No. 6, pp. 241-280

- 33 Experience in Medical Cooperation. W. B. Small, Waterloo.
- 34 Bacteriology of Throat Infections. F. J. Hall, Kansas City, Mo.

- 35 Health of Women Students in Some of Iowa Colleges. J. F. Throckmorton, Chariton.
- 36 Use of Lane's Plates in Treatment of Fractures of Femur. F. M. Tombaugh, Burlington.
- 37 Eczema. E. L. McEwen, Chicago.
- 38 Chronic Pancreatitis. J. W. Shuman, Sioux City.
- 39 Early Diagnosis of Cancer of Uterus. G. T. McCauliff, Webster City.

Journal of Infectious Diseases, Chicago

July, XIX, No. 1, pp. 1-103

- 40 Study of Various Methods for Determining Virulence of Diphtheria Bacilli. J. A. Kolmer and E. L. Moshage, Philadelphia.
- 41 *Study of Acid Production by Diphtheria Bacilli. E. L. Moshage and J. A. Kolmer, Philadelphia.
- 42 *Relation of Carbohydrate Splitting Ferments to Soluble Toxins of Diphtheria Bacilli. J. A. Kolmer and E. L. Moshage, Philadelphia.
- 43 Protein Sparing Action of Utilizable Carbohydrates in Cultures of Certain Sugar Fermenting Organisms. H. M. Jones, Chicago.
- 44 Antigenic Value of Spirochaeta Hyos in Complement Fixation Tests in Hog Cholera Serum. W. E. King and R. H. Drake, Detroit.
- 45 *Production of Antibodies After Antityphoid Inoculation. K. Howell, Chicago.
- 46 *Effect of Benzene on Production of Antibodies. L. Hektoen, Chicago.
- 47 *Time Relations of Infiltrating Cells in Acute Anterior Poliomyelitis. A. E. Taft, Boston.
- 48 *Yeasts, Probably Pathogenic in Throat Cultures. A. L. Grover, Iowa City, Iowa.
- 49 *Phagocytosis and Leukocytic Activity in Diphtheria Carriers. R. Tunnicliff, Chicago.

41. **Acid Production by Diphtheria Bacilli.**—In the experience of Moshage and Kolmer acid production tests are of limited value in the classification of diphtheria bacilli. From the practical standpoint, these tests have generally proved successful in the identification and classification of the Hofmann bacillus on the basis that it does not produce appreciable quantities of acids with carbohydrates. For the purpose of differentiating between virulent and nonvirulent bacilli, these tests have failed to prove of any value; the typical virulent diphtheria bacillus produces acids most characteristically with dextrose, dextrin, levulose, and galactose, and the false types, or Hofmann's bacilli, produce no acids at all; but between these extremes is a large group of bacilli of varying morphology and from different sources which present varying and inconstant degrees of virulence and fermentative power.

42. **Carbohydrate Fermentation and Soluble Toxins.**—According to Kolmer and Moshage carbohydrate fermentation by diphtheria bacilli is dependent on secretory enzymic products of the diphtheria bacillus, but is independent of the soluble poison or toxin; these ferment like carbohydrate splitting products are most likely to be produced by toxin producing bacilli.

45. **Antibodies After Antityphoid Inoculation.**—After injection of typhoid vaccine into human beings specific antibodies develop in the blood. Howell found that they reach the highest concentration in from one to two months, after which they gradually diminish. Opsonin appears to develop earliest. Agglutinin, so far as known now, persists the longest, having been demonstrated to be present two years and even longer after the vaccination. Specific complement fixation is obtainable with the serum of persons injected with typhoid vaccine, hence this test is not distinctive of typhoid.

46. **Benzene and Production of Antibodies.**—The course of infection and the production of antibodies in animals under the influence of benzene was investigated by Hektoen. He found that in rabbits the repeated injection of benzene in doses of 1 c.c. per kilo of rabbit weight at about the same time that sheep blood is injected greatly reduces the production of specific precipitin and lysin. In considerably larger doses benzene has a like effect on the production of lysin in white rats. The reduction of antibody formation under these circumstances is associated with grave lesions in the marrow, with leukopenia, and other changes characteristic of benzene intoxication, the leukocytes in the rabbit being of reduced phagocytic power. In the dog, benzene (0.02 c.c. per kilo) may cause leukocytosis associated with increase in production of lysin for goat corpuscles. So far as can be determined by the precipitin method, the course of the antigen in the blood appears the same in benzenized

as in nonbenzenized rabbits. At the height of antibody production the injection of benzene appears to have but little effect on the leukocytes of the blood and on its antibody content, the precipitin especially persisting longer and with more fluctuation than otherwise. Benzene may lower the resistance to infection by reduction (1) of antibody production, (2) of the number of leukocytes and (3) of leukocytic activity. That benzene acts on elements that elaborate antibodies and that the leukocytogenic centers are concerned in this elaboration is indicated (a) in the rabbit, by the reduction of antibodies and of leukocytes and by the resistance to these effects when antibody production is at or near its highest activity as measured by the concentration of antibodies in the blood, and (b) in the dog, when suitable doses are given, by leukocytosis and increased formation of lysin.

47. **Infiltrating Cells in Poliomyelitis.**—Thirty-eight cases, all in monkeys, were examined by Taft. Cases with a short incubation period and brief duration before death, showed a corresponding abundance of polymorphonuclear cells in the pericellular infiltrate, and an extreme degeneration of anterior-horn nerve cells. Cases in which death was delayed weeks or months showed a persistence of small round cell infiltration, but no polymorphonuclear leukocytes, even in cases with extreme nerve cell destruction. Therefore, Taft concludes that the duration of the disease, the incubation period, and the cell degeneration in acute anterior poliomyelitis, apparently depend on the virulence of the infecting virus. The polymorphonuclear leukocytes disappear after a time (in the cases here considered apparently within three weeks), but the small mononuclear cells, when death is sufficiently delayed, persist.

48. **Yeasts in Throat Cultures.**—Yeasts are found in the throats of a certain percentage of all individuals, and that under proper conditions they become pathogenic, setting up either an inflammation of the mucous membranes of the throat and air passages, or else producing a more deeply seated infection, such as a tonsillar or peritonsillar abscess. Experimentally, most of these organisms appear to be pathogenic for guinea-pigs. From a study of the clinical histories, Grover believes them to be pathogenic for man. The cultural characteristics of the organisms recovered from throat cultures have been worked out in considerable detail, but as yet no specific classification has been attempted.

49. **Phagocytosis and Leukocytic Activity.**—A study of diphtheria patients and carriers made by Tunnicliff showed that the phagocytic power of the blood of diphtheria carriers is increased, but at the same time the nose and throat may contain large numbers of leukocytes not engaged in phagocytosis. Efforts to increase the activity of these leukocytes by the use of normal serum, leukocytic suspensions, calcium chlorid, sodium salicylate, lactic acid, and magnesium chlorid were unsuccessful, although dilute solutions of these substances are found to promote phagocytosis in the test tube.

Journal of Nervous and Mental Disease, Lancaster, Pa.

June, XLIII, No. 6, pp. 489-590

- 50 *Study of Condition Occurring in Aged Usually Attributed to Cerebral Arteriosclerosis. C. M. Byrnes, Baltimore.
- 51 *Tumor Involving Crus Cerebri (With Unusual Endocrine Symptoms). W. Timme, New York.
- 52 Tic of Abdominal Muscles of Thirteen Years' Duration, Study of Case with Necropsy. F. B. Clarke, Milwaukee, Wis.
- 53 Interpretation of Symptoms in Infective Exhaustive Psychoses. S. Brown II, Bloomingdale, Ill.
- 54 *Pathologic Findings in Two Cases of Paralysis Agitans. E. M. Auer and G. P. McCough, Philadelphia.

50. **Study of Condition Occurring in Aged.**—Although the histologic examination of the cerebral vessels of the four cases examined by Byrnes does not confirm the clinical diagnosis of cerebral arteriosclerosis, there were other important pathologic changes which Byrnes believes may explain some of the symptoms. There were marked changes in the peripheral vessels, chronic interstitial nephritis, anemia, moderate local meningeal infiltration, and disintegration of the Purkinje cells, the cells of the nucleus dorsalis and the anterior horn cells of the spinal cord. The author suggests that it is not improbable that the symptoms may have been due to uremic or syphilitic toxemia, extracranial arterioscle-

rosis, or spasmodic constriction of the peripheral or cerebral vessels.

51. Tumor Involving Crus Cerebri.—The status of Timme's patient (male, aged 14, in July) was as follows: A staggering, swaying gait toward the left side chiefly, but also occasionally to the right; occipital headache; nausea. There was a right facial weakness seen chiefly in smiling. Diplopia was present. Nystagmus, coarse in character, greater when looking to the left, with the slow component to the right, was constant. Vision $20/30$ each; hyperopia; with white and red fields normal. Disks were pink, veins slightly dilated. In October a beginning papilledema with hemorrhage was first noticed in both fundi with normal color fields. There was incoordination with ataxia of hands and feet; right greater than left. The reflexes gave a greater right knee jerk, a double Babinski and Oppenheim, greater on the right, doubtful on the left at times; abdominals, right sluggish, left absent, epigastrics likewise; cremasterics equal. Elbow jerk, right exaggerated, left doubtful; asynergia was well marked in the usual movements of equilibration. Hearing unaffected. Weber and Rinne tests showed normal conduction. There was irregular pointing by and adiadochokinesis of the right hand. The cerebrospinal fluid was negative. The penis and scrotum were unduly developed. A roentgenogram of the skull showed no abnormal sella turcica, nor other pathologic condition. From these findings a general diagnosis of tumor was made without special localization. The drowsiness and headaches became more marked. He had two unilateral convulsions involving the right side. Following them there was added an Oppenheim on the left side and a gradual impairment of the motor functions of the trigeminus on the left side. Joint sense was unimpaired. Astereognosis was absolute on the right side. A moderate spasticity of the right leg began to appear but no clonus. Finally there was elicited by means of the esthesiometer, a slight diminution of cutaneous sensibility of the entire right side. These signs, together with the foregoing status, enabled Timme to localize the tumor as one involving the crus and pons of the left side, and extending posteriorly, to the origin of, but not including, the facial and auditory nerves—at any rate beyond the origin of the motor fifth.

The patient became progressively worse and died of respiratory paralysis. The necropsy showed a brain very much enlarged, the ventricles only slightly distended, with a pons very much distorted and enlarged, especially on the left side. This enlargement was caused by an extensive pontine tumor mass which reached forward through the left crus cerebri to the left thalamus, and posteriorly nearly to the beginning of the medulla, extending slightly into the brachium pontis of the left side; involving in this extended locus, the left median fillet, the red nucleus with the emerging rubrospinal tract, the left brachium conjunctivum, the left motor fifth root, and compressing the pyramidal tract of the left side as well as by transmitted pressure that of the right side also in lesser degree. The hypophysis was normal in size. The pineal gland was roughly triangular in shape with a large transverse diameter of 12 mm. and its anteroposterior 10 mm. This represents a gland rather large in size although within normal variation. The tumor proved to be a glioma.

54. Pathologic Findings in Paralysis Agitans.—The pathologic changes noted in the region of the basal ganglia in the two cases studied by Auer and McCough were: 1. Areas of rarefaction containing neuroglia cells and debris giving the tissue a moth-eaten appearance. 2. Clean punched out holes possibly excessively enlarged perivascular spaces from which the vessels may have dropped out. 3. Round and oval basic staining deposits chiefly in the perivascular space and adjacent tissues. 4. Diminution in the number of the external medullary laminae and of the radial fibers of the lenticular nucleus with some evidence of degeneration of the latter. 5. Failure of the cells of the corpus striatum to stain well which latter may possibly have been due to the age of the material. 6. In one case advanced degeneration of the cells of the centrum medium on both sides and of the corpus subthalamicum.

Journal-Lancet, Minneapolis

June 15, XXXVI, No. 12, pp. 341-370

- 55 Case of Perforating Gastric Ulcer Following Gastro-Enterostomy. A. N. Collins, Duluth.

Kansas Medical Society Journal, Topeka

June, XVI, No. 6, pp. 161-190

- 56 History of Kansas Medical Society. O. D. Walker, Salina.
57 Etiology of Iritis. J. W. Kimberlin, Kansas City, Mo.
58 Who Shall Practice Medicine? W. H. Young, Fredonia.

Medical Record, New York

July 1, XC, No. 1, pp. 1-46

- 59 *Congenital and Acquired Hemolytic Icterus; Report of Two Cases Treated by Splenectomy. G. E. Brewer, New York.
60 Human Prostate in Middle Age. O. S. Lowsley, New York.
61 Frozen Limbs and Their Treatment in Present War. E. K. Tullidge, Philadelphia.
62 Present Conception of Congenital Syphilis and Its Modern Diagnosis. A. Rostenberg, New York.
63 Importance of Blood Pressure to Eye Specialist. F. P. Hoover, Jacksonville, Fla.
64 Some Deformities of Head Mentioned in Talmud. D. I. Macht, Baltimore.

59. Congenital and Acquired Hemolytic Icterus.—Brewer reports two cases of splenomegalic hemolytic icterus, greatly improved if not cured by splenectomy. Both patients are free from jaundice, are much improved in health, and are able to do their work without fatigue. Brewer says that while there are as yet very few reports stating the remote results of splenectomy in these cases, the records so far as they go show conclusively that in early splenectomy we have a comparatively safe and the only successful method yet suggested in the treatment of splenomegalic hemolytic icterus.

New York Medical Journal

July 1, CIV, No. 1, pp. 1-48

- 65 Conservatism in Obstetrics. E. B. Cragin, New York.
66 Bone Sarcoma Treated by Radium. J. B. Bissell, New York.
67 Stricture of Ureter. G. L. Hunner, Baltimore.
68 Congenital Syphilis; Report of Case. J. P. Jones, Nez Percé, Idaho.
69 Intradural Nerve Anastomosis in Selected Cases of Poliomyelitic Paralysis. N. Sharpe, New York.
70 Contents of Ovarian Cysts. J. T. Leary, H. J. Hartz and P. B. Hawk, Philadelphia.
71 Dementia Praecox. M. J. Karpas, New York.
72 Autoserotherapy. F. Huber, New York.
73 Clinical Significance of Gastric Analysis. L. W. Kohn, Philadelphia.

New York State Journal of Medicine

June, XVI, No. 6, pp. 279-330

- 74 Nauheim Method. S. Baruch, New York.
75 Scheme of State Control for Dependent Infants. H. D. Chapin, New York.
76 Cancer as Nonsurgical Disease. L. D. Bulkley, New York.
77 Relation of State to Saratoga Springs Reservation. C. S. Whitman, New York.

Ophthalmic Record, Chicago

June, XXV, No. 6, pp. 271-324

- 78 Experimental Comparison of Three Common Methods of Measuring Heterophoria. F. W. Weymouth, San Francisco.
79 Indirect Injuries of Choroid and Retina. L. Mills, Los Angeles.
80 Case of Symmetrical Lymphomata of Lacrimal and Salivary Glands (Mikulicz' Disease). W. C. Posey, Philadelphia.
81 Injuries to Eye From Broken Spectacle and Eyeglass Lenses. F. D. Vreeland, Chicago.
82 Additional Fixation of Eye, in Connection with Use of Lid Retractors in Standard Cataract Operations. D. W. Stevenson, Akron, Ohio.
83 Case of Choked Disk with Rapid Destruction of Sight and Subsequent Improvement. A. M. Dunlap, Shanghai, China.
84 Herpes of Cornea as Complication of Influenza; Report of Case. C. W. Walker, York, Neb.

Public Health Journal, Toronto

June, VII, No. 6, pp. 289-333

- 85 Sewage Disposal by Activated Sludge Process. T. C. Hatton.
86 Ontario Medical Association Presidential Address. H. B. Anderson.
87 Married Woman in Industry. J. Martin.
88 Periodic Medical Examination. G. Elliot, Toronto.
89 Antityphoid Inoculation in Soldiers. G. D. Porter.
90 School Care of Girls During Puberty. R. I. Warner, St. Thomas.

Southwest Journal of Medicine and Surgery, El Reno, Okla.

June, XXIV, No. 6, pp. 161-192

- 91 Nervous Disorders Associated with Pelvic Disorders. G. H. Moody, San Antonio, Texas.
92 Management of Pellagra and Its Treatment. W. T. Wilson, Navasota, Texas.

- 93 Newer Methods for Treatment of Gonorrhea. R. Boland, Oklahoma City.
 94 Syphilis, Stomach and Pancreas. A. W. White, Oklahoma City.
 95 Value of Functional Kidney Tests Prior to Operation on Urogenital Organs. J. Fischer, Kansas City, Mo.
 96 Diagnosis and Treatment of Pellagra. J. L. Day, Norman.

Surgery, Gynecology and Obstetrics, Chicago

July, XXIII, No. 1, pp. 1-118

- 97 *Technic of Splenectomy. D. C. Balfour, Rochester, Minn.
 98 *Etiology of Uterine Prolapse and Cystocele. G. Fitzgibbon, Dublin.
 99 Transpancreatic Approach to Common Bile Duct. A. H. Harrigan, New York.
 100 *Excision vs. Gastro-Enterostomy. V. B. Knott, Sioux City, Iowa.
 101 *Advantage of Separate Suture of Mucous Membrane in Gastric Surgery. R. A. Barr, Nashville, Tenn.
 102 *Melano-Epithelioma; Report of Seventy Cases. A. C. Broders and W. C. MacCarty, Rochester, Minn.
 103 Cases of Giant Ureteral Calculus; Anomalous Development of Genito-Urinary Tract. I. Abell, Louisville, Ky.
 104 Teratogenesis of Human Athoracic, Acephalic, Acardiac Triplet, with Numerous Ageneses. H. O. White, Los Angeles, Calif.
 105 *Etiology of Cancer of Esophagus and Stomach. W. Lerche, St. Paul, Minn.
 106 Rupture of Bladder Associated with Fracture of Pelvis; Report of One Case. E. P. Quain, Bismarck, N. D.
 107 Pelvic Varicocele. J. A. Wall, Santiago, Chile.
 108 Purpura Hemorrhagica Following Menorrhea. F. R. Benham, Syracuse.
 109 Relation of Endometrium and Ovary to Hemorrhage from Myomatous Uteri. S. H. Geist, New York.
 110 *Sarcoma of Scapula; Histologic Diagnosis Made by Study of Blood Aspirated from Pulsating Portion of Tumor. C. E. Royce, Iowa City, Iowa.
 111 *Unilateral Hematuria Associated with Fibrosis and Multiple Microscopic Calculi of Renal Papillae. R. L. Payne, Jr., Norfolk, Va.
 112 Process of Repair in Wounds of Small Intestine. J. E. McWhorter, A. P. Stout and C. C. Lieb, New York.
 113 Value of Determination of Cholesterol Content of Blood in Diagnosis of Cholelithiasis. E. Henes, Jr., New York.
 114 Surgical Replacement of Prolapsed Kidney. D. Bissell, New York.
 115 Method for Preventing and Controlling Hemorrhage Following Prostatectomy. L. H. Cook, Bluffton, Ind.
 116 Paint Brush Drainage Tube. A. M. Miller, Danville, Ill.

97. **Technic of Splenectomy.**—The features emphasized by Balfour in the technic of splenectomy are: (1) the abdominal exploration, (2) the dislocation of the spleen, (3) the use of a hot gauze pack, (4) the protection of stomach and pancreas from injury, (5) the preliminary ligation of adhesions and (6) the treatment of the splenic pedicle.

98. **Etiology of Uterine Prolapse.**—Prolapse of the uterus and cystocele, Fitzgibbon says, are due to damage of the pelvic fascia in the region of the lateral fornices and in front of the cervix. Laceration of the perineum and levator ani muscles has no part in the production of prolapse. The cure of the condition can be effected by reuniting the fascial diaphragm across the pelvis.

100. Abstracted in THE JOURNAL, January 22, p. 304.

101. Abstracted in THE JOURNAL, January 15, p. 215.

102. **Melano-Epithelioma.**—In the opinion of Broders and MacCarty the so-called "melanosarcoma" should be called properly a melano-epithelioma when such a condition arises in the skin. A study made of seventy cases showed that the condition arises as a migratory hyperplasia of the basal (regenerative or germinative) layer of the skin and invades the subcutaneous tissues and distant organs as pigmented and nonpigmented oval, spherical, or spindle cells, all of which cells are frequently found in the same specimen or even in the same microscopic slide. The evolution of such neoplasms in regenerative cells corresponds to the evolution of cancer in the skin, mammary gland, prostatic gland and stomach. The alveolar arrangement of cells in this series shows no evidence of any relation to vascular endothelium. There is no specific region of the skin which seems especially predisposed to the development of melano-epitheliomas unless it is on the lower extremities, which in this series form the greatest frequency of location. Nevi certainly predispose to the development of the condition. Metastasis is usually to the regional lymphatic glands. Melano-epitheliomas or melanosarcomas arising in the eye have a much better prognosis than melano-epitheliomas arising in the skin. From a therapeutic standpoint the pathologic history of melano-epithelioma clearly points to the necessity of an early diagnosis and a radical removal of the primary lesion and regional lymphatic glands. From a prophylactic

standpoint pigmented areas of skin, such as warts and nevi, should be removed when these are in locations which are or have been subjected to injury.

105. **Etiology of Cancer of Esophagus and Stomach.**—Hot fluids so universally taken throughout the temperate climate zone, in the form of coffee, tea, soups, etc., and giving rise to chronic irritation, Lerche believes to be the main predisposing cause of cancer of the esophagus and stomach.

110. **Sarcoma of Scapula.**—A 10 c.c. of fluid had been aspirated from a tumor of the shoulder which was tentatively diagnosed as sarcoma. The fluid was allowed to stand over night at room temperature. The next morning it was clotted. A 10 per cent. formalin was added without disturbing the clot. The following day Royce removed a portion of the clot and imbedded it in paraffin. Sections from this block stained with hematoxylin and eosin presented beautiful pictures of islands of sarcoma cells imbedded in a matrix of fibrin and red cells. The cells are of the small round variety and mitotic figures are frequently seen.

111. Abstracted in THE JOURNAL, January 15, p. 215.

Wisconsin Medical Journal, Milwaukee

June, XV, No. 1, pp. 525-556

- 117 Some Precancer Conditions. W. E. Ground, Superior.
 118 Bifurcation of Transverse Process of Fifth Lumbar Vertebra; Report of Case. W. Cunningham, Platteville.
 119 Syphilis of Nervous System. F. C. Studley, Milwaukee.
 120 Case Involving Differential Diagnosis Between Paresis and Manic Depressive Insanity (Expansive Form) in Syphilitic Subject. R. Dewey, Wauwatosa.
 121 Health Supervision of Schoolchildren. G. P. Barth, Milwaukee.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

June 10, I, No. 2893, pp. 809-840

- 1 Malunited and Ununited Fractures. R. Jones.
 2 Spirochaeta Eurygyrata, as Found in Human Feces. H. B. Fantham.
 3 *Perforating and Penetrating Wounds of Chest With Severe Hemorrhage. A. Don.
 4 Suction or Vacuum Bougie for Treatment of Chronic Gonorrhea. A. Cambell.

3. **Perforating Wounds of Chest.**—If one considers the mechanism and physics of respiration one finds that with each inspiration there is a lifting of the chest wall and depression of the diaphragm, which tends to produce a vacuum in the pleural space by a sucker-like effect. A bleeding point thus has a suction pump applied to its open rent, and a clot is prevented from forming. The same process of suction takes place also throughout the lung tissue, and there is added the elasticity of the lung itself, which pulls apart and keeps open any rent. To overcome both the suction and the elastic forces and to allow the lung a complete rest till hemorrhage has been arrested, Don proposes making a temporary opening into the pleural cavity, allowing the lung to contract quickly, and, if necessary, washing out the blood clot. The risk of causing an infection which would not otherwise occur is infinitesimal. Very severe hemorrhage could be treated in advanced stations of field ambulances, less severe ones more comfortably in the small hospitals of the field ambulance and others, a diminishing number in the casualty clearing stations. In the only case in which Don has done the operation great relief was experienced in breathing; there was a marked diminution of pain, and, though hemorrhage could not be said to have been severe, it was still going on, and stopped quickly after the operation.

The operation may be done under a general or a local anesthetic, and in any of the usual sites for empyema, preferably the mid-axillary line. Percussion localizes the hemothorax, and a stab is made with a scalpel through the intercostal space, close to the lower rib. The scalpel goes right into the pleural space. The outer covering of one of the army tracheotomy tubes is slipped easily, owing to its central groove, one half along each side of the blade of the knife,

and is pushed right home. The knife is then withdrawn and the center piece of the tracheotomy tube put in. If air has not entered during the previous manipulations it will do so now, with a hissing noise, and the blood will be coughed out. The hemothorax may be aspirated through a soft catheter placed inside the tracheotomy tube, as was done in Don's case, but this would not be necessary in cases treated earlier, when clotting would not have taken place. The tube is now turned so that the inside end points up, and is fixed by straps and plaster or a suture to the chest wall. A pad of sterile gauze and wool completes the dressing. The tube is removed after twenty-four or forty-eight hours, according to the amount of blood escaping. The wound closes immediately aseptically.

Dublin Journal of Medical Science

June, CXXI, No. 534, pp. 371-441

- 5 Enzymes. W. G. Smith.
- 6 Myelitis, With Special Reference to That Due to Trauma and New Growths. E. E. Lavy.

Edinburgh Medical Journal

June, XVI, No. 6, pp. 417-502

- 7 Case of Hemophilia. T. Y. Finlay and A. M. Drennan.
- 8 Case of Symmetrical Pressure Fibromata. D. M. Greig.

Indian Medical Gazette, Calcutta

May, LI, No. 5, pp. 161-200

- 9 German Influence on Modern Bacteriology—Need for Elimination and Revision. W. C. Hossack.
- 10 Correct Names of Helminths of Man. C. Lane.
- 11 Treatment of Kala-Azar With Special Reference to Use of Antimony and Formaldehyd. R. U. N. B. Bahadur.
- 12 Injuries to Peripheral Nerves. F. P. Connor.
- 13 Septic Wounds Affecting English and Indian Troops: Comparison. N. W. Mackworth.
- 14 Gunshot Wound of Foot. A. B. de Castro.

Medical Journal of Australia, Sydney

May 20, I, No. 21, pp. 411-428

- 15 Formaldehyd in Ether. E. H. Embley.
- 16 Oil Ether Anesthesia. L. Lambert and M. R. Hughes.
May 27, II, No. 22, pp. 429-446
- 17 Inflammation of Fallopian Tubes. W. T. Chenhall.
- 18 Case of Liver Abscess. D. A. Cameron.
- 19 Epidermolysis Bullosa. N. Paul.

Practitioner, London

June, XCVI, No. 6, pp. 573-664

- 20 *Vaccine Treatment of Asthma in Bengal. L. Rogers.
- 21 *Alternatives to Operation of Colotomy. J. S. McArdle.
- 22 Citrated Milk Feeding for Infants. F. J. Poynton.
- 23 Recent Progress in Gynecology. F. McCann.
- 24 Recent Work on Diseases of Heart. C. W. Chapman.
- 25 Tuberculosis Arrangements From Clinical Point of View. H. Vallow.
- 26 Diet in Treatment of Pulmonary Tuberculosis. D. C. Muthu.
- 27 Vicious Circles Associated With Disorders of Blood. J. B. Hurry.
- 28 Treatment of Scars. W. K. Sibley.
- 29 Transplantation of Flexor Carpi Radialis Into Extensors of Thumb and Fingers in Case of Musculospiral Paralysis. P. J. Byrne.
- 30 Case of Migratory Pneumonia Occurring in Lung Wounded by and Containing Shrapnel Bullet. S. H. Bennett.

20. **Vaccine Treatment of Asthma.**—Promising results have been obtained by Rogers in a number of cases of asthma by vaccine treatment. Cultures were made from freshly obtained sputum; subcultures were made from the fine pneumococcal and streptococcal-like colonies, a number of them being taken up so as to get as many strains as possible in the tubes used for making the vaccine. Occasionally the culture consisted so purely of fine colonies that the vaccine could be prepared from the primary culture, but this was exceptional. A solution of 5 c.c. of sterile salt were added to each tube, which were then heated to from 56 to 60 C. for one hour; one-half per cent. of phenol was added, and after mixing well, the fluid was put up in doses of $\frac{1}{2}$ and 1 c.c. The first dose was $\frac{1}{2}$ c.c., which usually contained somewhere about 50,000,000 organisms. If no febrile but only a little local reaction occurred, a dose of 1 c.c. was given after five days, and repeated weekly. Occasionally the dose was increased to $1\frac{1}{2}$ or 2 c.c., but as a rule this was unnecessary.

21. **Colotomy Operation Alternatives.**—When there is a cancerous obstruction in the bowel at the edge of the true pelvis, with infiltration of the surrounding tissues, and resection is quite impossible, colotomy, with all its inconveniences, is the usual procedure now carried out. In McArdle's opinion, instead of colotomy, either of four operations should be carried out, according to the conditions found on exploration: 1. The sigmoid above the stricture can be joined to the sound lower part of the rectum, if the former is free enough. 2. If the sigmoid is fixed so that it cannot be brought down, the transverse colon, if low, may be anastomosed to the rectum and to the descending colon above the stricture. 3. When this is not feasible, the cecum may be joined to the rectum, and the ileum joined to the colon above the stricture. 4. The lowermost coil of the ileum may be joined to the rectum, and by a lateral anastomosis to the descending colon above the obstruction.

Bulletin de l'Académie de Médecine, Paris

May 30, LXXV, No. 22, pp. 647-670

- 31 *Syphilis Not a Factor in Appendicitis. (Sur l'intestin des hérédosyphilitiques.) Jalaguier, Routier and others.
- 32 Bacteriologic and Clinical Study of Infectious Sore Throat and Treatment of Different Types. (Angines. Sérothérapie de la diphthérie.) Capitan.
- 33 Indications for Resection of the Knee for Suppurating War Wounds. (Les indications de la résection du genou dans les arthrites suppurées par plaies de guerre.) L. Bérard.
- 34 *Duration of Immunity Conferred by Preventive Antitetanus Serum. (Durée de l'immunité conférée par les injections préventives de sérum antitétanique.) L. Bérard and A. Lumière.
- 35 Arteriovenous Aneurysms. (Sur les anévrysmes traumatiques artério-veineux directs.) Soubotitch.

31. **Syphilis Not a Factor in Appendicitis.**—Jalaguier, Routier, and Monod declare that they have never found any changes suggesting syphilis as a pathogenic factor here, and they denounce Gaucher's statements that inherited or acquired syphilis is frequently at the basis of enterocolitis and appendicitis especially in infants and older children. (See also Paris Letter in THE JOURNAL July 8, 1916, p. 132.)

34. **Duration of Protection from Antitetanus Serum.**—Bérard and Lumière know of over twenty cases of tetanus developing in wounded requiring some late operation, after the protection afforded by the prophylactic serotherapy had subsided. Roux's experiences with animals indicate that the protection begins to decline the fifteenth day and is quite gone by the fortieth or fiftieth day. In man, twenty or thirty days is regarded as the limit after two injections of 10 c.c. each. In four cases described in detail the tetanus developed after an operation to extract a fragment of shell only seven or eight days after the wound and prophylactic injection. Hence they plead for repeating the prophylactic injection between the fifth and eighth days whenever the wound was unusually soiled or an operation is contemplated.

Paris Médical

June 10, VI, No. 24, pp. 549-564

- 36 *Mixed Diseases. (Les maladies mixtes, hybrides ou métisses, en médecine d'armée.) P. Remlinger.
- 37 Action of Radium on War Wounds. Mme. A. Laborde.
- 38 Drainage of Suppurating Knee and Ankle Joints. (Drainage des arthrites suppurées du membre inférieur.) H. Chaput.
- 39 Gargling Syrup. (Un sirop-gargarisme.) R. Couetoux.

36. **Mixed Diseases.**—Remlinger discusses the changes in the clinical picture when two or more diseases develop at the same time and modify each other so that the clinical picture resulting is different from either. These hybrid or mixed diseases are particularly liable to occur among troops on a campaign, in a crowd of Mecca pilgrims, and other agglomerations of persons under conditions of privation. Some of the troops early in the war, much infested with lice, developed a peculiar form of typhoid which was retrospectively diagnosed as typhoid plus typhus. The typical "hybrid" disease is that from the blending of typhoid and dysentery. The tendency of the typhoid to stupor attenuates the pains and tenesmus of the dysentery, while the latter holds down the fever of the typhoid. The puzzling picture presented is explained by the dual bacteriologic findings. Such cases have been far from rare during the present

campaign. In the French colonies in northern Africa, the hybrid picture from blending of typhus and relapsing fever is sometimes observed. In the daily practice of medicine the combination of tuberculosis and syphilis is not uncommon. The resulting hybrid lesions are found in the glands in the neck, the cornea, the skin and lungs. In the latter the tuberculous lesions generally are grafted on a syphilitic affection of the lung. The two diseases may focus on a single point; the hybrid changes are probably in the soil, but the mixed lesion that develops retains the characteristics of each disease and is not a new clinical entity. Measles and scarlet fever, or smallpox may be superposed, but this is comparatively rare.

Presse Médicale, Paris

June 8, XXIV, No. 33, pp. 257-264

40 *Albuminuria Does Not Always Contraindicate Vaccination Against Typhoid. (Vaccination des albuminuriques par le vaccin chauffé triple antityphoïdique et antiparatyphoïdique A et B.) F. Widai and H. Méry.

41 *Characteristic Changes in the Finger Prints With Traumatic Neuritis. (Les empreintes digitales dans les lésions nerveuses du membre supérieur.) R. Cestan, P. Descomps and J. Euzière.

40. **Albuminuria as Contraindication to Vaccination Against Typhoid and Paratyphoid.**—Widal and Méry have been studying the effect of this vaccination on men with albuminuria of varying intensity. The vaccine used was a triple one, against typhoid and paratyphoid, both the A and B types. No attempt was made at vaccinating men with signs of severe nephritis, but many of those vaccinated had albumin up to or beyond 1 gm. to the liter of urine. No harm from the vaccination was evident in any instance. The men passing the physical examination admitting them to active service were all in condition to stand the vaccination without injury. Those with kidneys damaged too much to permit vaccination should not be allowed on active service. Under the influence of the vaccination the albumin content of the urine remained unmodified or dropped a little or showed a briefly transient increase. In men with figured elements in the urine before the vaccination, these persisted unmodified afterward or showed a briefly transient increase. Others whose urine had been free from them before showed transiently a few reds or whites or tube-casts afterward. The urea content of the blood and Ambard's coefficient of urea excretion were determined in all the men with albuminuria. Occasionally the findings varied after the vaccination, but the fluctuations were minimal and briefly transient. In a typical case the range was from 0.37 to 0.59, and back to 0.38 four days after the third injection, while the Ambard coefficient dropped from 0.10 to 0.07. In others the range was downward. None of the vaccinated men showed any signs of renal insufficiency. Even those with pronounced Bright's disease manifested the same tolerance for the vaccinations.

41. **Finger Prints and Neuritis.**—Seven illustrations are given to demonstrate the changes that become evident in the finger prints under the influence of a traumatic neuritis. The pores may encroach on the lines, or there may be signs of desquamation or emaciation; the epidermis may be cast off, the lines show gaps, or the whole finger print becomes blurred almost beyond recognition. Among seventy men with traumatic neuritis only three failed to show some of the above typical changes in the finger prints. The changes did not seem to be proportional to the severity of the neuritis, and they did not always correspond with the innervated area. The absence of any changes in the cases of hysteria paralysis was significant. The changes which are of a trophic order were encountered almost exclusively with injury of the median and ulnar nerves.

Progrès Médical, Paris

June 5, XXXII, No. 11, pp. 81-92

42 *Lead Poisoning From Projectile in the Tissues. (Existe-t-il une intoxication saturnine par les projectiles en plomb retenus dans l'organisme?) Loeper and G. Verpy.

43 General Principles for Treatment of Wounds of Soft Parts. (Traitement général des plaies des parties molles.) M. Sénéchal.

44 Simplified Litter Bed. (Le brancard-soulève.) Rehm.

42. **Lead Poisoning from Projectile in the Tissues.**—Loeper and Verpy noticed that a number of men who had apparently quite recovered from their gunshot or shell wound presented anemia, albuminuria or intestinal or nervous disturbances for which no explanation could be found unless the projectile still left in the tissues could be incriminated. A positive reaction for lead was obtained in the urine from six of the sixteen men tested. The projectile was a scrap of lead in these cases. Intact bullets did not seem to induce lead poisoning, being jacketed with another metal. Some of the men with a 20 gm. shrapnel ball in their tissues eliminated daily for months 15 mg. lead in the urine. The absorption of lead from the projectile varies with the chemical reactions of the tissues in which it is embedded, and with the activity of the circulation in the region. Absorption proceeded most actively in suppurating foci and the lung tissue seemed to be most favorable for it. Lead was found in the urine as early as twenty-five days after the injury and it kept up in two cases for three weeks after the projectile had been extracted. Among the 38 wounded men examined, albuminuria was found in 4; high arterial pressure in 2, and severe anemia in 2; neurasthenia was pronounced in 2, with abolished tendon reflexes in the legs in one of these. In another case there was rebellious painful spastic constipation. The subsidence of these symptoms after removal of the projectile testifies to lead poisoning as a causal factor. Examination of the urine for lead will warn when the projectile is beginning to give trouble. For this they collect the urine for two or three days, decompose the organic matter with hydrochloric acid and potassium chlorate (Fresenius and Babo technic), and after treating with sulphuretted hydrogen obtain the typical reactions with the sulphate of lead in the residue.

Revue de Gynécologie, etc., Paris

XXIII, No. 5, pp. 353-440

45 *Rupture or Abortion of Bilateral Tubal Pregnancies. (Des accidents liés à la rupture ou à l'avortement des grossesses tubaires simultanées.) R. Proust and A. Buquet.

46 *Interstitial Pregnancy. (La grossesse interstitielle.) C. Waegeli. To be continued.

47 *Pedunculated Flap of Fat for Correction of Large Femoral Hernia. (Traitement des grosses hernies crurales par la greffe adipeuse pédiculée.) Chaput.

45. **Bilateral Tubal Pregnancy.**—Proust and Buquet report an emergency laparotomy on a woman of 29 for sudden severe pains and persisting hemorrhage. Both tubes contained an ovum of about two months' growth. One tube had ruptured and the other was enormously congested. The adnexa were removed on both sides but the uterus was left; part of an ovary must have been left also as menstruation has continued since. They compare with this case forty-one similar observations that have been published, although in only thirty-three were the bilateral tubal pregnancies actually simultaneous. In conclusion they give the bibliographic references of eighty-two cases of bilateral tubal pregnancy on record. Their personal case closely resembles that reported by P. Finley in 1910. Among the simultaneous cases mentioned are some published in THE JOURNAL, 1912, 1913 and 1915. The necessity for careful exploration of the adnexa on the other side is emphasized anew by this group of cases. If a hematosalpinx is found on the other side it should be removed without fail, as it is liable to rupture soon. In the case reported the intense pain was felt first on one side and at the time of the laparotomy was restricted to this, the ruptured side.

46. **Interstitial Pregnancy.**—Waegeli encountered two cases of this kind last year and has compiled from the literature 150 cases. The accompanying data were so meager in thirty-eight cases that he dropped them from the list. His study of the subject therefore is based on 112 published cases and minute study of his own two cases. In the latter, intra-ovular hemorrhage entailed abortion at the sixth week, while the pregnancy reached the fourth month in the other case. In both the intramural development of the ovum was complete. The article is to be continued, Waegeli wishing

to discuss the classification of interstitial pregnancies, the etiology, symptomatology, pathologic anatomy, diagnosis and treatment.

47. Fat Flap to Correct Femoral Hernia.—By using a pedunculated flap of adipose tissue, Chaput succeeded in obliterating the opening with a firm and healthy living pad cover. The incision is that for an inguinal herniotomy. Then he divides the anterior wall of the inguinal canal and thus obtains access to the femoral ring, after having pushed aside the spermatic cord or the round ligament. He draws up the hernial sac into the wound if the hernia can be reduced. If not, he resects the sac through an incision in the thigh. No attempt is made to suture the femoral ring; it is obliterated by suturing over it the flap of adipose tissue 1 cm. thick, the base at the lowest point, corresponding to the pubis, the internal margin to the median line. This pedunculated flap is brought down between the peritoneum and the abdominal wall, after resecting its skin surface. The flap is sutured to the ligaments of Gimbernat and Cooper and to the crural arch. This is facilitated by slitting the flap for 2 cm., one strip passing behind and one in front of the femoral vein. He has applied this technic to three women and two men. The flap healed in place and the hernia was completely corrected, although the opening had not been made smaller, but merely covered with the flap. No by-effects or complications were ever observed and the technic, he says, is simple, easy and certain to succeed.

Correspondenz-Blatt für Schweizer Aerzte, Basel

June 3, XLVI, No. 23, pp. 705-736

- 48 Tuberculosis From the Standpoint of Health Insurance for Soldiers. (Tuberkulose und Militärversicherung.) R. Staehelin.
49 Rarity of Anemia Among Persons Who Eat Pot Vegetables in Abundance. (Anémies et chlorophylle.) H. Maillart.

Gazzetta degli Ospedali e delle Cliniche, Milan

May 25, XXXVII, No. 42, pp. 657-672

- 50 Means to Avoid Unnecessary Amputations. (Per limitare le mutilazioni.) G. Perez.
May 28, No. 43, pp. 673-688
51 *Utilization of Grapes in Standard Diet. (Cura d'uva, derivati dell'uva e digeribilità degli alimenti.) E. Bertarelli.
52 Gas Gangrene. S. G. Torino.

June 1, No. 44, pp. 689-704

- 53 The Reaction of Degeneration Remote From Point of Attachment of Muscle. (La reazione degenerativa a distanza.) L. Siciliano.

51. Grapes as an Article of Food.—Bertarelli discusses some recent research in Italy aiming to utilize grapes more than hitherto in the standard diet by making them into durable food preparations. The unfermented juice of grapes and the pulp mixed with milk, ground meat, blood or the yolk of eggs seems to modify the protein in such a way as to make it keep much longer and make it more readily digestible. This phenomenon of the preserving property of the derivatives of the grape is still an unexplained mystery, but Bertarelli says that he has proved that the phenomenon may be counted on, and that vine-growing countries have here an important source of food supply in the production of new articles of diet by various combinations of proteins with the derivatives of the grape.

Policlinico, Rome

May 28, XXIII, No. 22, pp. 677-708

- 54 Mycosis Localized in the Throat. (Una nuova micosi con localizzazione nella gola, osservata per la prima volta a Catania.) G. Basile.
55 *Diagnosis of Bilateral Cystic Kidney; Two Cases. (Sulla diagnosi del cistoma multiloculare bilaterale del rene. Contributo clinico ed anatomo-patologico.) S. Rolando.
June 4, No. 23, pp. 709-740

- 56 Gastritis in Rabbits From Roentgen Exposures. (La radiogastrite ulcerosa nel coniglio, con speciale riguardo all'azione dei raggi secondari del bismuto.) F. Ghilarducci.
57 Apparatus for Extension of Fractured Leg. (Apparecchio a trazione per fasciature gessate nelle fratture dell'arto inferiore.) T. Cavazzani.

55. Diagnosis of Cystic Disease of the Kidney.—Rolando reports two cases, the patients women of 35 and 57, which

illustrate anew the remarkable way in which the kidneys are able to perform their task without symptoms even when studded with cysts. Zones of normal tissue are able to carry on the functioning. The bilateral occurrence and the lack of metastasis testify against malignant disease. The patients usually apply for relief merely from the tumor. In one of the cases reported, one of the enlarged kidneys had sagged down into the iliac fossa while the other had become displaced upward, pushing up the left diaphragm. This was the case also in the second patient, the left kidney being quite hidden under the pushed up diaphragm.

Riforma Medica, Naples

XXXII, No. 13, pp. 337-364

- 58 *Interposition of Intestine Between Liver and Diaphragm. (La epatoptosi parziale da interposizione.) F. Perussia.
59 Experimental Research on the Significance of Local and Generalized Eosinophilia and of Increased Numbers of Leukocytes With Basophil Granulations. (I granulociti acidofili e basofili.) G. Grosso. Concluded.

No. 14, pp. 365-392

- 60 *Intravenous Vaccine Therapy of Typhoid. (Nuove osservazioni e considerazioni sulla vaccinoterapia endovenosa nel tifo.) A. Fagioli.
61 Antibodies in Serum of Rabbits Vaccinated Against Typhoid. (Sostanze immunizzanti comparse nel siero degli animali vaccinati con tifo.) F. Lanzetta.
62 *Physiologic and Therapeutic Action of Training the Respiratory Apparatus. (Rieducazione dell'apparecchio respiratorio.) G. Boeri. Concluded in No. 15.

58. Liver Pushed Down by Interposed Loop of Intestine.—Perussia relates that in the last six years he has encountered a number of cases of partial ptosis of the liver for which organic changes in the gastro-intestinal tract were directly responsible. These displace the bowel and a loop is liable to become interposed between the diaphragm and the liver. In three of the five most typical cases there was stenosis of the pylorus with gastrectasia; in the other two, hour-glass stomach from an ulcer, and the colon was unusually large. In all the cases the interposed loop of the colon was distended, and the degree of ptosis of the liver was proportional to the distention of the stomach or bowel or both. Analyzing the cases of hepatoptosis from interposition on record, he found some anomaly in the gastro-intestinal tract in all. This suggests that the main cause of sagging of the liver under these conditions is not from changes in its sustaining apparatus, as hitherto assumed. It is secondary to abnormal conditions in the stomach or bowel or both, either directly or by the increased intra-abdominal pressure.

60. Vaccine Therapy of Typhoid.—Fagioli has been treating typhoid systematically of late with a vaccine prepared by Vincent's technic, injecting into a vein from 150,000,000 to 300,000,000 killed germs. Larger doses than this are liable to bring on collapse. The details of a few cases are related to demonstrate the advantages of this treatment. He says that the injection is followed by an intense and prolonged chill, the temperature runs up to 104 F. or more, and there is often vomiting, with or without delirium, while the pulse and respiration grow faster. Heart tonics should be given as needed. The fever subsides in a few hours, almost always within twenty-four hours, with sweating, and this deferescence is almost always final. The general improvement is marked and the typhoid bacilli disappear from the stools. The charts show this sudden drop in temperature. The injection was made at the twelfth or fourteenth day in the three cases described. There was one relapse among the twelve patients given this vaccine treatment. It developed the ninth day after deferescence, but subsided promptly after injection of half the usual dose of vaccine. A single intravenous injection seems to be equivalent to three or four subcutaneous injections, and the latter are by no means always exempt from by-effects.

62. Training the Respiratory Apparatus.—Boeri's account of his extensive experiences in this line demonstrates that not merely better functioning can be realized by the training exercises but the lungs and chest measure can be permanently enlarged. The breathing capacity is augmented and bad habits of breathing are overcome, with the insep-

arable consequent improvement in the circulation. The exercises he advocates are simple and not fatiguing, and are practiced for five or six to ten minutes several times a day. They can be done reclining or erect, deep inspiration and expiration accompanying some regular movement of the arms or trunk. Boeri urges to have records taken of the circumference and diameter of the chest during the different phases of respiration, before and after, comparing the findings with the spirometer, pneumomanometer, pneumograph, stethograph, and roentgenoscopy. He gives specimen curves of these various findings during courses of training of this kind, taken from both children and adults. They demonstrate beyond question the benefit derived, and show that the functional tests are far more instructive than the chest measurements. The latter may represent merely the residual air.

Semana Medica, Buenos Aires

XXIII, No. 15, pp. 407-434

- 63 *Mitral Stenosis. (Estrechez mitral.) C. P. Mayer.
- 64 Impotency and Matrimony From Forensic Standpoint. (A proposito del libro del Dr. D. S. Cavia, "La impotencia y el error en la persona en el matrimonio," 1915.) J. V. Gnecco.
- 65 Dengue. F. Otero.
- 66 The Responsibility of the Physician From Forensic Standpoint. (De la responsabilidad medica.) A. Stucchi.

No. 16, pp. 435-462

- 67 *The Sanitary Condition of Brazil. (Estado sanitario del pais. Sus progresos y como se realizaron.) J. Penna.
- 68 *Thyroid Treatment of Contracture From Rheumatism. (Retracciones tendinosas post-reumaticas, y opoterapia tiroidea.) R. G. Pizarro.
- 69 Medical Ethics. (Etica profesional, deontologia especial y moral medica.) A. Stucchi.

No. 17, pp. 463-490

- 70 Apparatus for Artificial Pneumothorax. C. Mainini.
- 71 Report on Public Health Matters Throughout Brazil. (La futura sanidad de los territorios nacionales.) F. Otero.

No. 18, pp. 491-518

- 72 Post Partum Ileus. (Oclusion intestinal post parto.) E. Mazzini.
- 73 Plasmogenesis. (Inducciones plasmogeneticas.) V. Delfino.
- 74 *Infant Mortality in Brazilian Province. P. Ivanishevich.

63. **Mitral Stenosis.**—Mayer lays great stress on tonics and nourishing food for patients with mitral stenosis who have not yet reached the asystole stage. General massage is useful and stimulating lotions, while avoiding physical exercise and worry. The girl with mitral stenosis should not get married; if married, she should not become pregnant; if a child is born, she should not nurse it. When the stage of asystole is reached, heart tonics are called for. He gives digitalis in a mild form for ten or fifteen days and repeats this every month.

67. **The Sanitary Condition of Brazil.**—Penna is chief of the national public health service, and he states that the mortality for the country has dropped gradually from 18.92 per thousand inhabitants in 1911 to 15.39 in 1914. The mortality in Rio for the same year was only a trifle lower, namely, 15.25 per thousand. He gives tables of statistics which show among other things that the preventable infectious diseases are responsible for a larger share of the mortality than in other countries, as the proportion of constitutional, inherited diseases is comparatively small. Infant mortality is alarmingly high, forming 38.24 per cent. of the total deaths in 1911 and 36.55 per cent. in 1914. In the systematic campaign against rats, which is being constantly waged, all the railroad stations were freed from rats and the rolling stock disinfected. Smallpox has been vaccinated out; from 4,024 cases in 1911 there were only 17 in 1914, a total of 3,035,702 persons having been vaccinated during these four years. The total population of Brazil is 7,784,644 (1914). Flying squadrons of vaccinators were sent throughout the country. Each of the nine provinces has its central hospital and antimalaria service, with ambulance and portable steam sterilizer. The physician in charge has one sanitary guard and eight subordinates. These are all in daily communication with the central bacteriologic institute and vaccine headquarters, and the whole system is working finely. If kept up along these lines he thinks the mortality can be reduced to 10 per thousand in time, but he deplors that

Congress with ill advised economy has recently reduced the appropriations for this service.

68. **Thyroid Treatment of Contracture.**—Pizarro's patient was a girl of 15 who had had three attacks of acute articular rheumatism. The latest attack left contracture of the tendons of both hands rendering them useless. As the contracture persisted unmodified after ten days of ordinary measures, salicylates, iodid and massage, Pizarro stopped them all and started a course of thyroid treatment. Benefit was apparent by the sixth day and by the twentieth normal conditions had been completely restored.

74. **Infant Mortality in Brazil.**—Ivanishevich refers only to the province of Mendoza where the infant mortality is exceptionally high, reaching 200 per thousand. Out of the 7,300 deaths in Mendoza in 1914, 4,229 were of children under 5. Rivadavia, with 18,000 inhabitants, and a revenue of over \$46,000 appropriated only \$63 for the care of the sick poor during a recent year. Another town with a revenue of \$136,309 spent \$64 for this purpose, and six others with about \$70,000 revenue did not spend one cent for this purpose.

Russkiy Vrach, Petrograd

XV, No. 14, pp. 313-336

- 75 *Aplastic Anemia and Its Relation to Other Forms of Anemia. (Aplasticheskoe malokrovie i ego otnoshenie k drugim formam anemii.) V. E. Predtechensky.
- 76 *Pathology, Symptoms and Treatment of False Aneurysms. A. A. Opokin.

75. **Aplastic Anemia.**—Predtechensky says that it is necessary to admit the existence of primary aplastic anemia caused by congenital hypoplasia of the bone marrow. This form of anemia from defective development of the bone marrow may be fatal. It is usually combined with hypoplasia of viscera. Frequently the congenital hypoplasia of the bone marrow is associated with hemorrhages, and this may result in various types of anemia. They may resemble post-hemorrhagic anemia with leukocytosis and the presence of normoblasts, in case the bone marrow is naturally strong and healthy. When, however, the hypoplasia of the bone marrow is very marked, these forms of anemia clinically resemble the aplastic type. Congenital hypoplasia of the bone marrow is frequently combined with hemolytic agents. The result may be various forms of malignant anemias which may resemble classic pernicious anemia if the bone marrow is naturally healthy, but with congenital hypoplasia of the bone marrow, the anemia is more apt to be of the aplastic type.

76. **False Aneurysms.**—Opokin has found false aneurysms during the present war comparatively often; namely, in 52 per cent. of blood vessel wounds. In about 15.2 per cent. of the cases they are caused by fragments of artillery shells. Infection prevents formation of a true aneurysm. In 30.7 per cent. of the cases the aneurysms involved both vein and artery. Operative treatment of pseudo-aneurysms is indicated not by the length of time that has elapsed since the lesion, but by the force of the arterial collateral branches, as determined by the sphygmomanometer. Ligation was the principal method of treatment. Suturing was contra-indicated on account of the infection, infiltration of the walls of the blood vessels, presence of large cavities after removal of the accumulated blood, etc. Excision of the involved portion of the vessels, as near the injured portion as possible, with preliminary ligation, gave quite satisfactory results. In 76.4 per cent. of the cases of these false aneurysms and in 100 per cent. of the arteriovenous variety, the patients recovered.

Prakticheskiy Vrach, Petrograd

XV, No. 11, pp. 101-112

- 77 Improved Blood Counting Chamber. (O dvukh kombinatsiakh schetnoikameri prof. Bürker s sietkoe prof. V. E. Predtechenskogo.) S. I. Kliuchareff.

Hospitalstidende, Copenhagen

June 7, LIX, No. 23, pp. 545-568

- 78 *Atrophic Chronic Nasal Catarrh. (Om Ozaena. Med særligt Henblik paa Coccobacillus foetidus ozaenae—Perez.) K. E. Salomonsen. Commenced in No. 22.

78. **Etiology of Chronic Fetid Nasal Catarrh.**—Salomonsen reviews the history of ozena and the various theories as to its etiology, and then describes extensive personal research with Perez' "coccobacillus of fetid ozena." An international collective inquiry on the subject of ozena was launched at the third international laryngology congress, and early in 1914 the committee in charge of it sent out notices urging special research to confirm Perez' and Hofer's statements in regard to Perez' coccobacillus. Salomonsen inoculated over thirty-eight rabbits with nasal secretions from twenty-eight patients with ozena, and thorough bacteriologic tests were applied to the findings. His report fills thirty-four pages, and all his conclusions are negative as to the Perez' coccobacillus.

Hygiea, Stockholm

LXXVIII, No. 10, pp. 611-720

79 *Histologic Structure of Pituitary Body and Its Tumors and Their Connection With Acromegaly. (Hypofysens och hypofysadenomens histologiska byggnad samt deras förhållande till akromegalien.) G. Kahlmeter.

80 *Theoretical Explanations for Transposition of Viscera. R. Naucler.

81 *Bone and Joint Tuberculosis From Modern Standpoint. (Nyaré åsikter om ben- och ledgångstuberkulosen.) P. Silfverskiöld.

82 *The Water Level in Examination of the Chest. (Vattenpasset i läkarens hand.) C. E. Waller.

79. **Pituitary Tumors and Their Connection with Acromegaly.**—The conclusions from Kahlmeter's review of recent literature on this subject are sustained by the findings in a case reported in which a miller, 45 years old, died from effects of an adenoma of the pituitary body. The first symptoms had been noted ten years before, disturbance in vision and headache. There were no signs of acromegaly at any time. Analysis of this and similar cases seems to indicate that pituitary tumors of the adenoma type, with cells which do not take the acid stains, do not induce a tendency to acromegaly, while acromegaly is practically a constant accompaniment of such tumors when they are of an acidophil structure. This assumption sustains the view that the acidophil granula is the active principle of the secretion of the pituitary body, and that excessive production of this is what entails acromegaly.

80. **Transposition of Viscera.**—Naucler discusses the various theories that have been advanced to explain why this ever occurs, illustrating his statements with a typical case of total inversion of the viscera. The findings did not afford any special support for any of the theories described. Gruber says that total inversion is three times more common than partial inversion. The majority of such persons die of pulmonary tuberculosis, as in the case here described.

81. **Bone and Joint Tuberculosis.**—Silfverskiöld comments on the changes which the last three or four years have brought in our views on bone and joint tuberculosis, and discusses the leading works that have appeared on the subject. Andvord, in Norway, and C. Rivière regard infection of children with bovine tuberculosis as almost a mild immunization process. Rivière's publication on the "protective rôle of the bovine bacillus" was hailed by Meissen of Essen as "not so paradoxical as it seems at first glance." The great danger from the tubercle bacillus is because it can find a firm foothold in the body without causing symptoms. As the focus can develop without causing much local irritation, the phagocytes are not attracted to the spot, and this negative or weak chemotaxis, especially in the secondary lesions, autoreinfections, is the secret of the gravity of bone and joint tuberculosis. Our present methods of treatment, immobilization and injection of iodoform, fail in so many cases because they act counter to Nature instead of imitating Nature's healing processes. The time is ripe for a complete revolution in our treatment of bone and joint tuberculosis, he declares. In the first place, he insists that every child should have the tuberculin skin test applied at regular intervals every few years. When a bone or joint tuberculous lesion is suspected, some substance should be injected to induce chemotaxis. Even if the exact localization of the focus is not possible, chemotaxis induced in its immediate vicinity will act on it practically the same as if directly in

it. The main point is to detect and act on the lesion while still in its incipient stage. Operative measures during the early stages are simple and harmless, he reaffirms, while they do away with a constantly growing menace. He bores a passage into or close to the focus and tampons with iodoform gauze for a few days or until the vessels are plugged with thrombi, and granulation has begun. Then he scrapes out the focus and works into it a strip of gauze impregnated with turpentine ointment or 50 per cent. camphor-naphthol. This tampon is renewed every day until the focus is suppurating freely. After this the intervals can be lengthened until finally the cavity begins to fill up. His experience with treatment on these principles has been extremely favorable, and he thinks it is applicable also to tuberculous vertebral disease, although he has not happened to encounter any such cases in an early stage. He describes a technic, however, that he has worked out on eight cadavers and which seems to answer every purpose. The aim is to imitate Nature by mobilizing the defensive forces at the spot before the enemy is too well entrenched. As a destructive process always spreads along the line of least resistance, the pus and infectious matters escape through the opening made to introduce the chemotaxic substance. Among the 2,606 cases of bone and joint tuberculosis requiring institutional care in Sweden in 1913, there were forty-one helpless cripples from this cause. Recent figures from Prussia gave 11,300 children more or less crippled from the same. He suggests that the benefit from heliotherapy may be due to the action of the chemical rays on the leukocytes similar to their action on amebas, the ultraviolet rays repelling them, driving them inward, and rendering their ameboid movements and vital processes more active.

82. **The Water Level in Examining a Patient.**—Waller uses a wood, brass and glass water level, about 20 cm. long, and lays it on the chest at the close of expiration. Any asymmetry in the behavior of the chest walls is rendered evident at once as the patient breathes. Pulmonary processes, hemorrhage and other conditions can in this way be traced to the lung and the part of the lung responsible.

Norsk Magazin for Lægevidenskaben, Christiania

June, LXXVII, No. 6, pp. 717-844

83 *Drugs in Treatment and Prophylaxis of General Paresis and Tabes. (Bidrag til spørsmålet: Den moderne medikamentelle behandling av paralyse og tabes.) W. Holland.

84 History of Teaching of Dermatology and Psychiatry in Norway. H. Hopstock.

85 *Rupture of Liver of Girl of Twelve; Recovery After Operation. (Ruptura hepatis helbredet ved operation.) P. Bull.

86 *Climatic Factors Probably Responsible for Character of Epidemics. (Hvorledes man finder genius epidemicus.) A. Magelssen.

87 Intramuscular Arteriovenous Angioma. A. Vetlesen.

83. **Treatment of Tabes and General Paresis.**—Holland declares that in spite of the progress realized in the treatment of syphilis in the last few years—or possibly because of it—the physician's task is no lighter than formerly, but more responsible and with new problems to solve. Treatment of syphilis in the primary and secondary stages must be continued until the Wassermann reaction has been negative for some time and the spinal fluid gives negative findings. The patients must be reexamined every year or so for ten years. In eighty-five cases of tabes or general paresis in his service and ninety-three cases of various other forms of cerebrospinal syphilis, since 1903, only one patient was known to have had systematic intermittent treatment through two years. In forty-nine others treatment had been exclusively symptomatic. The details of treatment were not known for the other patients. Courses of nucleinic acid, tuberculin and salvarsanized serum in tabes or general paresis proved absolutely useless. The cerebrospinal fluid usually gave a negative response finally to the four usual tests, and the symptoms from meningeal involvement retrogressed, but no improvement was apparent in the clinical picture of the tabes or paresis. The only hope, he reiterates, is to start treatment in an early stage, but when the patient becomes alarmed about his condition and applies for treatment, it is then too late for it. It is possible that certain strains of the pale spirochete have a special affinity for the

central nervous system. This view is sustained by the cases in which tabes or paresis develop in persons infected from the same source or in husbands and wives. He has had a few cases of this kind, but he thinks a constitutional predisposition is more likely. In one of his families, two brothers died at 43 and 48 of general paresis, and a third is insane. In another family, one man of 50 died of general paresis, his brother of 41 is being treated for cerebral syphilis which developed seven years after the infection, and a third brother has tabes.

85. Operative Treatment of Rupture of the Liver.—Bull's patient was a girl of 12 and the bleeding was severe. She seemed to be doing well after the prompt laparotomy and suture of the liver, but the fifth day symptoms of peritonitis became evident requiring further intervention. Bile oozing from the suture was responsible for the peritonitis and also for an effusion in the pleura. Recovery was complete in two months. In Thole's compilation of 752 cases of injury of the liver given surgical treatment, the mortality was 39.5 per cent. of those in which the interval before the operation was less than six hours. It rose to 86.3 per cent. with an interval of twenty-four hours or longer. In the 188 cases with simple rupture—like the case reported—the mortality was 55.85 per cent. and in over three-fourths of these the bleeding was the direct cause of death. Bull thinks that in his case the girl's life was saved by the two liters of saline infused into the saphena before and during the operation.

86. Meteorologic Factors as Influencing Character of Epidemics.—Magelssen gives charts showing the general mortality at Christiania in connection with the average temperature curves through eight decades. They parallel each other, rising and falling together, and the same is evident in charts showing conditions in Berlin, Stockholm and Copenhagen. These curves demonstrate that the fluctuations in the mortality cannot be ascribed to the merit of hygiene alone. They seem to be dependent on the temperature or some unknown factor closely connected with it, which controls the fluctuations in the mortality, the *constitutio epidemica*.

Ugeskrift for Læger, Copenhagen

May 25, LXXVIII, No. 21, pp. 831-878

- 88 *Pseudoleukemia in Children. (Om Pseudo-Leukæmi hos Børn.) C. E. Bloch.
- 89 Abortive Copper Ionic Medication of Soft Chancre. (Abortiv-behandling af Ulcus molle med Kobber-Jontofores.) O. Jersild.
- 90 Combination of Renal and True Diabetes. (Et Tilfælde af Diabetes.) E. Begtrup.

June 1, No. 22, pp. 879-926

- 91 *Diagnosis of Typhus. (Om exantematisk Tyfus, navnlig dens Diagnose.) S. T. Sørensen.
- 92 *Periodic Acetonemia in Children. V. Scheel.
- 93 The Continuous Bath for Chronic Suppurating Hip Joint Disease. (Permanent Bad.) H. R. Magnus.

88. Pseudoleukemia in Children.—Bloch applied roentgenotherapy systematically and perseveringly in five of the six cases he reports. The effect was pronounced in all, the tumors retrogressed, the general health and the blood picture improved. The intermittent fever also subsided and the children seemed to be cured, only a few small hard lymph glands could still be palpated, no more than are found sometimes in apparently healthy children. This improvement was not permanent, however, the anemia and fever returned and the number of leukocytes rose again, but the lymph glands did not enlarge. Under renewed roentgenotherapy, the fever and anemia declined again, but there was little or no influence apparent on the enlarged spleen and the palpable glands. The lymph glands seemed to cease to respond to the Roentgen rays in time. Reclining out of doors seemed to have a favorable influence; when there was fever the children were kept in bed. It seems to be possible thus by combining arsenic and roentgen exposures to keep the disease down so that the children can lead a fairly satisfactory existence, but a cure is out of the question. Even this much can be said only of the chronic cases. In the acute cases, although the tumors retrogressed notably, yet the general condition did not seem to be influenced in

the least, and the roentgenotherapy seemed to depress the child's spirits, and consequently it was not applied in the sixth case. All that could be done was to relieve with opiates and complete rest. Otherwise the roentgenotherapy had no unfavorable effects. There was no albuminuria or other symptom of toxic action although the destruction and absorption of tumor tissue was on a large scale. At first the exposures were made only during afebrile periods, but later no attention was paid to this. In the first three cases the neck began to swell without known cause in children between 3 and 5. In six months the broad tumor in the neck had attained a large size but the general health persisted good, the trouble seeming to be a local one at first. In the three other children, from 2 to nearly 5 years old, the disease developed in an acute form and proved fatal in from one to three months. In these three acute cases both parotid glands were much enlarged and tender, as in mumps, but they subsided nearly or entirely under Roentgen exposures. Bloch does not know of any other acute cases on record with these parotid tumors. In one of the acute cases subperiosteal flat, tender tumors developed on the skull and pushed both eyes out of their orbits. These tumors did not develop until the leukocytes had dropped to 4,000. The bones of the skull seemed to attract the lymphocytes, causing the tumors. Such tumors have been observed in a number of cases, usually in children; in several cases deafness developed from infiltration of the internal ear with lymphocytes. There was green pigment in some of the tumors in one case. Some writers might call the case one of chloroma and the two others, Mikulicz' disease, but Bloch says that all three are typical pseudoleukemia. This disease thus occurs in children, both in the acute and chronic form, and does not differ from the clinical picture in adults more than one would expect.

91. Typhus.—Sørensen reviews his experience with a small epidemic of typhus in Denmark in 1893, a total of forty-three cases, and discusses recent publications on the subject. The first case was mistaken for scarlet fever at first, although there were no tender glands and no hyperemia on the skin between the small patches of the eruption on trunk and limbs, the eighth day, and the patient was inclined to be delirious, the tongue dry and fissured. The fever of 39.5 C., dropped with the typical zigzag course to normal the twenty-third day of the disease. In another case the temperature ranged from 40 to 41.1 C. for an average of twelve days; defervescence followed on the twentieth day. Sørensen recalls that thirty-one cases of gangrene of the legs were known in the great epidemic of typhus in Finland, 1866 to 1868, in which 14,000, 21,000 and 60,000 persons died.

92. Periodical Acetonemia in Children.—Scheel's two patients were little girls under 3 and 7. The attacks of uncontrollable vomiting, accompanied by the odor of acetone in the breath, and their periodical recurrence were typical of this affection which he calls Marfan's disease. The explosive vomiting and the intense thirst may be accompanied by albuminuria, fever and rapid pulse, and the acetone may be eliminated in urine and vomit as well as in the breath. The trouble is evidently an acidosis as in diabetes, but both the acidosis and the vomiting are undoubtedly the result of some other factor, some periodically recurring anomaly in the metabolism. In the younger child the urine contained 0.2 and 0.35 gm. of sugar. The child was recovering from nephritis and the sugar content of the blood was normal. Others have stated that glycosuria is never encountered with this periodical acetonemia. In this case there was no further glycosuria after subsidence of the attack. The latter had commenced with convulsions, but there was no vomiting. He has seen cases of periodical vomiting in adults, accompanied by acetonemia, and it is a question whether this is the same as Marfan's disease in children. As everything is vomited up, an alkali cannot be given to combat the acidosis; it is too irritating by the rectum. More important than doing anything to relieve the patient is the refraining from doing the wrong thing. One is apt to be misled into diagnosing some surgical affection, while operative measures are superfluous to say the least.

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EPILEPSY

WITH SPECIAL REFERENCE TO TREATMENT*

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PHILADELPHIA

A disease as old as epilepsy is always interesting and constantly demands our best efforts for its alleviation and its possible cure. In order to approach its treatment intelligently, it is necessary first that we obtain as clear conceptions as possible concerning its nature. Let us, therefore, briefly review some of the essential facts.

It is at once evident that in a large number of cases the history of epilepsy begins before the individual is born, indeed, before the foundation of the organism is laid. All writers, ancient and modern, lay stress on the factor of heredity. Most writers content themselves with the general statement, others express the fact in percentages. Gowers, for instance, found hereditary factors at one time in 35 per cent., and at another time in 46 per cent. of his cases, Ahronson in 32 per cent., Siebold in 55.2 per cent., Dejerine in 66.8 per cent., Binswanger in 61.7 per cent., and Kraepelin in 45.7 per cent. An unusually low percentage is given by Petges and Cardenal, namely, 22 per cent. Differences in the estimates made by different observers are doubtless to be explained by differences as to what they have included under hereditary factors. The results, however, justify the conclusion that in a large number of cases these factors are present. If all forms of nervous and mental diseases in the ancestry are included, the percentage, of course, rises. If the inquiry is restricted to the transmission of epilepsy alone, the percentage, of course, falls. The results must further vary whether we include a general or collateral family history of epilepsy or whether we limit our studies to its direct inheritance. Again, Kraepelin found in 303 men 44.5 per cent. presenting a family history of nervous and mental diseases, but only 32.7 per cent. presenting such a history in the immediate parents of the patients. Further, when the inquiry was restricted to the occurrence of epilepsy alone, a general family history of epilepsy was found in 13.2 per cent., and its direct transmission from parent to child in only 6.3 per cent. In 104 women, Kraepelin found 49 per cent. with a general family history and 39.7 per cent. with a direct history of nervous and mental diseases; 17.3 per cent. with a general family history of epilepsy and 11.5 per cent. with a direct history. It would appear that a family history of nervous and mental diseases is of great significance, and this is indeed in accord with general experience.

Other facts must also be taken into account. Among these is alcoholism in the ancestry. That the children of alcoholics frequently suffer from epilepsy is well known. Kraepelin, for instance, found a direct alcoholic ancestry in 18.2 per cent. of 303 men and in 19.2 per cent. of 104 women. That there is here a direct damage of the germ plasm there can be no doubt. Again, the rôle which syphilis in the ancestry plays is also an important one. It is probable that syphilis acts much as alcohol does, namely, by damaging the germ plasm. In a given number of our cases, moreover, the actual evidence of syphilis can be demonstrated clinically and by the Wassermann reaction in the epileptic children. In other cases, while it cannot be asserted that the patients suffer from inherited syphilis, it is probable that the development of the organism has been hampered, arrested, and made deviate and degenerate by the presence of the spirochete and its toxins. In the larger number of cases, however, it is probable that the baneful effect of syphilis in the parent has expended itself mainly in an impairment of the germ plasm. It is probable that toxic factors in the ancestry other than those mentioned, such as lead poisoning and the various infections generally, occurring in the ancestry, may damage the germ plasm so as to lead to the production of epilepsy in the descendants; but of this our knowledge is as yet insufficient to speak definitely. However, that the damage to the germ plasm from the various causes mentioned is not theoretical but actual and real is proved by the signs of morphologic arrest and deviation so commonly present. Among these are the anomalies in the size and shape of the skull, the high and narrow palate, the anomalies of dentition, of the ears, of the digits and of the general development. We must remember, too, that the signs of arrest and deviation accessible to observation are merely surface indications of other and more fundamental deviations present in the organism throughout.

Approaching the subject from whatever point of view we choose, the inference is unavoidable that in a large number of epileptics there has been a primary, a basic impairment of the germ plasm. It would appear that this impairment may be general in character, the result of various nervous and mental diseases or of various intoxications and infections in the ancestry; or, the impairment may be special in character and may result in the special transmission of epilepsy.

Concerning the direct production of epilepsy in the individual himself by intoxications and infections, the evidence is overwhelming. This is notably true of alcohol. The sufferer from alcoholic epilepsy is the not infrequent subject of both outpatient and hospital care. Lead poisoning also plays a rôle here, but naturally a less important rôle. Regarding the infections

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and the rôle which they play in the production of epilepsy, the evidence is also quite conclusive. The convulsions which now and then accompany the infectious diseases of childhood are to be regarded merely as epiphenomena of the infectious processes, and are to be explained by a direct toxic action on the cortex. Quite commonly they disappear with the infection; they are of consequence only when they persist subsequently. Unfortunately, they occasionally persist as established epilepsies. Again, epilepsy every now and then follows an attack of typhoid or of scarlet fever, less frequently of measles, whooping cough or influenza. Not uncommonly there is a history of convulsions accompanying the infection, and then, after an interval, possibly of months or of years, the establishment of epileptic attacks follows. It is probable that in such cases an encephalitis, probably localized and cortical, occurred during the febrile infection, followed subsequently by sclerotic changes, perhaps slight in character, but sufficient to act as the starting point of future epileptic seizures. I have only recently studied a case of this kind, one in which an attack followed by weakness of one half of the body occurred during the course of typhoid fever, and in which some years later typical epileptic seizures supervened. The occurrence of epilepsy as a sequel of encephalitis the result of infection has been emphasized by Freud, Rie, Marie, Renlich and others.

Another factor in the history of epilepsy is that of trauma. Here again the facts are such as not to admit of dispute. Certain it is that cases are constantly encountered in the clinics, in which injury to the brain has been followed after a longer or shorter interval by epilepsy. Epilepsy following injury to the brain is frequently jacksonian in type, but it is not improbable that changes may supervene in the traumas of childhood which may later give rise to the picture of a generalized epilepsy. It is exceedingly probable that in the epilepsies which supervene after intoxications, infections and traumas, actual changes are present in the cortex, possibly of the nature of mild and limited sclerosis themselves the sequels of limited encephalitis. Allied to such epilepsies are the epilepsies seen in hemiplegic and diplegic children. Here atrophic and sclerotic changes more or less pronounced involve the motor area of one or both sides and serve as the cause of the convulsive seizures. It is significant in this connection that many epileptics are left handed; in these cases the left handedness is probably an acquired quality subsequent to a cortical left-sided damage in infancy or early life. In other cases, it is doubtless connected with some morphologic deviation. The epilepsies which are the result of coarse sclerosis are in turn closely related to the epilepsies caused by neoplasms and gross lesions generally; these need not here detain us.

When we review the facts which have here been hastily summarized, one fact stands forth with striking prominence, namely, that epilepsy is not a specific clinical entity. Under the caption of epilepsy are included many symptom groups which differ widely as to their origin and pathology. Perhaps this is not surprising when we reflect on the physiology of the brain. It would appear that the motor area of the cortex responds by convulsive attacks to both chemical and physical irritants, and that there should be a multiplicity of causes, any one or number of which may bring about an epileptic symptom group, is perhaps just what we should have been led to expect.

The lesson taught by the pathologic findings at necropsy are also of great significance and in keeping with what has already been said. Many years ago, I placed on record anatomic studies of twelve epileptic brains all of which revealed more or less marked anomalies of the convolutions and fissures. These findings were all to be interpreted as phenomena of arrest and deviation. A similar interpretation is to be placed on the sclerosis of the cornu ammonis so much insisted on by earlier writers. Arrest and deviation are also the significance, as I have already pointed out, of the asymmetries, peculiarities and malformations of the skull.

Microscopic studies of the brain have sometimes revealed atrophic changes in the cortical cells, and sometimes a proliferation of the glia, more especially of the cortex in its outer layers, a proliferation which constitutes a kind of gliosis or sclerosis. Time will not permit of an enumeration of the findings in epilepsy; the thickening of the calvarium, the thickening of the membranes, the adhesion of the latter to the skull or brain, or the visceral changes which necropsies have from time to time revealed. Suffice it to say that no changes are constant, and this is the factor of most significance.

If we attempt to classify the epilepsies, we encounter great difficulties. It will not suffice, for instance, to divide them into those attended by gross organic changes, such as tumors, massive sclerosis, traumatic disease and the like, and those in which no such factors are evident, for many of the latter may, on microscopic examination, reveal the very changes which constitute organic disease. We have seen how minute and varied may be the changes and how varied the causes. Moreover, it is especially in the group without apparent gross organic cause that hereditary factors play such an important rôle, and in many of this group, again, morphologic arrests and deviations are present which in turn give to the cases a profoundly organic character.

Some epileptics present symptoms suggestive of involvement of the internal secretions. That such symptoms should occasionally be present is not surprising when we reflect that anomalies of the glands of internal secretion are frequently closely bound up with arrest and deviation. No special internal symptom group is presented; occasionally there are modifications of stature and growth; coarseness, dryness, thickness or suspicious infiltration of the skin and, less often, special signs distinctly referable to individual glands are observed. In quite a number of epileptics I demonstrated years ago by Roentgen-ray examinations enlargement and distortion of the pituitary fossa due apparently to disease of the hypophysis.

Once more let it be emphasized that it is just in the group often embraced under the term "essential" epilepsy that we have to deal with persons in whom the development has taken place in an aberrant and damaged germ plasm, and in which the epilepsy is expressive of an endogenous, autotoxic deterioration. The evidence before us is such as to exclude specificity of cause. I am, of course, aware of the recent announcement by Reed of Cincinnati of the discovery of a germ as the cause of epilepsy. If the correctness of his observations be admitted, it must be equally conceded that they can bear but a limited relation to the great and varied group of diseased states embraced under epilepsy.

This consideration as to the nature of epilepsy has unfortunately occupied more time than I had originally intended, but an intelligent discussion of treatment is impossible without it. Clear ideas must obtain, first, as to the conditions which confront us and, secondly, as to the objects which we should seek to accomplish. A specific treatment of epilepsy is obviously out of the question, and the first step must be the intensive study of each individual case. This includes an elaborate study of the family and of the personal histories, a detailed neurologic and visceral examination, including, of course, the laboratory tests of the blood and at times of the cerebrospinal fluid, and, finally and especially, a search for the earmarks of arrest and deviation. The latter, it must be remembered, are not only physical but also mental. That the treatment must necessarily be influenced by the findings follows of necessity; especially is this true when the investigations reveal gross organic nervous lesions, visceral disease or active infectious processes. What shall we do, however, in the residue of cases in which the investigation reveals merely the defective, autotoxic and deteriorating organism outlined in this paper? The task is always difficult, often discouraging and at times hopeless. However, not infrequently much may be accomplished and, in a few cases, even definite arrest of seizures brought about.

The first indication is that the organism, though defective and deviate, shall lead as physiologic a life as is compatible with its structure. To attain this end, a life without physical or mental strain, close to nature, in camp or on the farm, should be adopted by the epileptic. This, indeed, is the principle applied in the various epileptic colonies. In a given number of cases it is attended by an improvement in general health and a notable diminution in the number of seizures. There can be no doubt that the benefit is largely due to the increased oxidation of waste and toxic substances and the general increase of physiologic efficiency which result from an outdoor life. In addition, three points should be borne in mind:

1. The diet should be so modified that in this organism, already toxic, as little strain as possible be placed on the liver, the thyroid and other defensive glands. For this reason the red meats are to be partaken of sparingly. The carbohydrates also are to be diminished. To take the latter in large amount is to hamper the oxidation of the tissues, an oxidation which for the obvious reason of the autotoxicity of the patient should be maintained at as high a level as possible. In the diet, emphasis should be laid on the white meats, the succulent vegetables and milk; eggs also may be permitted. Stimulants of all kinds are, of course, to be excluded.

2. The various avenues of elimination should be kept freely open. If the diet does not of itself counteract the constipation frequently present, a moderate dose of a simple saline or laxative water may be given daily. The patient should drink water freely between meals to promote the action of the kidneys, and should take a lukewarm sponge bath daily to promote the action of the skin. The bath should not be such as to promote an active reaction, but merely to favor elimination.

3. Resort to medicines must, of course, be had in many cases to influence or control the seizures. Time will not permit the extended discussion of these, but after all is said and done, experience teaches that chief reliance must be placed on the bromids. Regarding

their efficient administration, however, one important point must be borne in mind, namely, the principle of sodium chlorid withdrawal introduced by Richet and Toulouse. If table salt is withheld, the bromids instead of being eliminated are retained and are effective in much smaller dose. I myself have been in the habit for many years past of administering the bromids in the form of sodium bromid, at the same time instituting as rigid a withdrawal of the sodium chlorid as possible. There can be no doubt that under these circumstances the sodium bromid takes the place, in a measure, of the sodium chlorid in the tissues. If, in a case so treated, the sodium bromid be discontinued and sodium chlorid resumed, the bromid is rapidly eliminated in the urine.

But one other point of importance remains. In a given number of instances, the physiologic level of the patient may be distinctly raised by the administration from time to time of small doses of thyroid extract; say from an eighth to a quarter of a grain three times daily, seldom more. Thyroid in small doses, long continued, stimulates the chain of glands of internal secretion, increases oxidation and promotes metabolism generally.

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ABSTRACT OF DISCUSSION

DR. DAVID F. WEEKS, Skillman, N. J.: I want to emphasize the importance of early recognition of symptoms that point toward beginning epilepsy. When the patient reaches the institution the disease has usually been of long standing. In the collection of data bearing on the heredity of patients at the New Jersey State Village for Epileptics at Skillman we were impressed with the importance of careful study of children subject to periods of unprovoked anger, joy, passion, weeping, etc., and accordingly undertook a special study of children of school age. For the purpose of checking our data our field workers investigated the heredity of children showing these epileptic characteristics and tendencies and reported the presence of the epileptic taint in many of these families. In some cases these potentially epileptic children later developed epileptic convulsions. School inspectors have an excellent opportunity of detecting these children before their seizures have been established, and by referring them to the family physician for such care and treatment as will put them under right living conditions may forestall the convulsions and reduce the number of epileptics. Our special classes should be reorganized to provide separate classes for epileptics, thus removing them from the classes as now established.

DR. A. L. SKOOG, Kansas City, Mo.: In connection with institutional or colony cases and cases seen in private practice, the point that strikes me in particular is the difference between the two classes of patients. It is true that a large percentage of the cases seen in colonies are of the chronic type. Their etiology is more obscure than that of the cases seen in private practice. Permanent damage has been done, and the etiologic factor or the immediate cause of the trouble is probably no longer at hand. I believe that the prognosis is better for cases observed in private practice than for those in colonies, for two reasons: First, they come at an earlier stage and you have better opportunity for a study of the etiology, and second, you can carry out certain treatments better. However, there are certain types of epilepsies that never should be taken care of in private practice. Such patients should be sent to a special colony for care and treatment. I like very much the way Dr. Dercum handled the subject from the standpoint of calling the condition *epilepsies*, not epilepsy. I believe it is now almost the universal opinion of students of this broad subject that we are dealing not with a single entity, but with a whole group of diseases involving the brain directly or indirectly. I believe it is possible that quite a number of epilepsies have their origin in mild or more severe degrees of encephalitis, secondary to one of the various

infectious diseases of children. It is true that a large number of epilepsies are still described under the idiopathic or genuine epilepsies, so called, and we can say regarding these that the etiology is obscure. Some of these cases may have their origin in functional disturbances. This also has a bearing on some of the findings observed at necropsy. Most cases of epilepsy come to the postmortem table at a late stage. Every seizure produces at least a small amount of damage to the brain. I have had opportunity of observing three generalized convulsions in epileptics at operations, two of them in the parietal or postrolandic region, and one in the frontal region close to the head centers. Two of the convulsions were produced by bipolar electrical stimulation. There was nothing focal about the convulsions in either one of these cases, being diffused immediately. But the essential point was the tremendous amount of intracranial pressure produced. The surgeon with whom I was working at the time became very much alarmed, fearing serious damage from bulging of the brain. As soon as the convulsive period was over, not occupying more than one and one-half minutes, the brain immediately receded. A condition like this undoubtedly presents the possibility of trauma to the cortex, and that trauma may increase the susceptibility to future seizures.

DR. FRANCIS R. FRY, St. Louis: I do not know how much other practitioners and particularly neurologists have been disturbed by a phase of so-called treatment now in vogue. We certainly find it a disturbance, because 50 per cent. of the epileptic patients who come to us inquire whether or not they shall go over to Cincinnati. Some extreme thing of this kind obtrudes itself from time to time, and particularly is this true in regard to chronic affections and often in regard to epilepsy. Therefore it is very timely at junctures of this sort that there should come forth some authoritative statement such as the paper that has just been read. Dr. Dercum has conscientiously told us all that is known to date about epilepsy from any scientific or rational, sensible standpoint. And among practitioners, at least, it is something definite to appeal to, coming from one of Dr. Dercum's standing.

DR. CHARLES R. BALL, St. Paul: I was much pleased that Dr. Dercum brought out the fact that epilepsy is composed of separate entities and is not a single distinct disease. It may come from a great number of causes. The cause may be mechanically irritative, from any organic disturbance in the brain; or it may be chemically irritative, due to a toxic condition. In this connection it is well to take into consideration the secretions of the ductless glands and the toxemias that they undoubtedly cause through irregularities of function. With reference to heredity and the influence that alcohol plays, might not the special influence of alcohol on these glandular structures be an explanation for the frequent occurrence of epilepsy in the offspring of alcoholics? I am continually impressed with the very close relationship which seems to exist between the so-called idiopathic epilepsy and migraine. Not only have I found migraine in the mother with epilepsy in the child or a reversal of these conditions but in the same patient the epileptic seizure being converted into a migraine. I have also seen migraine develop into epilepsy. We should attempt to do more for these patients. Anything suggested is worth while. I believe I have found something that is an improvement over the old bromid treatment, viz., luminal. It does not have the bad influence that the bromid has. In the great majority of instances patients can take it over a long period of time without untoward consequences. Once in a while a patient develops a rash or dermatitis. Luminal is chemically similar to veronal, except that the ethyl group in veronal is replaced by one phenyl group. I give $\frac{2}{3}$ to 1 grain of luminal three times and sometimes four times a day. While I am not able to compete with the Cincinnati clinic in the number of patients as yet, nevertheless I find my cases increasing in number.

DR. WILLIAM RAVINE, Cincinnati: Dr. Dercum alluded to the reported finding of a specific organism in epilepsy by Dr. C. A. L. Reed. Dr. Wherry, bacteriologist of the Cincinnati General Hospital, did not find the specific organism, neither did his animal experimentation corroborate the findings of Reed; the organism did not fulfil all the require-

ments laid down by Koch. We in Cincinnati are not so very proud of the operation of "short-circuiting" for epilepsy. It is a far cry from intestinal stasis and its treatment to the cure of epilepsy. A great number of these afflicted individuals have come to Cincinnati. Epileptics being poor surgical risks, the mortality has been high, the number of remissions, or so-called cures, few. This procedure is quite an extreme measure to resort to in the treatment of epilepsy.

DR. JULIUS GRINKER, Chicago: Many of these forms of epilepsy are the result of lesions acquired perhaps early in childhood, but not discovered until long afterward, when the epileptic attacks have become thoroughly established. The real etiology of epilepsy is still to be discovered. It is true we have given bromid for many years, and we have not cured our patients, although many of them are kept at work, have become self-supporting, and in spite of the fact that they occasionally have an attack of epilepsy, they are useful members of the community. If we had not treated them medicinally, as some would have us do, and had experimented with the operative procedures which originated with gynecologists, many of these patients would have been lost and many others would have become invalids. Regarding the drugs to be used: The bromids are, after all, our main medicine in the treatment of epilepsy. There are patients, however, who cannot take bromids for even a short time without developing acne and pustular eruptions, and bromidism even after small doses. In some instances I have been handicapped in the management of epilepsy by the fact that patients could not even take a 10-grain dose of bromids. For this reason I have resorted to the use of luminal in some cases and the results obtained were very favorable. Many patients who could not take bromids well could take luminal in doses of $1\frac{1}{2}$ grains once a day; others needed two doses daily; very few needed three doses of $1\frac{1}{2}$ grains a day. There is one point in connection with the administration of luminal that I wish to emphasize: Having given luminal, do not change to bromids, because they become ineffective.

DR. R. A. GREENE, Palmer, Mass.: If there are no specific epilepsies, why is it that in institutions for the insane and feeble-minded there are so many cases with exactly the same heredity, exactly the same lesions, and they do not have epilepsy? If there is not any specific epilepsy, why is it that some of these absolutely organic conditions such as the pronouncedly feeble-minded and those with hemiplegia and all sorts of organic lesions, who are mental equals and look like our epileptic patients, do not have convulsions? Must there not be some specific cause of epilepsy? I do not believe that there is any micro-organism to be described, such as the *Bacillus epilepticus*. I can conceive that all epilepsies must have a primary status or causative factor in some metabolic abnormality or internal secretion that is not functioning properly.

DR. JAMES H. MCBRIDE, Pasadena, Calif.: There are of course many forms of epilepsy, and various causes: the epilepsy of traumatism, toxemia, peripheral irritation, etc. Two cases of epilepsy due to peripheral irritation that I recall are I think worthy of a brief mention. A woman at 30 developed epilepsy during confinement with her third and last child. She continued to have two or three fits a year until the time that I saw her when she was 63. On examination I found very large and badly ulcerated internal hemorrhoids. They were removed and she has not since had any recurrence of the fits, having now been entirely free from them for eleven years. A young man of 20 developed epilepsy while in college and during six months had two violent attacks of grand mal and many minor attacks. I found he had very large internal hemorrhoids which were removed. This was seven years ago and he has not had any recurrence of the fits. As a matter of pathologic interest I may mention the case of a man who was shot in the left eye at the battle of Gettysburg in 1863. He stated that he soon after developed epilepsy and up to the time of his death in 1889 had a discharge from the left ear.

On necropsy I found the bullet lying on the temporal bone just over the middle ear: It had entered at the orbit, passed to the temporal lobe and gravitated to the bone below, where

it had produced an abscess and necrosis of the bone by which the abscess had discharged into the middle ear and perforated the tympanum. The bullet which I removed in three pieces had remained in the skull cavity for twenty-three years.

DR. JOSEPH M. ATKIN, Omaha: I desire to make an inquiry regarding the relationship between migraine and epilepsy. In taking the history of patients complaining of epilepsy, I am impressed with the frequency of epilepsy, where there is a family history of migraine. I have wondered if the pathogenesis of migraine and epilepsy may not be practically the same, whether it be a specific germ or whatever the cause. I have in mind a young man whose history was that he had sick headaches until 17. At the age of 27 he came to me seeking relief from epilepsy, alleging that his epilepsy began at the age of 17, at which time his headaches ceased, and that his epileptic attacks had supplanted his headaches for ten years. Another case is that of a boy 8 years old who had a family history of migraine, suffered severe attacks of migraine till 14 years old, when without warning he had an epileptic convulsion. For six consecutive months he had on an average two or three epileptic convulsions a week, but no sick headaches. At the expiration of the six months the epileptic convulsions ceased and for eight years past he has what he had formerly, sick headaches. The relationship between the two conditions leads me to think of a toxemia of some kind, whether of endogenous or exogenous origin I do not know.

DR. WILLIAM J. HICKSON, Chicago: No one has mentioned the association of hysteria with epilepsy, and perhaps I should take that fact as evidence of its not being of significance. My cases are sent to me by the probate court, and I have made some detailed studies of the relationship of hysteria to epilepsy in certain cases. I am sure that I have done the patient, his family, and his community a real service by directing treatment to the hysteria and then turning the patient back with his small remnant of epilepsy.

DR. FRANCIS A. ELY, Des Moines, Iowa: Fortunately or unfortunately I have been recruited from the ranks of the general practitioners into those of the neurologists. I have had the opportunity of observing a great many instances of head trauma in children, and have attended a considerable number of difficult confinements. I am impressed with the fact that we should attach a great deal more importance to head trauma as a factor in the production of epilepsy. Since the Roentgen ray has come to our service it has been interesting to note that many instances of apparently slight head trauma in children have shown definite skull fractures and serious head lesions. We are all familiar with the great compressibility of the head of the child in coming through the birth canal, and those who have had any general practice will remember many instances in which infants have been very difficult to resuscitate. They will also perhaps remember many others in which, a week or so following birth, temporary epileptiform manifestations have occurred. I believe that in many instances such children in later life become epileptics, and I simply make this observation in order that we may not forget that head trauma both in the infant at birth and subsequent thereto are probably very important factors in the causation of epilepsy, and that there are many so-called idiopathic epilepsies which are indeed of traumatic origin.

There are undoubtedly a great many cases of encephalitis which escape the observation of the general practitioner and yet if these patients were subjected to a critical examination at the time of their illness, definite encephalitic symptoms might be observed. This type of cases also undoubtedly increase our list of those ascribed to unknown or idiopathic influences.

DR. C. EUGENE RIGGS, St. Paul: The pessimism of the profession with regard to the treatment of epilepsy has had a disastrous effect on the laity and consequently they have been willing to take hold of any will-o'-the-wisp that presented itself. Last month, at the meeting of the American Neurological Association in Washington, attention was called to the use of extract of pancreas in the treatment of epilepsy. Epileptics usually have a high blood pressure, which is indica-

tive of epinephrin in excess. Pancreatin neutralizes this excess. It should be given in 5 grain doses, after meals. It certainly has a decided influence in lessening the frequency of the convulsive seizures. It has been in use such a short time that no statement can yet be made as to definite results. It should be given a fair trial.

DR. I. LEON MEYERS, Chicago: Epilepsy has from time to time been ascribed to structural changes in the brain. As a matter of fact, however, there is a striking difference between idiopathic epilepsy and jacksonian epilepsy. In idiopathic epilepsy there is practically always a loss of consciousness or at least a clouding of consciousness, whereas in jacksonian epilepsy consciousness is frequently retained. This shows that idiopathic epilepsy very frequently originates in parts of the brain other than the cerebral cortex. We know that we can remove the entire cerebrum without complete loss of consciousness; the loss of consciousness in idiopathic epilepsy would therefore point to an etiologic factor in the more vital centers of the brain. We are often impressed with the similarity between toxic epilepsy and idiopathic epilepsy. I had occasion to observe one case of idiopathic epilepsy in which the patient had typical tonic and clonic convulsions a short time after I had seen the convulsions in an animal on an injection of oil of absinthe and I was struck by the great similarity between the two. This would speak in favor of the toxic origin of epilepsy. It is well known that in producing convulsions in animals by the administration of strychnin or any of the other convulsants, if you touch the fur of the animal it promptly goes into convulsions. All that is needed to produce a powerful convulsion-reflex is the application of some kind of stimulus. This will explain the cases in which it has been noted that slight irritations produced attacks of idiopathic epilepsy. If the body is saturated with a poison having toxic properties similar to those of strychnin or absinthe, then a slight external stimulus is sufficient to produce generalized convulsions. This is evidenced also by the aura. It seems that there is some kind of poison in the blood affecting the lower level centers, and a slight stimulus which manifests itself by a certain aura brings about the generalized convulsions. But unconsciousness supervening immediately, the aura is cut off and the patient's knowledge of the stimulus is vague and indefinite. From my observations of convulsions in animals as well as in men, I believe that idiopathic epilepsy is toxic in origin, and not due to organic changes in the brain. Of course, organic changes in the brain may cause convulsions, but they are not, I think, the cause of genuine idiopathic epilepsy, and I heartily concur with Dr. Dercum who spoke of epilepsies and not epilepsy.

DR. DAVID S. BOOTH, St. Louis: It is quite evident that there are a great many causes of epilepsy, but many of them are toxic and I have no doubt that a large number of these result from toxins in the alimentary canal, especially in the intestines. A number of years ago Professor French of the Southern Illinois Normal University discovered an intestinal parasite which he called the *Gastrophilus epileptalis*, and which he thought was the cause of many cases of epilepsy, hence the name given to it. However, the examination of the feces of, I believe, over a thousand cases revealed only a few infections with this parasite. So Professor French decided that this was not the cause of all the cases of epilepsy. Epilepsy may be due to rectal trouble, as I have noted in several cases. A case under observation was that of a physician in whom epilepsy was cured without any medicine whatever on the successful treatment of a rectal ulcer. As to treatment, parathyroid extract has not been mentioned, and I would like to know whether calcium has been used to any great extent. I have used calcium bromid with some good results, but perhaps no better than have been secured in some other cases not treated with this agent.

DR. ROBERT MCGREGOR, Saginaw, Mich.: I would like to ask Dr. Dercum if he has ever used, or heard of the use of, cerium oxalate in epilepsy. Usually the addition of strychnin or digitalis to a bromid mixture will lessen the amount required.

DR. J. MATTHEW PULLIAM, Fort Wayne, Ind.: I believe our main trouble is that the general practitioner throws up his hands in horror when an epileptic walks into his office, saying that there is no treatment. In my opinion the principal thing in the treatment of epilepsy is elimination, and I am not afraid of sodium chlorid and I do eliminate with sodium chlorid, giving a hard pressed normal saline tablet by mouth so that it will dissolve slowly in the stomach. I give with this a tablet composed of $\frac{1}{3}$ gr. aloes, $\frac{1}{40}$ gr. extract cascara sagrada, $2\frac{1}{2}$ gr. each of bicarbonate of soda, bicarbonate of potash and magnesium sulphate six times a day with a full glass of water. Just try it and see what the elimination is. That of itself will reduce the number of convulsions. There is nothing equal to bromid to stop convulsions. In looking over my records for the past ten years I find forty cases of epilepsy, thirty-two of which have had no attacks during a period ranging from two to eight years.

In regard to treatment with bromid, there is one point which may be applied to the dosage of bromid. Watch the blood for the hemoglobin content. Give the bromid until you have a drop in hemoglobin of 10 per cent., and you will find a drop in the hemoglobin content if you go high enough. Then cut the dosage in half, giving two weeks and intermitting two weeks. I accidentally discovered this fact nine years ago and have treated every case along this line. Up to this time I have not made any mention of it, not knowing whether the point was a practical one or not, as I have had but forty cases in which I could observe the effect. In the state institution at Logansport and Government Hospital at Washington, D. C., we had hundreds of cases, but all beyond the stage where we could do anything. Every one has neglected to treat the child. A girl came to me yesterday, aged 22, who at the age of 4 years had epileptic convulsions. A doctor treated her and her convulsive seizures ceased. On coming to womanhood she again developed epilepsy. The seizures started again when, because of development, extra work was put on the nervous system. Now I am giving bromid as I give iodine, in gradually ascending doses with remission, giving it two weeks and stopping two weeks. I take no account of a convulsive attack—it is not the cause, it is only the result. A toxic process is at the bottom of the trouble. Any man giving bromid without the promotion of elimination is wrong, although it does help for a time. So far as bromism is concerned, it is a very easy matter to prevent this. In regard to the skin eruption, Fowler's solution is specific. Give it in ascending doses in connection with bromid and you will not get much bromism.

DR. FOSTER KENNEDY, New York: We have had so many dogmatic assertions in this discussion of epilepsy that perhaps it would be well for us here and now to confess that we do not know anything definite about the etiology of this condition. The best proof of our ignorance is that so many different theories are put forward and accepted. From the West we hear of the epileptococcus and the removal of the large intestine, and from the East we are told that epilepsy represents an effort of the individual to resume his fetal position in the mother. All these various propositions are put forward perfectly seriously by speakers. While we can do a good deal to alleviate and to investigate, it is well at the outset, in order to reach the truth, to clear our minds of any delusions that we know much more than did our forebears about this subject.

DR. WALTER TIMME, New York: We cannot treat epilepsy as a disease; we have to treat the epileptic as an individual. Therefore, in one case we get results with sodium chlorid, while with another we do not. Another point is this: That the introduction of the endocrine glands into the therapeutics of epilepsy must be done guardedly. You cannot give thyroid constantly as you would bromid, without endangering the balance of the internal glandular system and perhaps converting an epilepsy into, or even adding to an epilepsy, a glycosuria or an exophthalmic goiter, both of which contingencies have occurred. You cannot give a patient thymus, nor can you give a patient suprarenal gland, forever, without disturbing the same balance. You must give first one, then the other, or a third, or none. You may give one of the glands

for a week; it may be necessary to give it for a month, but each patient must be the criterion of the treatment. And unless you do that you are bound to fail. Two points to show the close interrelationship between the endocrine glands and epilepsy might be cited, as follows: There is a seasonal variation in the epileptic attack. *Seizures are always more severe and frequent in spring; also in the spring there is an increased thymus activity and an increased pituitary activity. Another point is that at those critical periods of life, such as the menopause, such as puberty, epileptics either are cured spontaneously or their troubles spontaneously get worse. And it is at just those periods also that the endocrine glandular system is called on to exert itself to its utmost. There is a parallelism, therefore, between disturbances in the endocrine gland system and apparent spontaneous changes in the epileptic seizures.

DR. L. KAUFFMAN, Buffalo, N. Y.: The question of calcium in the treatment of epilepsy has been touched on. Colloidal chemistry has a very strong bearing on the metabolic condition of the human body. Dr. G. H. A. Clowes, chemist to the New York State Cancer Institute at Buffalo, finds that there is a certain balance which the body normally maintains between calcium, on the one hand, and sodium on the other, and that as soon as you disturb this balance one way or the other there is trouble which may manifest itself in spasm, as tetany, etc., and epilepsy can likewise be considered one of the forms of disease ensuing. With Dr. James W. Putnam of Buffalo I have employed calcium with considerable success. Of course, we must first take into consideration elimination, the various causes of irritation must be removed, and all the other possibilities taken care of; if then metabolism is the factor, try calcium lactate. It is a better drug for the purpose than calcium chlorid. It does not irritate the stomach, and you can use 30 to 60 grains three times a day in a glass of water over a long period, but I think it better to use it over short periods. We have had favorable results and complete cures in cases so far studied.

DR. GEORGE A. MOLEEN, Denver: In the treatment of epilepsy so many things have been advocated that conservatism and suspended judgment are demanded. The relation of hysteria to epilepsy is, I believe, showing a very perceptible narrowing of the gap. I would reserve my opinion of luminal, which has been used so largely in German clinics, because of its very close relative veronal, for we are seeing increasing numbers of habitués of veronal now. Therefore, it would seem that the same judgment should be applied to the use of luminal as would be applied to the routine use of opium.

DR. F. X. DERCUM, Philadelphia: I have been impressed by the consensus of opinion with regard to epilepsy, namely that epilepsy represents a multiplicity of conditions of which the convulsive seizures are merely epiphenomena. We should entertain clear ideas with regard to the principle of salt withdrawal as originally advocated by Richet and Toulouse. Salt is not of itself especially harmful to epileptics but during bromid administration salt withdrawal should be practiced as thoroughly as possible, for the reason that the bromid, in a measure, replaces the sodium chlorid in the tissues and is retained in the tissues for a much longer period than otherwise. In a case in which sodium chlorid has been withdrawn for some time and the sodium bromid freely administered, the sodium bromid will be eliminated rapidly in the urine when sodium chlorid is again taken, showing that there is an interrelation between the sodium chlorid and the sodium bromid in their retention and elimination. I could not, of course, in my paper enter into a discussion of the various other drugs which are being used in epilepsy. We are not infrequently forced to abandon the bromid and to try other remedies. I have also had a rather favorable experience with luminal. I have not, however, used it over very long periods of time because I have been afraid of establishing a habit. In regard to Dr. McBride's case, we all recall the fact that trauma, surgical operations and incidental infections, such as typhoid, frequently inhibit epileptic seizures for a greater or longer period. It would appear that the causes which modify the metabolism of the body for the time being influence the frequency of the

seizures. Operations on the intestinal tract, not infrequently performed at the present day, such as gastro-enterostomy, excision of the colon, etc., recall to our minds vividly the sad experiences of the profession years ago with regard to the influence that pelvic surgery was supposed to have on hysteria, epilepsy and other functional nervous diseases, an experience which should have convinced us as to the futility of such measures. Again, shall we experiment on our patients with poisons, autotoxins and what not, in diseases which are essentially morphologic and neuropathic in their character? Sanity demands that we should now and then review the knowledge which our ancestors and we ourselves have so painfully acquired in order that we should not allow ourselves to be deluded into wild and inexcusable undertakings.

THE PREPARATION OF THE PATIENT FOR OPERATION*

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In discussing the preparation of the patient for operation, I wish to consider his mind, his body in general and his eyes in particular.

In preparing the patient for operation, we should aim to "rob surgery of its terrors" (Moynihan). This preparation must begin with our initial examination of the patient, our method of broaching the subject of operation, our sympathetic attitude toward his ignorant prejudices and fears. All this is as truly a part of the successful surgeon's training and equipment as his mastery of asepsis and other matters I shall soon discuss.

There is no one here but has himself felt the depressing effect of fear, dread, anxiety, worry, embarrassment and the stimulating tonic effect of hope, courage, faith, sympathy, religion, some one to lean on. Why do we not more systematically and deliberately set ourselves to utilize these facts?

In taking the history of the patient, special attention should be paid to previous operations, the anesthesia, convalescence, complications. If the patient has any idiosyncrasies it is important to know them.

GENERAL EXAMINATION

The condition of the circulatory, digestive, renal and nervous systems should be investigated with more or less thoroughness according to the nature of the operation and whether or not general anesthesia is to be employed. While the whole subject is open for discussion, I pass over syphilis, tuberculosis, alcoholism, pregnancy, heart disease and others for lack of time.

The importance of the digestive tract has always been recognized, but the more we learn about it the more important it seems to become. Free action of the bowels must be secured *and maintained*. In our desire to secure an empty colon, however, we must be careful not to so upset the patient as to do more harm than good. This is likely to happen now and then if a routine treatment is ordered for all patients without individualizing. Often it is well to order the treatment—cathartics or enema—not the day before but two or three days before the operation so that if any

undue disturbance is created it may have passed off before the operation, and if the treatment has not been effective it may be repeated.

Too great zeal in preparation, too many baths and enemas and purges and dieting tend to induce a state of nervousness in a person, especially if elderly, who is entirely unaccustomed to such procedures and to whom they are very distasteful. In these cases the mental preparation is often more important than the physical, and the patient should be brought to the operation with the minimum deviation from his established daily mode of life. Not a few of these patients do better when operated on in their own homes; but the work and anxiety of the surgeon are greatly increased and there are other obvious disadvantages, so that on the whole a hospital is the best place. Sudden changes in the patient's habits or mode of dress are to be avoided, for example, giving the patient a warm bath and then putting on cotton night clothing when the patient has been wont to wear flannel; shampooing the hair against the patient's wishes, or having the windows open more widely than is the patient's custom. What though the patient's habits have not been up to the latest hygienic standards, this is no time to reform him! Let us get him through his operation and convalescence as quickly, safely and comfortably as possible.

NOSE AND MOUTH

The nose and mouth are but little less important than the colon. It is difficult in any particular case to trace trouble with the healing of an eye to foci of infection about the teeth or tonsils or sinuses because so many thousands of patients have these foci who do not present pathologic results in the eye.

I believe that most of the mild cases of uveitis following cataract or similar operations are due to slight infections from the operation. Some are noninfective, but due to the toxic action of lens material. (This is denied by Treacher Collins.) Some of the slightest and most evanescent are due to trauma pure and simple; but it is becoming more and more clear that a fair proportion must be ascribed to the same causes as uveitis in nonoperated eyes, namely, to foci of infection in other parts of the body. An operation like any other trauma is just the determining factor needed in such cases to enable the pathologic influences, already at work, but till then ineffectually, to start up the inflammatory process. It matters not whether these foci of infection act through their toxic chemical substances, or, as seems more probable, through the micro-organisms themselves.

When the anterior chamber is evacuated, there is a great increase in the flow of fluids through the eye. Thus if fluorescein is injected into the general circulation, none may appear in the anterior chamber or eye; but if paracentesis of the cornea is done, staining may quickly follow. This is of great importance as showing how the antibodies and protective materials are carried to the wound when the anterior chamber is opened. Probably many eyes could be saved by a more frequent use of this means of bringing up reinforcements. Sometimes it may be well to open the anterior chamber not only daily but several times a day in combating severe infection. It is beneficial also as a means of drainage. On the other hand, it seems probable that this same enormous increase in the flow of currents through the eye may serve to bring deleterious agents, whether chemicals or organisms, to the

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

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eye in too large amounts, and so an endogenous infection may be set up which otherwise might never have occurred, although there was a focus of infection somewhere all the time.

The bearing of this on the preparation of a patient for such an operation as cataract is obvious. We should eliminate as far as possible all foci of infection, which, if circumstances should be favorable, might cause an iritis. The mouth and teeth should be cleaned up in the surgical sense. The tonsils and sinuses should be cared for.

I wish to call particular attention to the possible danger of these foci of infection to the patients with the thin conjunctival "bleb" which so often follows sclerocorneal trephining. I believe that some of these tragic late infections could be traced to suppurating ethmoid, bad teeth or the like.

ARTERIOSCLEROSIS

Arteriosclerosis interests us chiefly because it is often the important factor in intra-ocular hemorrhage. It acts in two ways: by the high blood pressure and by the weakened vessel wall. The healthy blood vessels have a wide margin of safety in their strength to withstand pressure, but endarteritis and endophlebitis greatly reduce this margin.

The intra-ocular pressure tends to support the arteries and veins, so that the vessel walls do not sustain the whole of the blood pressure in them. When the eyeball is opened, all this support is removed quite suddenly, and so the whole of the blood pressure has to be borne by the vessel walls practically unaided.

It is obvious that we have two ways of avoiding this sudden increase in tension on the walls of the vessels produced by opening the eyeball. We can reduce the pressure in the vessels and we can reduce the pressure in the eye.

The pressure in the eye can be reduced in cases of glaucoma, by miotics vigorously pushed and aided by ethyl-morphin hydrochlorid (dionin) and cocain and ocular massage. Rest in bed with light diet and purgation are important aids, and some sedative to subdue nervous excitement and anodynes to relieve pain are obviously indicated. In case of acute congestive symptoms, leeches will help. When one cannot take the time required to reduce intra-ocular pressure by these methods, or when they are ineffective, one can and should tap the vitreous by scleral incision, permitting slow escape of some of the contents of the eyeball.

Where intra-ocular hemorrhage is to be feared, reduction of blood pressure is even more important than reduction of intra-ocular pressure, unless glaucoma with high tension is present, when both should be reduced.

In the reduction of the general arterial blood pressure the following are the chief resources at our disposal, and we may wisely invite the cooperation of the internist in their selection and use, for arterial hypertension is sometimes compensatory, in which case it is not ruthlessly to be interfered with; while if it is due to the presence of toxic products, the result of faulty mode of life, it should be remedied, of course: rest in bed, say a week before operation, if not contra-indicated; milk and farinaceous diet restricted in quantity; mild purgatives; mental repose; sleep (blood pressure usually falls in sleep, often from 30 to 50 mm.); enteroclysis; avoidance of what puts increased demands on the kidney and therefore on the circulation, as salt, alcohol, gravies, soups, extractives,

or too much water; hydrotherapy; warm baths; electric light baths; massage with Swedish movement; phlebotomy, not less than from 300 to 500 c.c. Nitrites are especially valuable when a prompt effect is wanted, even if it is only fleeting. Thus nitroglycerin, $\frac{1}{100}$ grain, may be given every fifteen to twenty minutes until some effect is produced which either satisfies our requirements or is a signal to stop.

As to general anesthesia, ether does not alter arterial tension much. Nitrous oxid increases it.

In a case in which immediate operation is required, the arterial tension can be lowered quickly by nitrites, or failing that, by phlebotomy; the intra-ocular pressure can be lowered by cocain and massage, or if necessary, scleral puncture; but this must not be so done as very rapidly to reduce the ocular tension, or intra-ocular hemorrhage will be quite as likely to occur as on opening the anterior chamber.

PREPARATION FOR ANESTHESIA

I pass over the well known precautions as to the mouth, stomach and intestinal tract. If narcosis is to be used, there is a difference of opinion as to the use of morphin. It is the belief of a majority that a hypodermic of morphin shortly before the beginning of the narcosis will make it easier for the patient and for the anesthetist. To secure a good sleep the night before, adalin and veronal, or bromid and chloral may be used, and if necessary may be repeated the morning of the operation to subdue nervousness. This preparation is important when a general anesthetic is to be used; for local anesthesia it is indispensable.

It is not desirable for the patient to be too thoroughly doped in preparation for muscle operations or other operations on the globe, for we want the patient's cooperation. One should try to secure such a dosage of the sedative drugs as will produce freedom from worry and undue dread, without anything approaching stupor.

EXAMINATION OF THE OTHER EYE

That an examination of the physical condition and functions of the eye should precede operation hardly needs to be emphasized. One thing should never be omitted before any operation, and that is to learn the condition of the other eye. If that is useless or nearly so, one should consider well the serious responsibility he assumes in operating on the only good eye.

THE SKIN

For the preparation of the patient's skin we have two approved methods:

1. Wiping with a cotton sponge, moistened with benzin (this is especially good for the lashes), washing thoroughly with soap and water followed by mercuric chlorid, 1:1,000, drying, and applying alcohol.

2. Application of tincture of iodine to the dry skin (previous washing reduces the efficiency of this method), which is valuable for quick preparation in an emergency. The lids may be irritated by iodine, causing itching or even eczema with vesicles, etc. Hence many have either given it up for regular use or reduced the strength to one half. Fresh tincture is less irritating than old. Eyebrows, if long, may be plastered down with collodion, as suggested by Elliot. (In extensive plastic operations they should be shaved.) Lashes should be clipped short where they are likely to be touched by instruments. If a speculum with a blade covering the lashes is used, only the outer fourth of the lids needs to have the lashes cut.

If an ordinary speculum is used, all should be cut. Elliot points out that the lashes should be cut sufficiently short with the first stroke of the scissors, since short, stiff fragments cut off with the second cut are hard to get rid of and very irritating to the conjunctiva. If the scissors are anointed well with sterile petrolatum, the hairs will adhere to them as they are cut.

LACRIMAL SAC

The lacrimal sac requires most careful examination. Pressure will not always squeeze out anything from a diseased sac, for it may have been squeezed shortly before the examination, or it may be so protected by the anatomic conditions and small size of the sac that nothing is pressed out. A safer and surer way is to syringe through the lower canaliculus with a syringe whose tip is small enough to enter the punctum after it has been slightly dilated, but not cut. Liquid should run through without forcing. A partially obstructed lacrimal duct is dangerous as well as a completely stenosed one. Argyrol or fluorescein instilled in the conjunctiva should appear in the nose within ten minutes. Usually it is sufficient to have the patient hold the head forward ten minutes and then blow the nose into a piece of gauze. If this is negative, to make sure, a small wad of cotton should be placed in the inferior meatus close to the lower end of the duct and a second instillation made. It is possible for argyrol to work its way through a passage too small for free natural drainage of the sac and as Duane has pointed out, this is a method of overcoming an incipient stenosis by treatment without probing. Frequent instillation of argyrol may reduce swelling and clean out the duct and restore free drainage. Unless one is fully convinced that the lacrimal sac and duct are free from obstruction and disease, he should not omit syringing, and if still suspicious, the canaliculi should be tied by a suture passed around both a few millimeters to the nasal side of the puncta, and the puncta may be seared with a pointed cautery. After a week when the wound in the eye has healed, the stitch may be removed, and if the puncta were seared they may be opened again with a suitable dilator.

There is another condition which requires suture of the canaliculi, or sealing of the puncta by cautery, and that is the presence of a dangerous condition in the nose, as *ozena* or *ethmoiditis*.

When the duct is definitely stenosed, a brief course of treatment may be tried; but if a very few probings and syringings do not secure free drainage into the nose, the sac should be extirpated. This is the safest treatment in most cases. The immediate result is an increase in the bacterial content of the conjunctival sac so that it is not wise to operate for two or three weeks, during which time treatment to improve the conjunctiva and reduce the number of bacteria should be carried out.

CONJUNCTIVA

All investigators are agreed that since instruments, sponges and collyria can be surely sterilized and hands can be kept away from contact with the operative field, the great source of danger is the conjunctival sac. Most postoperative infections have their origin in the conjunctiva.

We have a peculiarly intricate and difficult problem, then, for not only are organisms always present, often of dangerous varieties, but if they are ignored, only 1 to 6 per cent. of eyes will suppurate, as in prelis-

terian days. It is not like an operation on a knee joint where any departure from strict asepsis is almost sure to be followed by disaster. Disaster in eye operations comes in only a small percentage of cases, even with very loose and unsurgical methods of asepsis. Finally, the best operators are not in agreement as to the best methods of ocular asepsis.

There are three schools or methods which are supported by sufficiently good authority and argument to command our study:

1. Method chiefly urged by Elschnig of Prague, Axenfeld of Freiburg, and Browning of London.

Before any cataract or similar operation, cultures of the conjunctival sac are made by instilling a special culture fluid into the sac and sucking it up again with care to avoid contamination with the lid margins; incubation is carried on for twenty-four hours; a stained smear is examined, and if streptococci or staphylococci or other dangerous organisms are present, operation is postponed till suitable treatment has, if possible, eliminated the unwelcome organisms. If no dangerous organisms are found, operation may proceed. This will be in about 70 per cent. of the cases. If the appearance of the conjunctiva is suspicious, one should wait more than twenty-four hours until the culture has incubated longer.

2. The Vienna method of Fuchs and his followers.

One decides whether or not it is safe to operate by the clinical appearance of the conjunctiva. If that appears clean and safe, the operation may be done at once. If not, treatment should be given until the pathologic conditions are remedied. Cultures are misleading. The eye is prepared at the operation by the operator himself. The skin is wiped with cotton moistened with benzin, followed by washing with a special soap and 1:1,000 mercuric chlorid. The conjunctival sac is wiped with swabs and then irrigated forcibly. If the eye is of the class called clinically clean, normal salt is used for the swabs and irrigation. If it is regarded as suspicious, mercuric oxycyanid, 1:2,500, is used for the swabs and irrigation.

3. Indian method advocated by Herbert and Elliot.

In the presence of active infection, operation is postponed until this has been remedied (for example, the lacrimal sac is extirpated). To determine the presence of active conjunctivitis, a test bandage is used. If this shows no significant discharge, even if the conjunctiva is thickened, rough and diseased, the operation may be safely done, provided the following method is carefully carried out: Fifteen minutes before operation the everted lids are irrigated with 1:3,000 mercuric chlorid under a head of 3 feet, moving the lids vertically so the stream will penetrate all folds and especially around the caruncle and fornices. Irrigating is continued at least a full minute and longer if the desired result is not obtained, namely, secretion of grayish mucus; or if the mucous membrane is so scarred that this does not occur, until clouding and opacity of the epithelium from superficial coagulation necrosis occurs. This is followed by epinephrin to control the hyperemia, and then cocaine at intervals for fifteen minutes. If insufficient effect was produced, it will show now by absence of mucus or opacity, and further irrigation with mercuric chlorid may be done, but usually at this stage irrigation with normal salt will suffice. Elliot adds at this point, before irrigating with saline, wiping of the conjunctiva with sterile swabs, moistened with saline.

We may be guided in our choice between these methods by the statistics of series of cases treated by the different methods, or by the arguments and theories advanced in support, and finally by our own experiences and prejudices.

The results of the Indian method of prolonged irrigation with 1:3,000 mercuric chlorid are far superior to those of the other methods. Herbert's last 1,655 cases were free from panophthalmitis, and there were only two cases of iritis severe enough to close the pupils.

After Elliot was induced to adopt this method by seeing the remarkable results obtained by Herbert, he had one suppuration in the first thousand cases (due to an undiscovered suppurating tear sac). Since then he has had thousands without a suppuration. Herbert and Elliot say that suppuration has been practically eliminated since they adopted this method and perfected other details. Even nonsuppurative inflammations are very rare. Moreover, the conditions under which these operators worked, and the class of patients, were both less advantageous than are found in Europe and America.

Other Indian operators have followed similar methods, and if statistics have any meaning, their results must carry great weight. The enormous numbers of cases in which operations were performed under fairly uniform conditions make the statistics peculiarly convincing.

Statistics of Fuchs' clinic as reported by Lindner¹ show results varying with the skill and experience of the operator from one suppuration in 509 cases, or two in 664 cases, down to four in ninety-five cases during the same period of time and with the same methods. It is evident that the Fuchs method makes use of the swabs and irrigation with mercurial lotion similarly to Elliott, only less prolonged and using oxycyanid instead of mercuric chlorid and limiting the mercurial to the suspicious cases. Now it has been abundantly shown that cases which clinically look clean may harbor dangerous organisms. Washing with normal salt solution will mechanically remove many, but if mercurial is regarded as safer when dangerous organisms are thought to be present, why not use it when it is not known that they are absent? The far better statistics of Elliot, Herbert and other Indian operators would seem to show that they are nearer right in their method.

Let us look at the statistics of those who use the bacteriologic findings as a guide to operation. From Elschnig's clinic there is reported a series of cases with 0.5 per cent. failures and 3.5 per cent. iritis (of which 1 per cent. is classed as bacterial and 2.5 per cent. abacterial).

From Moorfield's, Browning² reports "only one case of infection in all the operations where the bacteriological examination has been made and the eye reported suitable for operation, and no case of acute post-operative infection has occurred after cataract extraction." Browning's method of examination is by carefully applying a sterile swab to the conjunctiva of the eye to be examined and with this inoculating human blood agar, incubating twenty-four hours or more and examining stained smear. Previously to the adoption of this technic, about 1 per cent. of the eyes operated on for cataract at Moorfield's were enucleated because

of infection. In fact, anything less than 2 per cent. of infections has been considered good in the past, but that standard will have to be raised.

If dangerous organisms are found, various methods are advised to get rid of them. At Prague, according to Kraupa,³ they use irrigation every half hour with 1:5,000 mercuric oxycyanid and wash out the tear passages daily. On the third day another culture is taken (he does not say for how many hours irrigations are omitted before taking this), and if positive, 1 per cent. silver nitrate is applied, even if there is no secretion from the conjunctiva. Ethylhydrocuprein, 0.5 per cent., is used also in some cases for half hourly irrigation. If he has to operate before the sac shows negative cultures, he applies silver nitrate, 1 per cent., two hours before operation and copious irrigation at the time of the operation with oxycyanate, avoids bruising the wound, uses conjunctival flap, and avoids introducing into the eye any instrument which has touched the surface of the eyeball; but he does not think it necessarily an indication for iridectomy. He thinks it particularly important to know about the bacterial content of the conjunctival sac in cases of needling or treating prolapsed iris.

In Vienna, if the conjunctiva looks unclean and the cultures are positive, the treatment, according to Lindner,¹ is 2 per cent. silver nitrate once daily, and he reports great difficulty in getting negative cultures in these cases.

At Moorfield's, Browning² says no treatment will so surely and quickly render an eye sterile to cultures as mercuric chlorid, and so if a culture is taken less than twelve hours after irrigating with this it is likely to be sterile, though a few hours later, if untreated, it would be positive. This is a very important point, and may be the cause of some of the failures by other operators. I suppose the reason for this is that the pathogenic bacteria are not only on the surface of the conjunctiva, but also are in the ducts of the glands which abound there. The antiseptic solutions do not penetrate into the ducts, and though nearly all those on the surface may be removed or rendered harmless, fresh ones gradually come to the surface from the glands, just as happens when we try to sterilize the skin, for example, the hands.

Mayou says that over and over again he has found the conjunctiva almost invariably sterile when tested after three days, washing four times a day with per-chlorid 1:6,000.

It is probable that some of the energetic measures adopted to get rid of the organisms only serve to keep up or set up a conjunctivitis, because they are so strong and irritating. One of the advantages of argyrol is that it is not irritating; another is that it penetrates on account of its great specific gravity. It seems to me that 25 per cent. argyrol instilled every hour, and copious irrigation with a weak mercuric chlorid or oxycyanid solution 1:5,000 twice a day, for half a minute or less, according to the amount of irritation excited, is more likely to be well borne by the conjunctiva. We must rely largely on Nature's defenses, and it is unwise to break them down by too vigorous use of powerful antiseptics. I should not use silver nitrate if there is no conjunctivitis.

In view of the conflicting opinions among the highest authorities, it is not well to be dogmatic; but I venture to make a definite statement as to what seems to

1. Lindner: Arch. f. Ophth. (Graefe's), 1914, lxxxviii, 415.
2. Browning: Tr. Ophth. Soc. U. Kingdom, 1914, xxxiv, 61.

3. Kraupa: Ztschr. f. Augenh., 1913, xxx, 459.

me the best procedure in the hope that it will stimulate discussion.

1. A knowledge of the bacterial content of the conjunctival sac is of very great value to an operator, provided it is reliable. At present such information is not obtainable anywhere in satisfactory fulness. It is not enough to be told that streptococci are present, or even that pneumococci are present. There are an unknown but large number of different varieties and types and strains, differing in virulence, differing in the immune reactions they excite, and consequently requiring different defensive antibodies for the patient to combat them with. But the fact that perfectly full and reliable information is not available is not a sufficient reason for rejecting the partial information that is within our reach. Let us seek for all the information we can get, and keep clearly in mind its limitations. It is only a question of time when much fuller information will be obtainable. It does not seem unreasonable to prophesy that when the strains of streptococci are differentiated, vaccines and serums will be found far more effective because applied so much more intelligently than at present is possible. I would make for my first thesis the assertion that it is desirable to have as full a report as possible on the bacterial content of a conjunctival sac, before undertaking a cataract or similar operation.

2. Since our laboratory report is confessedly not to be fully trusted, we must apply the clinical test. If the conjunctiva is not healthy looking, operation should be postponed until treatment has made such improvement as is possible in a reasonable time. If it is healthy looking and the laboratory report is not unfavorable, the operation may be proceeded with.

3. The best treatment for the conjunctiva when not healthy, or when the bacterial report is unfavorable, will vary with the condition and the organism. Three aims should be kept in view: (a) To remove mechanically all bacteria as fast as possible by free drainage and irrigation. (b) To increase the natural resistance and defensive powers of the eye and body. (c) To kill or inhibit the growth of the bacteria. For *a*, instillation of argyrol 20 to 25 per cent. every hour has proved its value, though it is said to have no value as a germicide, so that care should be taken that its solutions are sterile. This should be supplemented by copious irrigation twice, or perhaps many more times a day with a mercurial lotion, either mercuric chlorid or cyanid, 1:5,000, but I should not favor the frequent application of strong antiseptics or irritants. Yellow mercuric oxid ointment, or other antiseptic ointments are often useful. There may be, and probably are, special antiseptics of value against special organisms, a zinc solution against the diplobacilli and ethylhydroperin against pneumococci. Where the mercurials are irritating and seem to do more harm than good, I like to use a bland, but very cleansing and agreeable solution containing:

	gm. or c.c.
Boric acid.....	0.8
Borax	8.8
Ol. eucalypt.....	0.15
Ol. gaulther.....	0.15
Menthol	0.050
Thymol	0.075
Water	1,000.

To increase the general and local resistance, attention to the digestive tract and to diet, fresh air (avoiding wind, dust, smoke and strong light) exercise and plenty of sleep should be prescribed. In short,

eyes and body should be put in the best physical condition possible. There is no doubt that in suitable cases vaccines and antisera are of value, but their limitations are not yet well defined.

Lastly, if one is obliged to operate, or chooses to operate in the presence of an unhealthy looking conjunctiva or with positive cultures of dangerous organisms, the most effective plan is that of Herbert as modified by Elliot. I am not sure that cotton swabs are the best to aid the irrigation in clearing away the bacteria. A smooth glass or metal or rubber instrument may serve the purpose as well, and be less likely to leave lint behind. The objects to be gained by the swabbing are removal of mucus, etc., and also by a sort of massage the removal of some of the contents of the conjunctival glands, which might otherwise be made to escape during the operation by the similar massage by the lid elevator or other instruments or fingers.

SQUEEZING

Is there anything that can be done to prevent squeezing? Maddox⁴ speaks of the dozens of eyes that are spoiled annually in his country, by sudden squeezes which overpower the ordinary speculum. The same is true in ours. Much thought has been given to this problem, and the chief reliance of ophthalmic surgeons is on one or another method of procedure during operation aimed to control rather than prevent squeezing—special forms of speculum or blepharostat, or special ways of holding them and supplementing them with fingers. Of these we need not speak, for they are not a part of preparation of the patient for operation.

Van Lint has suggested prevention of squeezing by paralyzing that part of the facial nerve which controls the orbicularis. He does this by deep injection into the outer half of the upper and lower lids through one puncture external to the outer canthus. The solution is from 3 to 4 c.c. of 1 per cent. novocain with some suprarenin. He operates from one-half to one hour after injection. How well this succeeds I do not know.

Other operators try temporarily to rob the orbicularis of its power for mischief by cutting the muscle or its tendon. An incision upward and outward through the muscle above the external lateral ligament will quickly heal while the operative wound in the eye is healing and will leave no noticeable scar. One of the chief advantages of this method is the better access gained in case the palpebral fissure is small. This cut allows the lids to be more widely opened. It should be more often used.

Maddox⁴ recommends a suture for bad cases to be inserted before the cataract incision is made. It passes across the cornea from the insertion of the superior rectus to a point below the cornea. This is not preventive of squeezing, but is aimed to hold the wound together when the patient squeezes, being slackened during intervals of comparative calm, to allow the necessary steps to be taken.

All these measures, except the last, are aimed to control or prevent squeezing by the orbicularis. They take no account of any other method the patient may have of squeezing. I believe that the orbicularis is far the most important factor in squeezing, but I am convinced that the external ocular muscles are capable of exerting pressure and do exert pressure if they are caused to contract, and I am not referring now to the

4. Maddox: Ophth. Rev., October, 1914, xxxiii.

well known effect in pulling open the wound and at the same time exerting pressure on the globe, which is caused by contraction of the inferior rectus and superior oblique muscles when the patient is told to look down and does so. Smith has shown how this may be avoided by operating with the patient looking up, and his contribution is of no little value.

I wish to call attention to an old but simple way of greatly reducing, though not wholly preventing, squeezing. Squeezing is a reflex act which a patient with intelligence and self-control can inhibit. But a reflex act requires a centripetal impulse to the nerve centers to start it—a sensation. If we can arrange to eliminate that, we shall not have to avail ourselves of the various methods of increasing the patient's inhibitory control, nor shall we have to resort to paralyzing or cutting the orbicularis. To avoid this centripetal impulse, this exciting sensation, we have only to avoid doing things to the eye that the patient can feel. In short, I wish to make a plea for thorough anesthesia and gentle and skilful manipulation. The experienced and dexterous operator has far less troublesome patients apparently, but that, of course, is because he does not excite them to troublesome demonstrations, knowing as he does how to execute his manipulations without setting up the annoying and dangerous reflexes. But apart from the question of skill, I am sure that more complete anesthesia would be the salvation of many an eye. Cocain instilled in the conjunctival sac produces only analgesia in a large proportion of cases, not anesthesia, and when it comes to manipulation of the iris, not even analgesia is always obtained.

I need not describe the various methods of securing anesthesia for cataract or similar operations. Prolonged use of cocain in strong solutions is harmful, so much so that some advise operating within ten minutes of the first instillation of cocain. Yet others instill cocain repeatedly for half an hour, or holocain and cocain; others inject cocain subconjunctivally near the site of the incision, even as high as 15 per cent. strength. Some allow some cocain solution to run into the anterior chamber before doing the iridectomy, or even place a crystal of cocain on the iris. Very few avail themselves of another method which is easy and has not yet, so far as I know, been shown to be dangerous, and that is the production of a profound anesthesia of the eyeball inside and out, by injecting novocain solution about the posterior pole of the eyeball so as to reach the ciliary ganglion or ciliary nerves. Pooley of Sheffield speaks of the total absence of squeezing or other reaction when doing anything to the iris in cases in which he has used this method. Is it safe? Only a more extended use can decide that question. I believe its possible dangers are much overrated. I have never seen any bad effects, but my experience does not cover enough cases to prove anything.

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ABSTRACT OF DISCUSSION

DR. W. H. WILDER, Chicago: The method of preparation of a patient will vary considerably with different operators according to their fondness for certain procedures. Speaking broadly, we should endeavor to conceal from the patient as much as possible the elaborate preparations that are made in his behalf and thus spare him the anxiety and mental shock that such knowledge might excite. It is not wise to explain to the patient too fully what is to be done; in some cases, in fact in most, it would only result in confusing or frighten-

ing him. I think I can agree with Dr. Lancaster in most of his premises. Whenever the eyeball is to be opened or entered with an instrument, the utmost care should be taken in the examination of the conjunctival sac for bacteria. If pathogenic organisms are found, operation should be deferred until the conjunctiva is free of them. While it seems that one may safely operate in the presence of such organisms as *B. xerosis* or *Staphylococcus albus*, it should be remembered that certain strains of *S. albus* may be more virulent than others, and certain colonies that appear white at first may develop the orange color in a few days that betrays their greater virulence. As a means of combating organisms in the conjunctival sac, I have used for several years, following the suggestion of Elschnig, oxycyanid of mercury in solution of 1:5,000. It seems to come into more intimate contact with the membrane and accomplish the desired result more promptly and with less irritation than the bichlorid solution.

I have often been asked by students and others why I do not use gloves when operating for cataract or iridectomy, and it is necessary to explain that one's tactile sense is somewhat obtunded by them, and there is no reason why the surgeon's fingers or any part of an instrument he has touched should come in contact with the field of operation. The hands of the assistant who prepares and uses the sponges, however, should be in gloves.

DR. WALTER H. SNYDER, Toledo, O.: A few years ago two patients with cataract came for operation, one of whom admitted he had lost the other eye by squeezing and the other was a patient who was fearful and worried, as she had friends who had been operated on with unpleasant results. Neither patient was a good surgical risk for general anesthesia. I adopted the method used by general surgeons in thyroid surgery. My cataract cases are always operated in bed. The two patients were brought to the hospital and told they would not be operated on for some days. The first afternoon at five o'clock a hypodermic of morphin was given, then cocain was instilled, and speculum inserted, eye flushed out and 1-grain solution of silver nitrate applied for the slight conjunctivitis. This permitted me to note their reaction to the morphin, allowed them to become familiar with the speculum and the usual directions. The next day at the same time the patient was put to bed and the same technic gone through except that normal salt solution was used instead of morphin. They were trained to look in the various directions, to close the lids easily and keep them closed, and cautioned against holding their breath (which sometimes begins the cycle of a squeeze). The suggestion was given that they would sleep after the injection and this was fortified by the fact, unknown to them, that morphin was used the first time but salt the second. They were allowed to lie in bed with a Ring mask on during the night. This did not provoke any irritation of the lids, as no cotton was used. In a few days they hardly noticed what was being done, and in four or five days I operated on them without telling them that I intended to do anything different than the usual dressing. However, the day the operation was done morphin was again used. Fifteen such patients have been operated on in the last two years with the most satisfactory results, seven being one-eyed patients who had lost the other eye from squeezing, vitreous loss, etc. This takes considerable time, but I feel that is of little moment when the results are considered. It seems to me that patients practically suffer no pain during a cataract operation but they act badly as the result of fear. The application to the eye is original with me but Dr. Crile uses a somewhat similar technic in his thyroid cases.

In a certain type of early cataract depending on a uveitis I have found it useful to have provocative treatment with mercury for a few weeks before the Wassermann, and the results in these cases after operation convince me that many of the cataract patients who do so badly are syphilitics needing only the trauma of an operation to set up a uveitis that cannot be controlled in time to save the eye.

DR. H. S. GRADLE, Chicago: Irrespective of how much weight we lay on exact knowledge of the bacterial content of the conjunctival sac before operation, I think we are all agreed that it is one of the important factors. There is only

one safe method of determining this bacterial content, and that is by the use of a culture. Smears will not give the content of the sac in 50 per cent. of cases where there are pneumococci or streptococci present. To get a complete record, we must use either a fluid culture medium or else take some of the tears, or salt solution dropped into the sac after the lids have been allowed to close, thus spreading the fluid in the depths of the transitional folds, and sweeping up the organisms present. If a loop is used, one can obtain only the superficial organisms from the tarsal conjunctiva. The majority of organisms are not in this region, but are in the depths of the transitional fold, and it is only by the use of fluid mediums that we can obtain them. Serum bouillon gives better results than any solid culture medium.

MALCOLM C. ROSE, New York: We are fighting a drug epidemic in this country. We do not have to mention drugs before the public. The Wassermann fails in a great number of the older cases of syphilis. It is only absolutely reliable in cases of about one or two years' standing. A test found effective by a number of men in the old cases of syphilis is the luetin test. Before using the test you must be informed on one point: Has the person been taking potassium iodid within a month? If so, the luetin test will show a reaction similar to that in syphilis.

DR. J. A. DONOVAN, Butte, Mont.: Dr. Lancaster's suggestion to reform the general hygienic customs of the patient within twenty-four hours is a capital one. As to opening the anterior chamber, formerly in many cases when in doubt I did not open it; now I give it the benefit of the doubt and open the anterior chamber, and I am usually glad of it. As to antiseptics, I have been using the biniodid in solutions and ointments, 1:5,000. I have increased the strength of the ointment to 1:1,000. It is made by dissolving the mercury in a potassium iodid solution, rubbing this into adeps lanac and petrolatum. After a traumatism it can be used in this strength without any irritation and it has many advantages.

DR. A. S. GREEN, San Francisco: Smith of India does not use the same method as used by Herbert and Elliot, and he gets as good results as they do. His infections do not run over one half of 1 per cent. All he does is to irrigate the eye when the patient is on the table with 1:2,000 mercuric chlorid solution, taking care that the lids are sufficiently lifted from the globes so that the fluid will go underneath into the cul-de-sac. He does not use a test bandage before the operation. He puts 0.5 per cent. yellow oxid ointment over the fissure after operation. In regard to instructing the patient beforehand, too much teaching of the patient may prove very troublesome, and that it is not necessary is shown by the methods and results of Smith. His patients come in probably the day of the operation; he likely has never seen them before, and without any preliminary instruction of any kind he operates on them, very seldom saying a word to the patient during the operation. The more talk the more nervous one is apt to make them. In this country we use a scheme to demonstrate to the patient that there will be no pain. That is, we utilize the time when we take the intra-ocular pressure with the tonometer to call attention to the fact that though we touch the cornea there is no sensation. It is probably true that most eyes that are lost from loss of vitreous are lost on account of squeezing. I do not believe it is necessary to resort to all the means spoken of by Dr. Lancaster to prevent squeezing. By the use of a speculum with a handle, the lids can be removed from the eyeball entirely so that no pressure will result. The speculum will prevent squeezing at the time of the incision and during the iridectomy, and that is the most dangerous period. It is on completion of the incision that the loss of vitreous generally occurs. But in some eyes the speculum will not answer as well for the delivery of the lens as a large strabismus hook. To safeguard the eye it is not sufficient to use the ordinary speculum, or to hold the lids with the fingers, as I have seen loss of vitreous time and again. Another point to guard against during the incision is the interference of the lashes. I have seen many good operators who made sufficient preparation, nullify the effect of that preparation by sweeping the knife through the lashes. They would trim the lashes that danger would be obviated.

DR. WENDELL REBER, Philadelphia: All those who have operated to any extent will agree with me that the tranquil patient is the greatest assurance against operative accident. Formerly I used morphin and atropin. Its disadvantage is that it produces postoperative vomiting, which, of course, is the most formidable complication we have to deal with. For the last five years I have followed the following plan: Two and one-half hours before the operation the patient receives 20 grains of bromid and 10 grains of chloral. An hour later he receives a similar dose. A half hour before the operation the patient receives $\frac{1}{6}$ grain morphin and $\frac{1}{200}$ grain of atropin hypodermically. I have not had vomiting in one case. I generally operate between 2 and 4 in the afternoon. I have an absolutely quiet patient. I have seen some vitreous loss in two cases. This method of preparing the patient is the most valuable I have ever employed.

DR. CLARK W. HAWLEY, Chicago: My operative experience may be divided into three periods. In my first few years I used mercuric chlorid in all operative work, and I had good success; a middle period when I tried things suggested by various men whom I thought better than myself. I had good success. My last and latest method is the simplest of all. I have learned to let the new suggestions be carried out by other men. In my cataract and other work I use as little manipulation as possible. My success in the later period is just as good or better than it was before.

In Europe I saw one operator who in all his work used nothing but the tap water of London. I saw him do 400 operations twenty-five years ago, and in his first series of 400 he had about eight losses; in his second series he was then having about the same proportion. Another operator used all the antiseptic precautions advocated in those days, and his loss was from 16 to 25. So that I believe if you can get a system adapted to your own individuality and make it as simple as possible you will have better success than by attempting to employ all the new notions various men may give us. I should like to call attention to one thing in regard to squeezing, and that is always to cocaine the other eye as thoroughly as the one on which you operate. That is especially valuable in children. Another suggestion is as to the use of a strabismus-hook. I have a better instrument in our common lid-elevator.

DR. LEE M. FRANCIS, Buffalo: I have found it useful to substitute for the morphin, codein phosphate in half-grain doses, and I have not had to deal with vomiting. While I have used chloral and the bromids, I think one gets the best effect with the least disturbance by giving it per rectum.

DR. M. FEINGOLD, New Orleans: For the prevention of intra-ocular hemorrhage subsequent to operations that open the eye, a method I believe advocated by Gilbert of Munich ought to be mentioned. It consists in performing venesection on the patient prior to operation. I have done this in several instances in which one eye has been lost by intra-ocular hemorrhage following an iridectomy. The results were excellent.

Another suggestion to prevent intra-ocular hemorrhage after operation was made by Hertel of Strassburg. His experiments based on Fisher's theory of glaucoma showed that introduction of large doses of chlorid of sodium into the general circulation would produce a tremendous fall of the intra-ocular tension that would last a few hours. These experiments he repeated on the patient with excellent results as to tension and without any disturbance as to the general condition.

Regarding the treatment immediately after the operation, I should like to mention the following: Some years ago I adopted the method of applying mercuric chlorid ointment or petrolatum only to the lids after operations and recommended it to my friends. A short while after I was present when a secondary cataract operation was about to be performed, and I noticed that something yellow, thin and flat was floating in the patient's anterior chamber and always occupied the highest point as the eye moved around. I at once concluded that the substance must be petrolatum that had entered the anterior chamber after the first operation when the patient had squeezed his lids under the bandage.

The petrolatum was easily removed from the anterior chamber by paracentesis. Since that time I have abandoned the use of ointments.

DR. WALTER B. LANCASTER, Boston: In regard to the preliminary training of the patient, I think that it is useful in some cases and harmful in others. Like a good many other measures, it ought to be used by individualizing the patients. Some will be made more intractable the more you try to train them. Many patients may seem to be calm and say they have no fear. Often in such cases the pulse is the better guide. Some of the professional anesthetists call attention particularly to this danger with athletes. They need special care in preliminary treatment, and often require sedatives. An important point to observe in the operating room is not to converse. These patients hear and whether they understand correctly or not, put their own construction on what they hear.

THE TRANSPLANTATION OF DUCTLESS GLANDS

WITH REFERENCE TO PERMANENCE
AND FUNCTION *

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AND

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The transplantation of normal or tumor tissue is at present attracting wide interest among experimental physiologists and pathologists because of the many fundamental biologic problems which earlier work, both with tumor and normal tissue, uncovered. Among these problems probably the two that are being most actively investigated at present are (1) whether specific nerves (either secretory or regulatory) are necessary for the survival, growth and function of transplanted tissues, and (2) the problem of the reaction of the host to transplanted foreign tissues. For this work the so-called endocrine glands have obvious advantages over glands with external secretions, or the various connective tissues and, indeed, over tumor tissue.

In the course of our work during the past three years, we have studied the transplantation of ovary, suprarenal (cortex and medulla), spleen, parathyroid and thyroid of rabbits. Because the thyroid has several great advantages, namely, its accessibility, its wide range of morphologic changes, which are easily interpreted, and its specific iodine reaction, all useful in checking and controlling results, we have devoted more time and effort to the study of this tissue, and the summary to follow is based for the most part on our experiments with the thyroid gland. Our experience has been confined wholly to autotransplantation and homotransplantation, and for the sake of clearness it seems best to present the data under these two divisions rather than according to the tissues used.

AUTOTRANSPLANTATION

We have made nine experiments with ovarian tissue, transplanting in the subcutaneous tissues of the abdomen after removal of both ovaries. In all cases the stroma, interstitial cells and graafian follicles showed survival and growth over periods varying

from thirty-four to 219 days. Mature graafian follicles were recovered from two rabbits, associated with active hyperemia of the uterus and the typical phenomena of rut.

A point of practical importance which we have observed in the older transplants is the presence of hemorrhagic cysts, due to the fact that the ripened follicles rupture into themselves instead of onto a free surface as occurs in the normal, and these cysts ultimately produce pressure atrophy of the ovarian tissue. Apart from this complication, our work confirms that of many others that these autotransplants are permanent and show all the evidences of functional activity.

As a part of other experiments, we have made six autotransplantations of spleen tissue in the subcutaneous tissue of the abdomen, all of which were absorbed in twelve days.

Parathyroid tissue has accidentally been transplanted many times with the thyroid, and we have often found active normal looking parathyroid tissue in thyroid transplants when examined microscopically.

In the first 100 rabbits used, thyroid was successfully transplanted into ovary, suprarenal, spleen, jugular vein, muscle, subperitoneal tissues and into the subcutaneous tissues of the neck, chest and abdomen. In the second 100 rabbits, transplantations were made uniformly in the subcutaneous tissue of the abdomen, modified by one or more of the following conditions: with the thyroids intact, partially and completely removed; with and without removal of spleen suprarenals, ovaries, and testes; with and without the administration of phosphorus, and with and without the administration of iodine using both normal and hyperplastic thyroids. Of these factors, the removal of a large part of the thyroid gland or the administration of iodine materially modifies the growth and activity of the autotransplants.

Autotransplants uniformly "take" and "grow," the amount of growth being determined by the amount of thyroid removed and also by the administration of iodine or desiccated thyroid. Cristiani and von Eiselsberg also observed that removal of the thyroid caused compensatory hyperplasia of transplants irrespective of their location in the body. We can confirm this observation. In every instance, it was found that the histologic condition of the transplant was identical with that of the thyroid gland. Both undergo hyperplasia simultaneously and to the same degree, and both involute simultaneously and to the same degree.

Following the administration of iodine, transplants take up and retain it to the same degree as the thyroid gland. Many authors have stated that transplants of thyroid were permanent. We have observed transplants for more than a year through the phases of spontaneous and induced hyperplasia and involution, and can confirm the statement that they are permanent irrespective of their location.

Inasmuch as such transplanted thyroid tissue undergoes all the morphologic variations associated with growth and function that are observed in nontransplanted thyroid tissue, and inasmuch as transplanted thyroid shows the same reactions with iodine and the same storage of iodine as nontransplanted thyroid, we believe that this is sufficient evidence that such transplants may grow, involute or function equally as well as nontransplanted thyroid. We can not accept the belief held by some observers that specific nerves, whether secretory or regulatory, are nec-

* From the Laboratory of Experimental Medicine, Western Reserve University.

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ecessary for normal growth or functional activity of the thyroid. The evidence obtained from these observations suggests that the thyroid is truly a blood gland in that the stimuli causing either increased or decreased activity may reach it directly by way of the blood stream. These conclusions are based on the study of 289 autothyroid transplantations in 141 rabbits observed during periods varying from three to 381 days. In forty-one rabbits, only autotransplantations were made, and in 100 both autotransplantations and homotransplantations were made; in thirty-two of this 100, negative homotransplantations had preceded the positive autotransplantations.

HOMOTRANSPLANTATION

We have made twenty-six homotransplantations of sexually mature ovarian tissue, all but one of which showed complete absorption of the ovarian structure except for the interstitial and luteal cells. The one exception was probably an instance of the failure of the host to react to the foreign tissue in the usual way. The fact that the lipid cells of the ovary can survive upward of 193 days, while the stroma and egg cells undergo absorption in a few weeks, shows that in the lipid-containing tissue we are dealing with a different order of cells against which the host reacts very slowly, if at all. There is evidence from the standpoint of transplantation, as well as from that of embryology and morphology, that the cells of the suprarenal cortex belong to this series also. Repeated homotransplantations into the same animal of these lipid-containing cells of the ovary would probably determine whether or not the host eventually develops resistance to this tissue also. Up to the present we have not made sufficient experiments to determine this point. The two important facts observed in this series of homotransplantations of the ovary are that: (1) the host reacts in the usual way and usual time to the egg and stroma cells, and (2) the host reacts very feebly to the lipid containing cells.

We have made eighteen homotransplantations of the spleen, all of which were absorbed in twelve days.

Homotransplantations of thyroid were made in spleen, bonemarrow, suprarenal, ovary, testes, liver, muscle and subcutaneous tissue of neck and abdomen. Purely for the convenience of subsequent examinations, we have used the subcutaneous tissues of the abdomen for all transplants during the past two years. Up to the present we have made 567 homotransplantations in 205 rabbits of various ages. In 105 of these only homografts were made. As in the case of thyroid autografts, the conditions have been varied as follows: with and without removal of the thyroid, ovaries, spleen and testes; with and without administration of iodine and phosphorus, using phosphorized and iodized thyroids separately and together.

A tabulation of the results shows that complete absorption may take place as early as the tenth day, and usually occurs before the thirtieth day in cases which have not been previously homotransplanted. As is well known, repeated homotransplantation markedly accelerates the destruction of homografts, due to the development of an immunity, the nature of which is little understood. On the other hand, we have under observation two rabbits containing homotransplants of more than a year's duration, which grossly and microscopically resemble autografts. Between these two extremes, there are all gradations in the rate of destruction. This to our minds is the

most significant fact we have observed, and, in reviewing the literature, we have been unable to find reports dealing specifically with these variations in large series of nontumor transplantations.

A thorough understanding of these variations would go far toward explaining the causes of the failure of homotransplantation and, as the students of tumor point out, it is also the most important problem confronting them. It seems well established that these variations depend on the development of an immunity to a foreign protein (tissue), and tumor investigators have shown that the degree of foreignness of the tissue used is the most important factor in its development. A study of our thyroid material suggests that these variations in the rate of absorption may be due to intrinsic differences in the reaction of the host, quite apart from and in addition to the other important factor of the foreignness of the tissue used. In the series of 205 rabbits about 92 per cent. destroyed initial homografts in from ten to thirty days, and subsequent homografts, as is well known, were destroyed more rapidly. The remaining 8 per cent. of the rabbits showed strikingly less rapid reactions even though the same gland was used for the two groups in most instances, and the factor of blood relationship could be considered most remote. The following instance, of which there are several others in the series, may be mentioned in some detail in support of the foregoing statement.

The thyroid slightly hyperplastic, of Rabbit 233 was transplanted into three rabbits (Rabbits 226, 227 and 229), May 8 1915. Within thirty-seven days the transplant in Rabbit 226 was completely absorbed, and within ninety days the transplant in Rabbit 227 was absorbed, while the transplant in Rabbit 229 is still large and active after 400 days. June 14, 1915, the thyroid of Rabbit 263 was also transplanted into Rabbits 226, 227 and 229 and, in addition, as initial grafts into six other rabbits, and as second homografts into four additional rabbits. This thyroid (from Rabbit 263) had disappeared from all but one of the thirteen rabbits at the time of the first examination, the single exception being Rabbit 229, which still has a homotransplant of 400 days from Rabbit 223. This second positive homograft was removed at the two hundred and forty-third day, and in both gross and microscopic appearances had all the characteristics of an autograft.

These experiments show that one has to deal with variations in the resistance of animals, which is quite independent of the thyroid used. It is clear, therefore, that when one finds an animal in which an initial homograft is positive, subsequent homografts from unrelated animals may remain and act as autografts. On the other hand, we have never seen a positive homograft following an initial negative homograft, no matter what the age, sex or blood relationship of the rabbits used.

Turning now to the second factor in the variations of the rate of absorption, namely, the degree of foreignness of the tissue used, there is evidence that one can modify the rate of absorption by modifying the condition of the host and also the chemistry and physiologic activity of the thyroid used, as is demonstrated in the following experiments:

In three rabbits with thyroids intact (Rabbits 237, 238 and 239), potassium iodid was given in 20 mg. doses for two weeks previous to transplantation. These three were then partially thyroidectomized and transplanted on the left side from the thyroid of Rabbit 254, in which marked hyperplasia had been induced by a previous partial thyroidectomy. The same hyperplastic thyroid was transplanted into the left side

of two other rabbits (Rabbits 255 and 256) which had had similar previous partial thyroidectomies and whose thyroid stumps were hyperplastic. The iodized and quiescent thyroid of Rabbit 237 was at the same time transplanted into the right side of all five (Rabbits 237, 238, 239, 225 and 256). Subsequent examination of the thyroid grafts made from the hyperplastic thyroid into both the iodized and noniodized rabbits shows that in the two rabbits (255 and 256) with previous partial thyroidectomies absorption occurred in thirty days; while in the three iodized rabbits (237, 238 and 239) the grafts disappeared in one (Rabbit 237) after fifty days; in the second (Rabbit 239) it was positive and was recovered at necropsy 144 days later and in the third (Rabbit 238), the graft was positive at 149 days but had disappeared at the two hundred and first day.

Subsequent examination of the right thyroid grafts made with the iodized thyroid of Rabbit 237 shows that in the non-iodized rabbits (255 and 256) absorption occurred in the usual time, while in the two iodized rabbits (238 and 239), this thyroid was removed in one (Rabbit 239) at necropsy 144 days later, and in Rabbit 238 the transplant is still large and active at 382 days and resembles in all respects an autograft.

This series of experiments shows clearly that when iodized thyroid is homografted into iodized rabbits, the rate of destruction is markedly decreased. As iodine is a physiologic constituent of thyroid, and as these experiments show that its previous administration to both donor and host delays the rapidity of absorption of homografts, it seems certain that it is possible to modify the usual reaction of the host by strictly physiologic means. While iodine favorably affects the thyroid, there is no evidence that it has a similar action on other homografted tissues. Its influence on the fate of the thyroid homograft suggests, however, that it may be possible to modify the host's reaction to other homografted tissues through one or more of their specific chemical constituents.

SUMMARY

Concerning autografts we have been able to confirm the conclusions of others that thyroid when transplanted shows all the evidence of growth, function and permanence, and to the same degree, as does the non-transplanted thyroid. This work also shows that specific nerves, whether secretory or regulatory, are not necessary either for the control of growth or of function in the case of the thyroid.

Concerning the behavior of thyroid homografts, it seems established that both the host and the tissue used for the grafts modify their duration. These two factors may be quite independent, antagonistic to or helpful to each other. In the case of the thyroid this reaction may be modified by iodine.

Lastly, the future of tissue transplantation as a therapeutic means rests on a solution of the problem of the homograft, and it is also certain that whatever headway is made in overcoming the obstacles to homografting will to an equal degree be applicable to the solution of the tumor problem.

ABSTRACT OF DISCUSSION

DR. ROBERT T. MORRIS, New York: In trying to make rabbits immune to each other's serum, I found that apparently these rabbits absorbed the grafts more readily than rabbits not so treated. This testimony is negative so far as my intention was concerned, but positive in a way, showing that the serologists, at any rate, have a problem before them. Undoubtedly in making transplants we shall sometimes sensitize. In some cases in which we produce allergic phenomena with our transplants, we shall be enabled to

work out further treatment on the basis of the degree and effect of the allergic response.

Sometimes a graft may not serve as a graft, but may have other functions. A patient had lost both his testicles as the result of mumps. I grafted a testicle from another man. The testicle which I grafted gradually underwent absorption, but what happened was this: that graft stimulated the energy of the testicle that had been formed, and that young man now has a testicle one-third the normal size on that side, with full semiesthesia. We have an unlimited field. Supposing, for instance, that we might in the case of tuberculosis of the suprarenal glands transplant a normal suprarenal gland. I have done it, have folded it into the omentum. It takes kindly, and we may then relieve the work on the suprarenal gland, in such a way that even though the graft undergoes absorption, we may obtain some control over the tuberculosis by strengthening the part, and then increasing this patient's general resistance.

AMINO ACID NITROGEN IN THE SYSTEMIC BLOOD OF CHILDREN IN HEALTH AND DISEASE*

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AND

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MINNEAPOLIS

The recent trend of investigation in the field of metabolism has served to demonstrate the importance of the amino acids in the metabolism of the proteins. As was shown by Folin and Denis¹ and Van Slyke and Meyer,² amino acids are present normally in the blood. Final proof of this fact was furnished by Abderhalden,³ who succeeded in isolating and identifying several of this group of compounds from large amounts of blood, and by Abel, Rowntree and Turner,⁴ who obtained considerable quantities of amino acids from blood by their ingenious method of vividiffusion. From these and other observations the conclusion has been drawn that the digested proteins of the food are absorbed as amino acids and as such are transported to the tissues.

The amounts of amino acid nitrogen in the blood of different normal individuals or even of the same individual at different times have been shown by Van Slyke and Meyer² to vary widely, the amounts given by these authors ranging from 4.5 to 8.5 mg. nitrogen per hundred c.c. of blood. Numerous reports have been made of variations in the total nonprotein nitrogen of the blood in disease, and in urea nitrogen, which is the largest factor of the nonprotein nitrogen, but only isolated attempts have been made to discover whether or not the amino acids in the blood were subject to characteristic variations in pathologic conditions, and these with but indifferent success.

Segale⁵ reports an increase of amino acids in the serum in anaphylaxis. Kaplan⁶ and later Kaplan and McClelland,⁷ have reported that in syphilis the amino acid nitrogen in the blood is habitually low; but Ellis,

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* From the Department of Physiology and the Department of Pediatrics of the University of Minnesota Medical School and the Minneapolis City Hospital.

1. Folin and Denis: Jour. Biol. Chem., 1912, xi, 87.

2. Van Slyke and Meyer: Jour. Biol. Chem., 1912, xii, 399.

3. Abderhalden: Ztschr. f. physiol. Chem., 1913, lxxxviii, 480.

4. Abel, Rowntree and Turner: Jour. Pharmacol. and Exper. Therap., 1913-1914, v, 275.

5. Segale: Zentralbl. f. Biochem. u. Bioph., 1913, xv, 269.

6. Kaplan: New York Med. Jour., 1913, xcvi, 1172; *ibid.*, 1913, xcvi, 157.

7. Kaplan and McClelland: New York Med. Jour., 1913, xcvi, 157.

Cullen and Van Slyke⁸ failed to confirm their results. Rabinovitch⁹ reports extremely high amounts in the umbilical cord, 37 mg. per hundred c.c. in the fetal portion, and 137 in the maternal portion.

Foster,¹⁰ in studying uremia, although observing considerable variations in total nonprotein nitrogen and urea, reports that the amounts of amino acids remained normal. Gyorgy¹¹ observed an increase after bleeding. The reports of amino acid content of the blood in pathologic conditions are, however, very meager. In continuation of the work which we have reported¹² on the amino acid content of the blood of normal infants, which was found to average about 4 mg. of amino nitrogen per hundred c.c. of blood, it was decided to extend the observations to pathologic cases in order to determine whether or not there were any marked or characteristic departure from the normal. The discovery of such a characteristic variation might be of considerable diagnostic value, or even throw light on the etiology of the disease.

Observations were made on the amino acid content of the blood of somewhat over sixty children ranging in age from 1 month to 13 years. Of these, ten were normal healthy subjects. The remainder were suffering from various disorders as follows: scarlet fever, 6; diphtheria, 5; bronchial or lobar pneumonia with complications, 5; syphilis, 4; underfeeding with complications, 4; tuberculosis, 3; exudative diathesis, 3; atrophy, 3; nervous disorder, chorea and spasmodophilia, 3; measles, 2; nephritis, acute and chronic, 2; rachitis accompanied by varicella and abscess, 2; alimentary disturbances, acute and chronic, 2, and 1 case each of encephalitis, otitis media, Mongolian idiocy, tonsillitis, and ichthyosis.

The blood was drawn by hypodermic from the median basilic vein of the arm, or by Tobler's method from the superior longitudinal sinus, and immediately taken to the laboratory for analysis. The analysis was made by the method of Van Slyke and Meyer.² As the amounts of blood obtainable were often small, it was possible to make only about half of the determinations in duplicate. The quantities of blood used in each analysis ranged from 2 to 5 c.c. In one case (Case 34, pneumonia), however, only 1 c.c. of blood was used. Since the amounts of urea and ammonia in the blood are very small (the analysis was begun within one-half hour after taking the sample), correction for these two substances was made as suggested by Van Slyke and Meyer² by allowing the deamination process to run for a second period equal in length to the time for decomposing the amino acids, and subtracting the volume of nitrogen produced in this second period from that obtained in the first period. The figures reported in the accompanying table represent milligrams of nitrogen per hundred c.c. of blood.

It will be observed that the figures for normal children, as well as for those suffering from the wide variety of disorders observed, run on the whole somewhat lower than the average values reported by Van Slyke and Meyer for adults. In observing the figures classified according to disease, there appears to be no consistent or characteristic variation from the average

values observed in health. This is also true for high temperatures, those subjects suffering from a fever around 104 showing no consistent increase in amino acid nitrogen over the normal, as might have been expected from the increased destruction of tissue protein, although this fact might be accounted for by a corresponding increase in the destruction of the amino acids which were produced by protein hydrolysis.

As was the case in our observations on infants,¹² there appears to be no striking correlation between the amount of amino acid nitrogen in the systemic blood

OBSERVATIONS ON THE AMINO ACID CONTENT OF THE BLOOD IN CHILDREN

Case No.	Age	Condition	Time after Feeding	Temp.	Nitrogen per 100 C.c. of Blood, Mm.
40	10 mos.	Normal.....	4 hrs.	.....	4.59
32	10 mos.	Normal.....	7 hrs.	.....	4.46
33	13 mos.	Normal.....	7 hrs.	.....	2.37
35	5 mos.	Normal.....	6 hrs.	.....	3.28
36	2 mos.	Normal.....	6 hrs.	.....	2.05
49	8 yrs.	Normal.....	8 hrs.	.....	3.86
50	8 yrs.	Normal.....	8 hrs.	.....	3.71
21	5 mos.	Normal.....	4 hrs.	.....	3.18
22	7 mos.	Normal.....	4 hrs.	.....	3.44
59	6 yrs.	Normal.....	12 hrs.	.....	6.97
23	9 yrs.	Scarlet fever (convalescence).....	5 hrs.	.....	3.41
24	8 yrs.	Scarlet fever (3 days).....	6 hrs.	102.5	3.74
48	5 yrs.	Scarlet fever (5 days).....	5 hrs.	100	4.97
52	7 yrs.	Scarlet fever (2 days).....	12 hrs.	103.5	4.41
53	7 yrs.	Scarlet fever (3 days).....	12 hrs.	103.8	2.37
14	9 yrs.	Scarlet fever (2 days).....	12 hrs.	103	5.48
34	13 mos.	Bronehopneumonia and rachitis	24 hrs.	103.6	1.80
25	5 yrs.	Lobar pneumonia and empyema	6 hrs.	102	3.77
3	6 yrs.	Lobar pneumonia following measles.....	48 hrs.	104	3.74
18	6 yrs.	Lobar pneumonia (convalescence).....	15 hrs.	.....	3.52
38	2 yrs.	Diphtheria (nasal and faucial)...	12 hrs.	102	1.56
39	3 yrs.	Diphtheria (nasal and faucial)...	12 hrs.	103	3.22
44	3 yrs.	Diphtheria (laryngeal).....	4 hrs.	103.6	2.01
5	13 yrs.	Diphtheria (faucial).....	24 hrs.	103	3.45
15	4 yrs.	10 days (convalescent typhoid)...	4 hrs.	.....	3.32
51	9½ mos.	Syphilis.....	4 hrs.	.....	5.10
6	1 mo.	Syphilis.....	4 hrs.	99	3.94
7	2 yrs.	Syphilis.....	6 hrs.	.....	5.0
8	18 mos.	Syphilis.....	7 hrs.	.....	5.0
43	10 yrs.	Chorea and spasmodophilia.....	4 hrs.	.....	3.27
17	12 yrs.	Chorea (convalescent).....	15 hrs.	.....	3.91
61	9 yrs.	Spasmodophilia.....	12 hrs.	.....	4.16
12	3 yrs.	Tuberculosis (incipient).....	5 hrs.	.....	5.0
16	12 yrs.	Tuberculosis (gland and Pott's)	15 hrs.	.....	4.0
19	7 mos.	Meningitis and pertussis.....	6 hrs.	.....	2.72
29	5 mos.	Exudative diathesis.....	4 hrs.	.....	3.60
41	2 mos.	Exudative diathesis eezema.....	4 hrs.	.....	2.44
57	18 mos.	Exudative diathesis.....	4 hrs.	.....	8.48
37	2 mos.	Atrophy.....	6 hrs.	.....	2.46
20	1 yr.	Atrophy.....	4 hrs.	.....	5.67
58	2 mos.	Atrophy.....	4 hrs.	.....	6.2
27	4 wks.	Underfeeding.....	4 hrs.	.....	5.2
28	3 mos.	Underfeeding.....	24 hrs.	.....	3.21
46	2 yrs.	Underfeeding.....	5 hrs.	.....	5.74
55	5 mos.	Underfeeding.....	4 hrs.	.....	4.52
9	5 mos.	Enteritis (bloody stools).....	24 hrs.	100	3.42
10	11 mos.	Chronic alimentary disturbance and rachitis.....	6 hrs.	.....	2.98
56	3 yrs.	Rachitis and varicella.....	4 hrs.	101	2.95
47	3 yrs.	Nephritis (chronic).....	24 hrs.	.....	1.24
1	7 mos.	Nephritis (acute).....	24 hrs.	101	4.44
31	4 wks.	Measles.....	4 hrs.	100	2.77
45	4 yrs.	Measles.....	4 hrs.	103	3.45
11	5 mos.	Otitis media and atrophy.....	6 hrs.	101	3.87
26	3 mos.	Mongolian idiocy.....	4 hrs.	.....	5.10
42	7½ yrs.	Ichthyosis.....	6 hrs.	.....	4.20
40	7 yrs.	Tonsillitis.....	12 hrs.	100	1.22
13	1 yr.	Encephalitis.....	9 hrs.	99	6.27

of children and the time which had elapsed since feeding; the values obtained after from fifteen to twenty-four hours of fasting not differing consistently from those obtained from children which had been fed four, five or six hours previous to the taking of the sample.

SUMMARY

Although the amounts of amino acid nitrogen in the blood of children appear to be somewhat lower than the accepted values for adults, we were unable to detect any consistent or characteristic variations of amount in the specific diseases examined, and neither marked increase nor decrease in fever.

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STRABISMUS PRODUCED BY OPERATIONS FOR STRABISMUS

A CONSIDERATION OF CAUSES PRODUCING DEFORMITIES FOLLOWING STRABISMUS OPERATIONS, WITH SUGGESTIONS FOR CORRECTIVE OPERATIVE PROCEDURES *

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MINNEAPOLIS

Cases of strabismus which have been produced by operations performed to correct strabismus or heterophoria are not uncommon. Perhaps it would be better to call such conditions deformities. In these cases, one or more operations may have been performed. They may be classified under four heads:

1. Cases in which operations have failed fully to correct the strabismus, that is, wherein the strabismus remains, is undercorrected, or is increased.

2. Cases in which an over-correction has occurred and strabismus of the opposite kind, though in the same plane, exists.

3. Cases in which strabismus in a different plane has resulted, usually combined with one of the failures classified above.

4. Exophthalmos or enophthalmos.

CAUSES

In general, it may be said that few failures would result if all cases were thoroughly studied and the

3. What muscle or muscles should be operated on?
4. What method of operation should be practiced?
5. What treatment should be given subsequent to operation?

Class 1: *Incomplete results may be caused by insufficient tenotomy.* While it is never best to sever a tendon completely, it is necessary to cut all of the tendon fibers in one place or another in order to secure any relaxation, and if any fibers remain, failure to secure the desired effect will exist. In the operation of limited tenotomy in which the tendon fibers have been cut in one place or another (as shown in Figure 1) and relaxation does not occur, it is due to the

fact that there are some uncut fibers on one or both sides, and these should be engaged in the hook and severed.

A tenotomy may be insufficient and an advancement operation may be required in addition.

Cicatricial contraction following tenotomy of any kind may result in a reduction of the effect at first produced by the tenotomy. This may be prevented or minimized by making the conjunctival incision parallel to and at one edge of the tendon so that the

cut edges of the conjunctiva may not come in contact with the cut tendon.

Another very frequent cause of failure to secure the desired effect is through the performance of an *improper advancement operation*. It sometimes happens that sutures in an advancement operation may cut through the tendon of the muscle. It is very easy

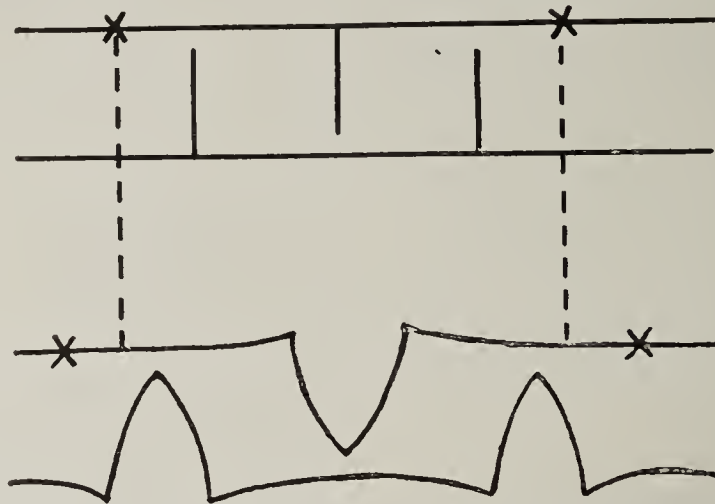


Fig. 1.—Diagram of author's method of limited tenotomy. The change in location of the crosses shows the lengthening which takes place.



Fig. 2 (Case 1).—Before operation; looking straight ahead.



Fig. 3 (Case 1).—After operation; looking straight ahead.

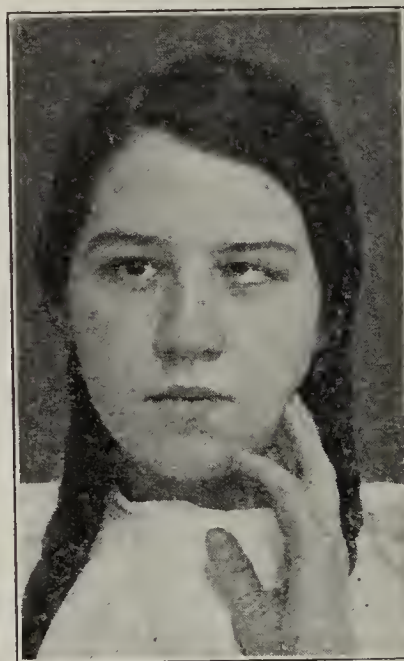


Fig. 4 (Case 1).—Before operation; extreme rotation to right.



Fig. 5 (Case 1).—After operation; extreme rotation to right.

indications for operations more carefully considered. The length of this paper does not permit of a discussion of these questions, but they involve these very definite considerations:

1. Should any operation be performed?
2. At what age should operation in the case under consideration be undertaken?

for this to occur if the sutures are merely inserted into the tendon, as they naturally pull in the direction of the fibers and cut through. In order to prevent this catastrophe, it is necessary to ligate the tendon in one manner or another. And again, the suture may cut through the sclerotic coat. This may be obviated if the suture is placed near the margin of the cornea and is well engaged in the sclerotic coat at right angles to the line of traction that it exerts. The force is

* Read before the Section on Ophthalmology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

thereby divided. Strong silk thread should be used. In case the suture cuts through the tendon or the sclerotic coat and the tendon has been severed, it may become completely lost, so that the effect of a tenotomy is produced, thereby increasing the degree of the strabismus already existing. Most forms of advancement operations do not permit of regulation, and the operator makes a guess as to the amount of effect that he will secure from his advancement operation. In other words, the results are governed by fate. There are now several operations which may be performed which will enable the operator to regulate the effect to some degree, and one of these methods should be selected.

Herein lies the advantages of a tucking operation. If the sutures slip or cut through, the tendon is not lost; but if properly inserted, they will not cut through or slip. The operation of tucking which I have described¹ not only holds the tendon firmly, but also permits of great advancement and of careful adjustment, and for these reasons seems to me to have distinct advantages as an advancement operation in squint.



Fig. 6 (Case 1).—Before operation; extreme rotation to left.



Fig. 7 (Case 1).—After operation; extreme rotation to left.

Class 2: These cases are also not uncommon. They occur very often as a consequence of the *performance of complete tenotomy on one or both external recti for convergent strabismus, bringing on a subsequent divergent strabismus*. Most of these patients have been operated on early in life, and are cases in which no operation should have been performed. Sometimes they are cases in which the wearing of glasses would have resulted in an eventual cure or in which the strabismus might have corrected itself at a later age. Some of them, however, are produced by operations in later life.

In these cases complete tenotomy has been performed on one or both muscles. *Rarely an advancement operation has been done in addition to the tenotomy*, but this is not commonly the case because the advancement operation seems to be avoided because of its greater difficulties.

The prevention of deformities of this class is thus apparent.

If an operator finds a greater effect than he desires to produce after tenotomy, either at the time of operation or a few days later, he should endeavor to recover the tendon and stitch it forward on the globe. If his advancement operation is too great, then he should be able to relax the tension, and if adhesions have already formed, the tendon should be hooked up and



Fig. 8 (Case 2).—Before operation; looking straight ahead.



Fig. 9 (Case 2).—After operation; looking straight ahead.

the eye forced toward the opposite side, thereby stretching or breaking the adhesions sufficient to secure the desired effect.

Rarely should a tenotomy be performed on young children; never until all other measures have failed after a long period of effort; never when any improvement is occurring as a consequence of wearing glasses, however slow the improvement, and never unless the case has been carefully studied and the proper operative procedure selected. It is impossible to tell what the conditions are going to be at a later period of life, and the chances of producing an ultimate greater and far more severe deformity (one which is still more difficult to correct) are more than even. It seems to be agreed that single binocular vision cannot be brought about after an early age. Tests and practice with the amblyscope may enable us to deter-



Fig. 10 (Case 2).—Before operation; extreme rotation to right.



Fig. 11 (Case 2).—After operation; extreme rotation to right.

mine whether or not such a prospect exists, and it may be wise in some cases to operate early if we feel that such operation may facilitate the production of fusion. I am sure from my experience, however, that it is sometimes possible to produce fusion and even stereoscopic vision in later life. I think the production of fusion and perspective are often facilitated by

1. Todd, F. C.: Extra-Ocular Tendon Lengthening and Shortening Operations Which Enable the Operator to Regulate the Effect, *Ophth. Rec.*, December, 1914.

accurate superimposition of the images, and that therefore it is important to secure an accurate correction when an operation is undertaken. If we are simply to secure a cosmetic result, I can see no reason why the operation should be performed until the patient has reached an age when local anesthesia may be used. In any event, if a tenotomy is to be performed, it should not be free and complete because the tendon may not become reattached to the sclerotic coat. The sclerotic coat is shiny and smooth, and unless denuded by trauma or in some other manner, the tendon will not reattach itself to the globe. A complete and free tenotomy is never necessary, for by cutting the tendon on either side in three places, it is possible to produce just as much effect as may be produced by complete tenotomy (Fig. 1).

Class 3: *If a complete and free tenotomy is performed, the tendon may fall back and reattach itself further up or down than was formerly the case, thus producing a complex strabismus involving a different plane. Advancement operations involving the severing of the tendon, which is then sutured to the globe, may alter the plane of action.* Herein again lies the advantage of the tucking operation.



Fig. 12 (Case 3).—Before operation; looking straight ahead.



Fig. 13 (Case 3).—Before operation; extreme rotation to right.



Fig. 14 (Case 3).—After operation; looking straight ahead.

Class 4: This class does not need much consideration. Exophthalmos may be produced by performing a tenotomy on two opposite muscles. This sometimes occurs when an operator seeks to correct an over-corrected strabismus which has been produced by a tenotomy. Exophthalmos thus produced by too extensive tenotomy may be improved by advancing the tenotomized muscles. Similarly enophthalmos might possibly be produced by too extensive advancement not accompanied by tenotomy.

THE CORRECTION OF DEFORMITIES

It is impossible to lay down any specific rules as to the correction of deformities produced by operations intended to cure strabismus, for, like plastic operations, each one is, to a certain extent, a law unto itself.

As a general rule, it is better to work on the muscle which has become wrongly attached, as where an internal rectus has been tenotomized, giving rise to a divergent strabismus, an effort should be made to find the internal rectus tendon and bring it farther forward on the globe. In this instance I find that the tendon

tucker is of great service, as it is difficult otherwise to secure sufficient hold on the tendon. With the instrument, the tendon may be forcibly brought forward and reattached. It may be necessary in order to relax the tension to do a limited tenotomy on the opposite muscle. *It sometimes happens that the tenotomized muscle cannot be found, for it has not become reattached to the sclerotic coat.* It is reasonable to believe that such a muscle has still some power, for the tendon is engaged in the capsule of Tenon and is prevented from slipping way back into the orbit by the check ligaments, and this opinion is confirmed by the results that I have had in advancing a mass of capsule. In those cases there has been secured sufficient power of rotation in the direction of the advancement to lead me to believe that the lost muscle has again become active.

Following is a description of the author's method of performing a capsular advancement operation where the tendon of the muscle cannot be found after it has been tenotomized:

An incision is made about a quarter of an inch from the margin of the cornea concentric with the margin. It having been found that the tendon is not attached to the globe, the

mass of capsule is engaged in a pair of broad fixation forceps, this mass being grasped well back and from the scleral surface of the capsule. The mass of capsule thus engaged is now twisted once around to give it body. It is now engaged with two sutures applied from within out, which are inserted deeply into the tissues. Each of the sutures is now inserted into the episcleral tissues near the margin of the cornea at right angles to the tendon. The under surface of the capsule that is to come in contact with the eyeball is slightly scarified, and the sutures tied. The effect is regulated by the distance backward that the sutures are engaged in the capsule and by the tenseness of the knot.

This operation was performed in Cases 3 and 4 (illustrated in Figures 12 to 18), and it may readily be seen what a tremendous benefit resulted from the operation. Rotation in the direction of the advancement thus made was very good, though, of course not complete. In both of these cases it was necessary to do a limited tenotomy on the opposite tendon; but the tenotomy in neither instance was sufficient to correct the defect. The further advantage of the advancement combined with the tenotomy is that whatever effect is secured by the tenotomy is thereby made permanent.

In case a deviation has been produced in a different plane, it will be found that the muscle which has been tenotomized has become reattached further up or down on the globe, giving rise to a deviation in the opposite direction from the place the tendon is attached, as was the case in Case 1 (Figs. 2 to 7); and it will be necessary to sever that portion of the attachment which is misplaced. The tendon then should be tucked and the portion that is folded reattached in the correct



Fig. 15 (Case 4).—Before operation; looking straight ahead.



Fig. 16 (Case 4).—Before operation; extreme rotation to right.

location on the globe, care being taken in the tying of the sutures so to regulate the effect as to correct the strabismus in the various planes. Here, too, it may be necessary to obtain a relaxation of the opposite muscle by the performance of a limited tenotomy.

ILLUSTRATIVE CASES

CASE 1 (Figs. 2 to 7).—*Alternating convergent strabismus since infancy*.—A. G., woman aged 19. Right eye converges 30 degrees when she fixes with the left eye. Left eye converges 20 degrees when she fixes with the right eye. Upward rotation of either eye when fixing with the other eye.

		EXAMINATION			
Homatropin Test	R + .50 ax 75	In	Out	Up	Down
	Versions	R 80	40	40	50
	L + .50 ax 105	L 70	40	50	60

Patient has had three operations, probably tenotomies of the internal recti and advancement of the left external rectus.

Operation.—Limited tenotomy of the internal rectus of the right eye and tucking of the external rectus, right eye. The attachment of the internal rectus was found to extend low down on the eyeball, accounting for the upward rotations. Severing of the lower portion of the attachment near the eyeball permitted the eye to drop to its normal position.

Final Results.—Cosmetic result shown by pictures. Rotations in various directions practically normal.

CASE 2 (Figs. 8 to 11).—*Divergent strabismus of left eye 35 degrees*.—E. L., woman, aged 19. The trouble came on one month after operation for convergent strabismus at 5 years of age (probably tenotomy left internal rectus).

		EXAMINATION			
Homatropin Test	R % + 1.25 C + 1.00 ax 95	In	Out	Up	Down
	Versions	R 45	60	40	60
	L % + .50 C + 2.75 ax 125	L 5	80	40	40

Left eye can turn only 5 degrees to the right.

Operation.—Under local anesthesia, a few fibers, evidently from the tendon of the internal rectus, were found attached well back to the globe. A tucking operation was performed, including a large mass of capsule to add strength. A limited tenotomy was performed on the left externus. Ten degrees overcorrection were produced to allow for stretching, and later regulation.

Final Results.—Result good, as shown by the illustrations. Rotation inward 35 degrees.

CASE 3 (Figs. 12 to 14).—*Divergent strabismus 40 degrees*. (Figs. 12 and 13).—K. K., woman, aged 27. Convergent squint developed at about 2 years of age. Wore no glasses. Was operated on some time between 6 and 10 years of age under general anesthesia. Patient does not know whether one or both eyes were operated on. Never had diplopia.

		EXAMINATION			
Homatropin Test	R % w + 3.00 C + 2.75 ax 85	In	Out	Up	Down
	Versions	R 45	55	48	50
	L % w + 2.75 C + 4.75 ax 85	L 10	70	40	45

It will be observed that rotations inward of left eye are only 10. This left internal rectus was severed. Probably no operation was performed on the right eye.

Operation.—Under local anesthesia (left eye). There is no internal rectus attached to the sclerotic coat, which accounts for the inability to rotate the eye inward. Limited tenotomy, three incisions (of external rectus). For advancement since no internal rectus tendon could be found, the capsule of Tenon was sutured to the sclerotic coat, as described elsewhere in this paper. Slight overcorrection was produced.

Final Result.—Final cosmetic result good, as shown. Inward rotation power left eye, 35 degrees. When patient fixes with the right eye the left eye is parallel. The patient can, but does not select the left eye for fixing; but if she fixes with the left eye, the right eye immediately diverges. Eyes remain straight because it is natural to use the right eye.

CASE 4 (Figs. 15 to 18).—*Divergent strabismus of left eye 40 degrees*.—R. P., woman, aged 18. There is some question whether this patient originally had convergent or divergent squint, but I believe it was originally a case of convergent strabismus despite the patient's statement. It was first noticed six weeks after birth. Patient has had left eye operated on three different times. First two operations in childhood and the last one three months ago. All these operations were on the left eye.

		EXAMINATION			
Homatropin Test	R — 1.00 C + 3.50 ax 45	In	Out	Up	Down
	Versions	R 55	45	40	55
	L + 2.25 ax 45	L 15	60	45	60



Fig. 17 (Case 4).—Before operation; extreme rotation to left.



Fig. 18 (Case 4).—After operation; looking straight ahead.

It will be observed from the illustrations and tropometer findings that the patient could turn the left eye to only a limited extent.

Operation.—On exposing the left external rectus, it was found that it had been previously cut, probably tenotomized. It was attached to the sclera over a considerable area and in a mass of scar tissue. A limited tenotomy was performed (left eye). An incision was made in the conjunctiva, and after it the usual attempt to find the internal rectus. No internal rectus was present. A capsule advancement, as

described elsewhere in this paper, was performed, attaching the capsule to the eyeball. Five degrees overcorrection were produced.

Final Result.—The illustrations show that the cosmetic result was good, and that rotation was very satisfactory in all directions. Tropometer measurements taken fifteen days after the operation on the left eye showed the following:

	In	Out	Up	Down
L	50	40	40	50

It will be seen that there was an inward rotation of 50 degrees against a former rotation of 15 degrees.

506 Donaldson Building.

A NEW SHORTENING TECHNIC

WITH REPORT OF FORTY-TWO OPERATIONS *

RODERIC O'CONNOR, M.D.

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OAKLAND, CALIF.

The basis of my claim as to the value of my operation is that it puts into the hands of the profession a method whereby the average oculist can get consistently good results (functional as well as cosmetic) if he will but study the theory of muscle work in order that he may be able to determine, in any given case, the proper muscle on which to operate.

If this claim is correct, and I hope to prove such to be the case, it necessarily follows that the vast number of cases, heretofore treated by temporizing measures, can be cured, and thus much time and suffering can be saved. The value of the method is therefore incalculable to that large class of people who have no access to those ophthalmologists who, by extended experience, are able to get good results from operations that are mechanically and surgically wrong in principle.

I feel that the foregoing statements are true because my results have been so consistently good—this in spite of the fact that my opportunities have been far less than those of even the average oculist. Therefore, I have to give credit to the method alone and not to any special abilities resulting from long experience in muscle work. I have been aided, of course, by my interest in and study of the muscle question so far as it has taught me to locate the muscle on which to operate. Any oculist can do the same and should, therefore, be able to equal my results.

I do not believe that the study of the extra-ocular muscle balance presents anything especially difficult, and do believe that the following are some of the causes which have operated to favor that idea:

1. A lack of agreement as to the cause of these imbalances, from which there naturally follows a lack of agreement as to the treatment. I myself favor the theory that the prime underlying cause is anatomic, consisting in anomalous development of the muscles which may show as either a defect in power to move the eye or as an excess in power.

2. The vogue of tenotomy, which, when complete, often made matters worse, and when of the partial variety often required repeated operations with failure at the end. The indications for tenotomy are rare, and in my opinion it should be done on the lateral muscles as the primary operation only in cases of moderate exophoria when combined with good convergence.

3. The uncertainty of results from shortenings and advancements except in the hands of those few who are qualified by long practice and special experience.

4. The reservation of operation to a place of last resort, thus prolonging suffering and possibly decreasing the chance of a good result from an operation too long delayed.

Therefore, in my opinion, it has not been the difficulty of the study so much as the frequency of poor results from operations, mechanically incorrect in principle, that has kept the profession, as a whole, from doing good muscle work.

It is also my opinion that the time is not far distant when operative muscle work will not be done "as a last resort" but will be done, like other operative work, on clear indications and at the earliest practicable moment. Nose and throat work when through many years during which most of the work was of a temporizing nature (like the average handling of muscle cases), till now it is recognized as an operative specialty, and the one who follows the older methods is put down as a "putterer."

SURGICAL PRINCIPLES

The avoidance of constriction of tissues by sutures and of tension on sutures are such well established surgical principles as to need no more than mere mention. The advantages of my shortening method all flow from the fact that neither of these are violated, in this respect being the only method which does not violate them.

In suturing tendons of muscles that move the extremities, tension can usually be avoided by properly positioning the part so as completely to relax the muscle whose tendon is sutured, and maintaining this position by splints during the healing period.

In suturing tendons of the ocular muscles this cannot be done, and so constriction and tension have been considered as necessary evils. In order, therefore, to lessen the unavoidable loss in effect following advancements, much time and thought have been given to securing firm anchorages for the sutures so as to hold the tendon forward as long as possible and thus give time for union to occur. Also the necessity for marked overcorrection has been emphasized in order to increase the chances of the final union occurring at approximately the point desired. This, in itself, was a cause of trouble, as it greatly increased the tension on the sutures unless the opponent was cut.

Binocular bandaging, as the closest approach to splinting possible, was advised, and Worth considers ten days in bed with both eyes bandaged necessary to insure a good result.

All these difficulties are enough to make the occasional operator (not to speak of his victims) hesitate, and have served to make tenotomy the operation usually done, although, in my opinion, it is seldom properly indicated.

The mechanical factors that operate against successful results in advancements are:

1. Constriction of tissues by sutures or ligatures.
2. Tension on point of union by the operated muscle and its opponent.
3. The anatomic formation of the tendons with their parallel fibers but loosely held together.
4. Stretching of the operated muscle, causing paresis.
5. Retraction of the globe into the orbit.

* Read before the Section on Ophthalmology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

Constriction of itself, even though there be no tension, is sufficient to produce sloughing of the constricted tissues. This sloughing produces a loosening which in turn permits the tendon to slip back through the now loose suture loop. These sequelae are increased by the tension of the operated muscle and its opponent through their tone when at rest and their contraction when in action.

Paresis from stretching should be only temporary, and this may explain those of my cases in which the immediate effect was apparently insufficient and yet the final was full.

Retraction into the orbit I believe does occur and especially in shortenings of the interni. My results in such cases have been much less in operating on the interni than the externi, even though the actual amount of shortening of the tendon itself be the same. My case reports show this. My idea of the explanation will appear later when considering Landoldt's statement that a permanent overcorrection from advancing an internus is impossible.

Overcorrection, in my opinion, should never be necessary with an operation correct in principle, unless to allow for retraction into the orbit. This has turned out to be true with my method, for in all my cases of esotropia, since I have learned the importance of a wide band, the effect has actually increased during the healing process, even though both eyes be left unbanded for use in the ordinary occupation of the patient. Figuring from the circumference of the globe, we know that the contraction of a muscle equal to 1 mm., with the attendant relaxation of its opponent, will rotate the eye through an arc of 5 degrees. The normal inward rotation (55) plus the normal outward rotation (45) makes a total arc of about 100 degrees. This means that each horizontal rectus varies its total length about 20 mm. from extreme contraction to extreme relaxation.

The points of this observation are:

1. In the primary position there must be considerable tone in the muscles.
2. In cases of concomitant squint, in which the actual rotations are not far from normal, there should be no call for tenotomy to aid an advancement, if the advancement be correct in principle; for by our rotation measurements we have proved the ability of the opponent to relax far beyond the point at which we wish to place the deviating eye. The need for tenotomy, in my opinion, depends on the presence or absence of contraction in the opponent which would be shown by the rotations.

DEVELOPMENT OF THE METHOD

In the fall of 1911, when stationed in Southern Arizona with a cavalry regiment, and therefore riding a great deal, the idea occurred to me that an ocular tendon could be shortened in the same way that saddle girths are shortened when for any reason a smaller one is needed but unobtainable. This is done by looping each strand of the girth about a piece of rope laid transversely. The girth is shortened approximately the circumference of the rope used. It is clear that the rope takes the constriction of the strands of the

girth, and for that reason there is no tendency to cut the girth.

In applying this method to an ocular tendon, all that is necessary is to divide the tendon into several strands and use catgut as the shortener. Figure 1 (A and B) shows in a diagrammatic way the method of placing the gut and the appearance after the looping is complete. In this method, while secure, I considered it possible that on absorption of the gut the loops might straighten with loss in effect. Therefore I thought it safer to shorten a band on each margin of the tendon wide enough to take the full muscle action, and then to suture the central section forward an amount equal to the marginal shortening, which would free it from all tension during the healing. At the same time it was thought better to increase the effect by making a double loop. Consequently my work has been in the latter procedure. However, I have had several cases in which my effect was permanent from dividing the tendon into several strands and looping each, so apparently my first fears were without foundation. I now believe, therefore, the first method will prove to be all right for phorias in which a low effect is desired (Case 25).

It is apparent that the mechanical shortening of the tendon is certain, and can be varied as desired. The shortening in the total muscle is not so certain, but depends on its own power as well as that of its opponent. I can state positively, however, that no loss can occur at the point of shortening if the loops are properly placed and if the retaining ligature is not tied so tightly as to cut the tendon bands.

TECHNIC IN DETAIL

A. Exposure of the tendon.

1. The conjunctival incision is curved, its summit being a little external to the center of the scleral insertion of the muscle; the ends are opposite their respective tendino-muscular junctions and distant therefrom about 3 mm.

2. This flap must be laid well back (Fig. 2 a) as much as possible by blunt separation to avoid hemorrhage.

3. Undermine the conjunctiva toward the cornea (Fig. 2 c) to make a space for the central section of the muscle.

4. Nick capsule of Tenon at one margin of the tendon, and lift entire tendon with its capsule on a strabismus hook. In this way the possibility of cutting a fragile tendon is avoided.

5. The incision of the capsule of Tenon follows in a general way that of the conjunctiva, and the capsule is laid back (Fig. 2 b) from the surface of the tendon by blunt dissection as far as possible. This separation may be more easily started a couple of millimeters back of the insertion, where it is freely movable and not adherent to the tendon as at the insertion.

6. It is important to have the entire tendon in full view in the subsequent steps; therefore its margins must be free in their entire length from the insertion to the muscle substance (Fig. 2 d).

B. Tendon splitting.

1. Separate a strip of tendon from each margin about 2 mm. in width and extending from close up to the scleral attachment out to the muscular portion. This must be done bluntly, and an eye spud makes a convenient instrument. It is important to have the tendon strips of practically equal width (Fig. 3 a).

2. Ligate the remaining central section of the tendon about 4 mm. from the line of insertion (Fig. 3 b), using 00 or 000 catgut. Cut one end close, leaving the other long for traction

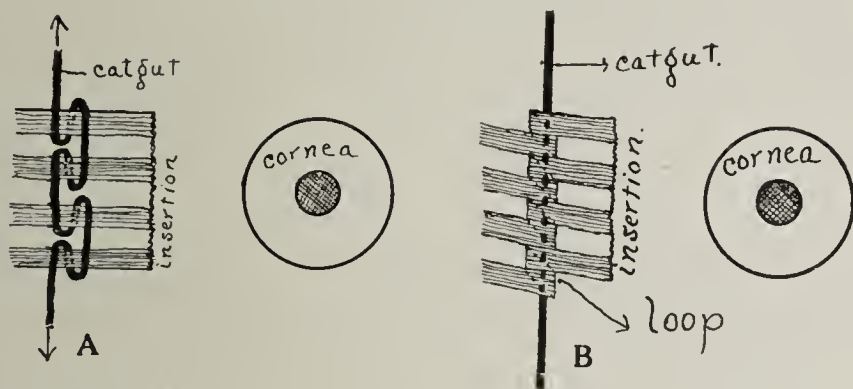


Fig. 1.—Method of placing gut, and appearance after looping is complete.

purposes later. Cut this central section about 3 mm. from the insertion and lay it back out of the way (Fig. 3 c).

C. Separate body of muscle from any possible adventitious attachments to the sclera.

D. Shortening the marginal strips.

1. Use 20 day Lukens catgut because it contains no irritating substance, such as chromic acid, which might cause a reaction.

2. It must be made completely flexible by soaking in tepid sterile water. This is very important, for if the least stiffness is present, the succeeding steps are made more difficult.

3. Double the strand, which should be about 10 inches long, and pass the center loop under one marginal strip, using a small hook to help draw the loop under the strip (Fig. 4 b).

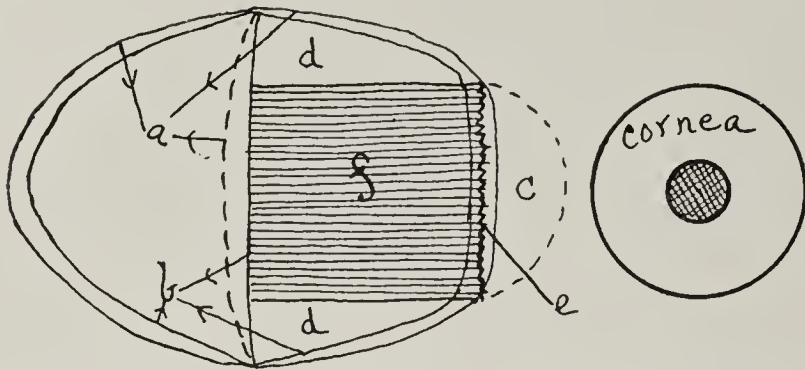


Fig. 2.—Exposure of tendon: a, outlines of conjunctival flap; b, outlines of flap in capsule of Tenon; c, area of undermined conjunctiva; d, sclera-clear view of and easy access to margins of tendon; e, line of insertion on sclera; f, tendon.

4. Draw the two ends through the loop (Fig. 4 c), and pull down fairly snugly around the center of the strip, thus making a double half hitch. It is *very important* to have the loop in the center for, if too close to the line of insertion, there may not be enough length of tendon to make the loop on that side.

5. Arrange the ends as shown in Figure 6 a, for if crossed as shown in Figure 6 b, the next step cannot be accomplished properly.

6. Straighten the catgut by drawing the ends in *opposite directions*, whereupon the double loop will be transferred and now appears in the tendon, the gut being straight (Fig. 6 c).

7. The assistant must hold the catgut taut during the succeeding steps.

8. The two tendon loops are slid into *close contact* with each other by pinching with iris forceps. This is *very important*, for it serves to take the slack out of the catgut and thus prevents the retransfer of the double loop back to the catgut.

9. These loops are held in this close contact by a 00 or 000 catgut ligature (twenty day) placed as shown in Figure 6 c (the white knot). It is not tied tightly, for it is not intended as a suture, but merely to prevent a retransfer of the double loop. Cut ends close.

10. Cut ends of large catgut as shown in Figure 6 c at the black lines on each side of the loop, which shows diagrammatically the appearance of one marginal shortening completed.

11. Shorten the other marginal strip.

E. Suturing central section. A double armed thread of 000 twenty day gut is used, the two needles being passed through the tendon stump from below as shown in Figure 4 c, thence through the central section, thence through the capsule of Tenon, and tied as shown in Figure 5 c, the assistant holding the tendon forward by gentle traction while the tie is being made. The traction end is then cut off.

F. Conjunctival Suture. I now use kangaroo tendon divided finely so as to pass easily through the eye of the finest eye needle. The needle pierces one margin of the wound from below, and passes over and pierces the other margin from without. As the tie is made the conjunctiva everts, but on cutting the two ends it returns to position, carrying and burying the knot. Place as many as needed to close the wound properly. As all the knots are buried, there is nothing to irritate the palpebral conjunctiva, and so patients complain of but little pain.

G. Bandage the one eye for two or three days for protection only.

To repeat, the points essential to success are:

1. A clear field of operation with the entire tendon in view.
2. Placing the catgut loop the proper distance from the insertion.
3. Sliding the tendon loops into close contact and retention in that position by the ligature of fine catgut.

COMMENT

1. There is no constriction in the marginal shortenings, which are by loops, not sutures. These loops of tendon constrict the catgut, not themselves.

2. The suture holding the central section is free from tension—the marginal strands taking the full muscle pull even when in action. Therefore there is no need for overcorrection.

3. For these two reasons there can be no loss of effect through slipping or through cutting and sloughing of sutures.

4. Before the catgut can be absorbed, the central section is firmly united to the sclera.

5. The "bunch" is not large.

6. The effect is necessarily straight forward; therefore no torsion or vertical deviation can follow.

7. There is a *definite shortening in the inelastic tendon* equal to twice the circumference of the catgut used plus the length taken up by the overlapping and thickness of the marginal strip.

8. The amount of shortening may therefore be varied by (a) the size of gut, and (b) the width of the tendon band. It is possible to graduate the effect to correct phorias as well as tropias, as shown by the case of seven degrees of esophoria. The wider the band the greater the effect, owing partly to the actual length taken up in the loop, but chiefly to the fact that more muscle fibers are thus allowed to take the strain of the shortening. The narrower the band, the fewer the fibers and the greater the chance for loss in effect from stretching. I feel certain that this explains some of my early insufficient results.

9. The tendon shortening does not, of course, represent the total, for the muscle fibers are elastic and must stretch a variable amount, depending on the power of the muscle itself and that of its opponent. This, there-

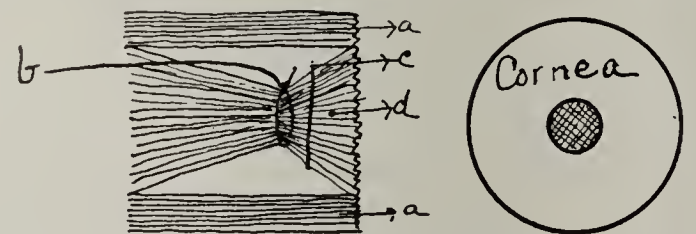


Fig. 3.—Tendon splitting: a, tendon strips separated; b, ligature of central section, one end left long; c, line of cut across central part; d, scleral stump of tendon.

fore, I believe to be the only unknown quantity in this operation.

10. It can be done as an office operation, as shown in practically all my cases. This is so because the shortened marginal strands are able to take the full muscle pull. To determine this positively, I operated a number of times on pig's eye muscles. After shortening a strand of tendon I would apply force until rupture occurred, and in every case it took place at the tendon-muscular junction and without affecting the point of shortening. If Howe is correct in stating that the internus has a maximum lifting power of but 1 ounce it is clear that by no possibility can the point of shortening be affected by the full muscle pull plus that of its opponent.

11. This splint principle can be used in connection with almost any of the other types of advancement, for: (a) the central section may be resected, tucked, or actually advanced, using scleral or other sutures, and (b) a central band may be shortened and the lateral portions be handled as in Worth's and similar methods.

12. Several of my cases show that the marginal shortenings are permanent even after the catgut is absorbed. Therefore the method can be used to correct torsions as follows:

(a) One margin may be shortened and the other left untouched (Case 30).

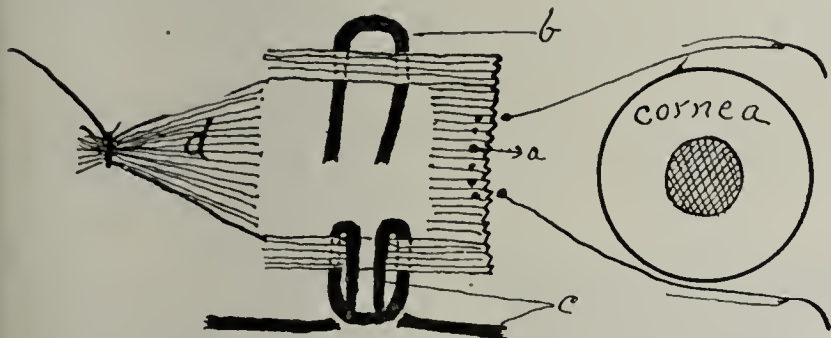


Fig. 4.—Shortening marginal strips: a, suture loop under scleral stump; b, catgut loop under tendon strip; c, ends of catgut drawn through loop around tendon strip; d, central section held back; e, needles of double-armed thread.

(b) Both may be shortened, but one more than the other, using different size gut and bands.

(c) One margin may be tenotomized, and the other shortened. This would be the equivalent of Steven's "extendocontraction," with the "contraction" a closer approach to certainty.

13. Size of catgut. The case reports show my results and show that the same result is not always secured from the same size gut. A great deal depends on the condition of the muscle. Outside of this I now believe that the width of the marginal band influences the result as much if not more than the size of gut.

14. There is one point in muscle work which I think is explained by my results, and that is the fact that an overeffect from advancement of an internus is unknown unless the externus be cut. By my method the possibility of loss at the seat of operation is eliminated; therefore the reason must be an anatomico-mechanical one. It is well known that, in shortening an internus, and thus rotating the globe, we put the externus on a stretch—the equivalent of also advancing it. Owing to the fact that the externus wraps around the globe (contact arc) to a much greater extent than the internus, it has a greater leverage. The globe under this double pull must go into a position in which the two forces balance (parallelogram of forces) and therefore must recede into the orbit. The mechanism is probably similar to those cases of divergence with insufficiency of convergence attended with retraction into the orbit on attempts to converge.

This result does not occur to such an extent when shortening an externus, because, while the internus is likewise strengthened, its leverage is not increased by an increase of its wrap about the globe. In the primary position the internus has but little contact with the globe as compared with that of the externus. Figure 7 shows this more clearly than any description. The less the degree of divergence, the less effect proportionately, till in pure cases of insufficiency of convergence the distant balance remains unchanged in spite of the enormous increase in the power of con-

vergence secured, all of which bears out this idea and Landolt's statement.

Using this operative procedure, it is my opinion that shortenings should be the operation of choice, reserving tenotomies as a means of "fine adjustment" to correct any remaining deviation. In this connection and at this time I believe that my multiple incision method will give all the effect desired. In one of my cases in which there was a remaining exophoria after shortening both interni, it gave me 22 prism degrees of effect, 18 of which were over. I had to fish in and suture forward finally, securing orthophoria. This is cited to show that it will afford enough effect.

Finally, I wish to say that I have found it desirable to shorten the interni under general anesthesia because of the lack of space in the inner canthus. The manipulations are felt too much at the origin of the muscle.

REPORT OF CASES

CASE 1.—This was to determine the practicability of the technic, and was on a blind eye exotropic about 15 degrees. Using a No. 3 gut, a complete immediate effect was secured which had diminished very little two years later.

CASE 2.—This was one of about 20 degrees alternating exotropia in which by two operations five months apart a perfect result was secured. In each operation No. 3 gut was used.

CASE 3.—One of 22 degrees esotropia in which about 15 degrees of permanent result was secured, No. 3 gut being used. Second operation refused, patient being satisfied with the cosmetic result from the first.

CASE 4.—One of 15 degrees esotropia in which a complete result was secured in one operation, No. 3 gut being used.

CASE 5.—One of about 35 degrees esotropia in which three weeks after operation there was lateral orthophoria and binocular superposition from one operation, No. 4 gut being used.

CASE 6.—One of 50 degrees esotropia in which by a double externus shortening at one sitting was secured about 40 degrees of correction; No. 4 gut was used.

CASE 7.—One of 50-60 degrees exotropia in which parallelism of the visual axes was secured from one operation, No. 4 gut being used.

CASE 8.—One of 18 degrees esotropia in which the immediate effect was only about 10 degrees, in spite of using No. 4

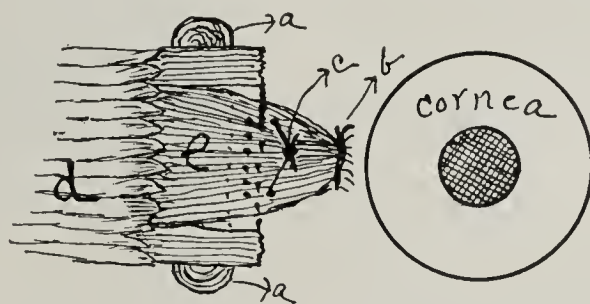


Fig. 5.—Suturing central section: a, bunches on marginal strips from looping; b, knot of traction ligature on central section; c, tie of suture holding central section forward; d, muscle; e, tendon.

gut. Three days later a gonococcal conjunctivitis developed and ruined any chance, so that the cause of the poor immediate effect will never be known.

CASE 9.—One of 20 degrees esotropia in which an immediate effect of at least 10 degrees over-correction was secured, No. 4 gut being used. Three weeks later the condition was reported to me as one of "perfect correction."

CASE 10.—One of paresis of right external rectus of a year's standing, the result of fracture of base of skull. Binocular field was but 8 degrees to the right while the actual rotation was 40; about 13 degrees less than that of the other eye. No. 3 gut was used, as only a small effect was desired. Twenty days after the operation the rotations were normal with no diplopia, which had been very annoying before. Six months later the result was reported as perfect, there being no diplopia with normal rotations monocular and binocular.

CASE 11.—One of 20 degrees esotropia in which a marked overcorrection was secured by a No. 4 gut. This diminished somewhat in the succeeding days, but I had a report stating that six months later there was but 2 degrees remaining esophoria with binocular vision and full comfort in the use of his eyes.

CASE 12.—One of 15 degrees esotropia in which the immediate effect was sufficient—a No. 3 gut being used—but six months later the condition was reported as having 7 degrees remaining esotropia. This could easily be corrected by a second operation on the other eye.

CASE 13.—One of 70 degrees paralytic external squint of the right eye due to a third nerve paralysis of over twenty years' duration. There was absolutely no power of adduction, the eye being set in the excessive divergence. The eye was blind for all practical purposes, having only $10/200$. It was made clear to the patient that by no chance could a complete straightening be obtained, but she said she would be satisfied if it could be gotten anywhere "to the front." In this case the central tongue was simply laid forward on the sclera, dependence being placed entirely on the marginal shortenings. No. 4 gut was used, and two weeks after the operation the divergence was 20 degrees, giving a result of 50 degrees. In this case, though, a complete tenotomy of the tendon of the externus was done. It seemed as though there was an attempt at adduction made but not a useful amount.

May 24, two and one-half months after the operation, the deviation was between 15 and 20 degrees measured on the perimeter, showing a slight gain. She also had gained a slight power of inward rotation.

CASE 14.—This case measured close to 35 degrees deviation inward of the right eye by perimeter and phorometer. In this case also only a cosmetic result was looked for, owing to a marked impairment of central vision due to an old macular hemorrhage. A tenotomy of the internus had been done in the fall of 1914, limited to the tendon proper but without much permanent effect. The right externus was shortened by my method, May 29, using a No. 4 Lukens gut and suturing the central tongue with a 000 forty day Van Horn gut. A slight immediate overcorrection was secured; possibly 5 degrees. This was to naked eye appearance, and most likely due to a slight corneal decentration, as two weeks later the eye tested practically straight on the perimeter. The patient went to her home in Stockton and informs me that she took the bandage off the operated eye the next day and went to her work as stenographer the second morning, and has not lost an hour from her work because of the operation. After four months the eyes were still parallel both to appearance and tests, and there was binocular fusion of red and white images in the red glass test.

CASE 15.—One of 50 degrees (arc) concomitant esotropia with marked amblyopia in right eye. The right externus was first shortened, No. 4 gut being used. The immediate effect was markedly insufficient, but at the end of two months there was but 10 degrees remaining deviation. At this time the left externus was shortened, which completed the cosmetic result. After this the patient began to have trouble from a 19 degree hyperphoria, which was not expected because of

the poor vision. For this the right inferior rectus was shortened, using 00 gut for fear of overcorrection. This was an error of judgment, as practically no correction was secured. She is now waiting for vacation for me to repeat this operation.

CASE 16.—One of paresis right superior rectus with a downward deviation in this eye of 40 degrees. The patient had but 10 degrees upward rotation. She was able to fuse images only in the lower limit of the field. This forced her to hold the chin high, which caused pains in the back of the neck. The right superior rectus was shortened, No. 4 gut being used. Under local anesthesia it was a difficult operation. At the eleventh day she was able to fuse images to a point 10 degrees above the horizontal, as determined on the perimeter. At this time she left for her home in the interior of the state with the understanding that she was to return for operation on the inferior rectus of the other eye. I have been unable to get a further report from her.

CASE 17.—One of 22 degrees concomitant esotropia with normal vision in each eye. Right externus was shortened, No. 4 gut being used, with an immediate overcorrection of about 10 degrees. Final effect at end of 4 months: esophoria 1 prism diopter by phorometer; no cyclophoria; no vertical deviation; convergence to 2 inches; stereoscopic binocular vision; prism abduction 17 degrees; a perfect result.

CASE 18.—One of 35 degrees divergence of left eye with a parietic condition of its internus as shown by defective inward rotation. This eye was practically blind from large colobomas of choroid, lens and iris, and was myopic about 20 D. Moreover, each cornea was decentered in 10 degrees. The right eye had the colobomas as in the left, except that the macular region was not involved and the vision was $20/30$, there being but a low error. The left internus was shortened, No. 4 gut being used, with an insufficient result, as the muscle was extremely fragile. Therefore the opponent was cut, allowing a full result. She left for her home in Utah at the end of two weeks when the visual axes were parallel, but there was an apparent divergence due to the corneal decentration. I have had a number of reports stating that this condition is maintained.

CASE 19.—One of epilepsy with 7 degrees exophoria and insufficiency of convergence, as shown by diplopia at 8 inches. This was my first case of the kind, and proved to my satisfaction that an overcorrection from shortening an internus is impossible. The first operation was on the left internus, No. 4 gut being used, and a marked convergent squint resulted. This entirely disappeared so that at the end of two months he still had his 7 degrees of exophoria, but could now converge easily to 3 inches from centers. A partial tenotomy of the left external rectus was now done, which as a final effect reduced the exophoria to 5 degrees. As his convulsions had markedly diminished in frequency and severity, we decided to camp on the trail of the deviation, so the right internus was shortened, No. 3 gut being used. Again a marked convergence resulted which disappeared, leaving an exophoria of 3 degrees as a final result with a convergence to $1\frac{1}{2}$ inches from centers. At this date the right externus was cut by my multiple incision method, cor-

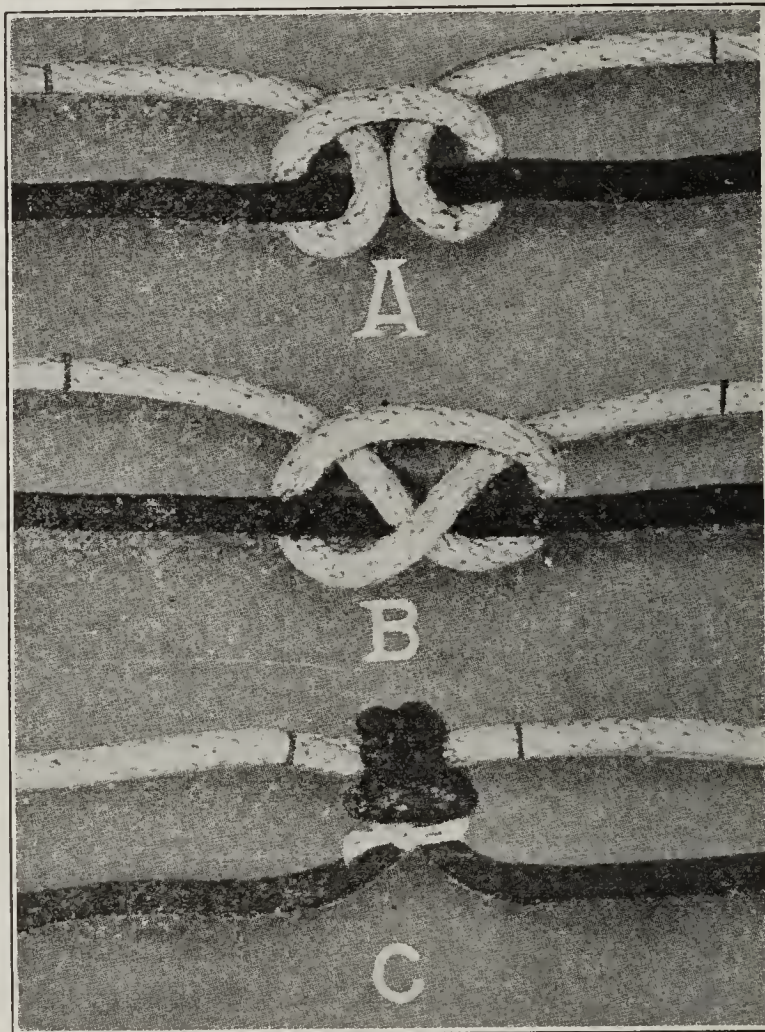


Fig. 6 shows at A the proper arrangement of the catgut ends before straightening; at B the improper way and at C the appearance diagrammatically of a completed marginal shortening.

recting to 6 degrees esophoria, which had increased to 18 in two days. This was corrected by a mattress suture so that at last was secured a condition of full orthophoria in all directions. His convulsions are much less frequent, and he is now able to get along without bromids.

CASE 20.—One of 35 degrees esotropia (concomitant) with vision in each eye approximately normal. Left externus shortened, No. 4 gut being used, with an immediate effect about 5 degrees under. During the subsequent two months the effect progressively increased till the final stage, when there was an exophoria of 6 degrees by phorometer. At this time there was no cyclophoria and no vertical deviation; prism abduction 18 degrees and binocular vision by superposition as shown by fusion of red and white images and absence of stereoscopic vision.

CASE 21.—One of paresis of right externus since childhood. Outward rotation was but 15 degrees, and she had to look to the left to avoid diplopia. The muscle was shortened, No. 3 gut being used, producing an evident divergence. Condition at the end of six months: binocular vision easily in the primary position and by a special effort as far as 30 degrees to the right; no vertical deviation or cyclophoria; rotates eye out 40 degrees, an increase of 25 degrees; non-comitant esophoria 10 in right and 20 in left. Her singing voice much better, owing to the ability to carry head in normal position, thus avoiding tension on neck muscles.

CASE 22.—One of developing exotropia, the screen deviation being 25 prism degrees. Diplopia cannot be elicited, owing to habit of suppression. However, he can hold eyes in convergence for an instant, and the amblyoscope shows presence of binocular stereoscopic vision. He is a student and has constant headaches. Aug. 30, 1915, the left internus was shortened, No. 4 gut being used. Six months after operation he tests as follows: orthophoria at 20 feet; exophoria 4 at 13 inches, converges easily to 3 inches from centers; reports entire absence of headaches since operation, and has been at his college work continuously since two weeks after its date.

CASE 23.—One of 15 degrees esotropia. Had an advancement of right externus with complete tenotomy of its opponent three years ago. That eye could rotate inward only 35 degrees, owing probably to the tenotomy. Left externus shortened, No. 4 gut being used, with the production of a marked divergence; so she was permitted to do without the bandage and directed to rotate eyes in order to lessen the effect. At end of two weeks she had 5 degrees of esophoria, which was entirely corrected by her high hyperopic correction. She then disappeared to her home down the state, and I have not heard from her.

CASE 24.—One of 20 degrees right exotropia due to paresis of right internus shown by defective inward rotation. Only a cosmetic result desired, as vision in O. D. was but $\frac{2}{200}$. The right internus was shortened with the production of a slight convergence. It was found to be very fragile. This lessened in the succeeding days, and as she complained of a pulling pain in the outer side of orbit, it is probable that a tense externus stretched the parietic internus. One week after operation there was 10 degrees exotropia, so that externus was cut according to my multiple incision method. This made eyes parallel, which she had maintained at the end of two months.

CASE 25.—One of 7 degrees (prism) esophoria with headaches. Left externus shortened, using 00 gut and dividing the tendon into five narrow strips, each of which was shortened in the same way. Immediate effect was orthophoria; the final effect at end of two months was 1.5 degrees of esophoria and absence of headaches.

CASE 26.—One of 40 degrees concomitant esotropia; some amblyopia in squinting eye. Left internus shortened as in previous case, but using three tendon strips and No. 3 gut. Final effect at end of two months was 6 degrees—prism—

esophoria remaining when wearing correction. This case also improved in effect during the healing period.

CASE 27.—One of 30 degrees esotropia with normal vision in each eye and binocular stereoscopic vision. Right externus shortened, using No. 3 gut and a narrow band with the idea of getting a half correction in this eye and the remainder at a second operation on the other eye. No bandage was used, and she got to wearing her correction the afternoon of the operation. Four days later she had 10 degrees arc remaining. This rapidly diminished till at the end of six weeks she had but 3 prism degrees of esophoria. At this time she had 19 degrees prism abduction and entire comfort in the binocular use of her eyes.

CASE 28.—Another case of epilepsy with exophoria of 18 prism degrees. Some time before both externi had been cut by an oculist of Los Angeles without any final effect on the deviation or symptoms. I figured her to have a case of what Volk calls dextrophoria, as her rotations to the left were defective in each eye. So I shortened her right internus, using No. 2 gut and a narrow band. This was an error, and was somewhat in deference to her father's idea, he being an oculist. Only 8 degrees of correction were secured, and without any change in her epileptic attacks. Nine days after the shortening I cut the outer two thirds of the right superior and inferior rectus, because of an idea that they might be the cause of poor result from the complete tenotomies of the externi. The cutting was stopped when she tested exophoria 1 degree and no cyclophoria. This diminished somewhat, so that at the end of twelve days she had 4.5 degrees of exophoria by the screen test and convergence easily to 2 inches. Her epileptic seizures now practically stopped, except when she tried to read. Before this she had to have both eyes absolutely occluded to prevent them. She then went home to Los Angeles. The last report from her father was six weeks later to the effect that she had no trouble except when reading, which would cause a return of her petit mal. In this letter he seemed so positive that all my ideas on the case were wrong that I replied to the effect that "too many cooks" had a bad effect, and if he wanted me to complete the case he would have to leave it entirely to me. This was two months ago, and I have had no reply; so his frame of mind can be easily imagined. My intentions were to shorten the inner third of the right upper and lower recti first, then if necessary to repeat the same operation on the same muscles of the other eye. Owing to an inward rotation of 60 degrees in the left eye

and a convergence to 2 inches, I saw no indication for shortening the left internus. I intended to reserve second tenotomies of the externi as an absolutely last resort.

CASE 29.—One of at least 60 degrees esotropia in a cretin $6\frac{1}{2}$ years old. He is also myopic about 7 D. in each eye. Two operations were done at six weeks' intervals, both externi being shortened, Number 3 gut being used each time. At the first operation the central tongue was sutured forward, while at the second the tendon was shortened in three bands. The first operation gave over half of the total error, which was not much improved by the second; so I am inclined to lose my faith in the security of an entire shortening by loops alone in high deviations. At times, however, his eyes are perfectly parallel for distance regard. This patient will need to have further assistance as afforded by my multiple incision lengthening of one or both interni, and will be the first of the entire series to require such aid.

CASE 30.—One of a triple deviation as follows: esophoria 25 degrees of arc, 10 degrees left plus cyclophoria, and 10 prism degrees left hyperphoria. Vision in each eye was $\frac{20}{15}$. Dec. 11, 1915, the lower margin left externus was shortened, Number 2 gut and a fairly wide band being used. This was done through a short incision parallel to the lower margin of the tendon. This gave an immediate correction to exophoria 1, left hyperphoria 1, and left plus cyclophoria 2.

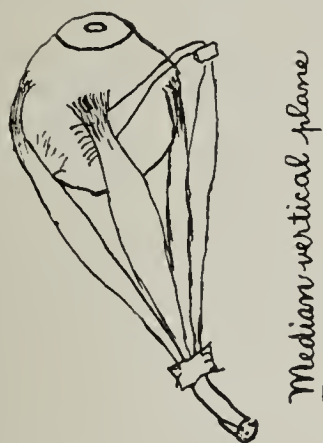


Fig. 7 (from Steven's Motor Apparatus of the Eyes) shows that in the primary position the wrap or contact arc of the internus is negligible as compared with that of the externus and hence that contact arc in itself is of no especial importance. The greater the degree of a divergent squint the greater the contact arc of the internus.

No bandage whatever was used. On the eighteenth he had to leave for his home in northern California, at which date he tested as follows: esophoria 4, left hyperphoria 3, left plus cyclophoria 5. He had, however, binocular fusion without symptoms. He promised to keep me informed of progress, but has failed to do so. I expected in this case to do further operative work to correct the cyclophoria and hyperphoria. This was to cut the upper portion of the same muscle to correct these two conditions. This would increase the esophoria which could easily be corrected by a shortening of the externus of the other eye.

CASE 31.—One of 20 degrees esotropia with normal vision in each eye and binocular stereoscopic vision as determined by the amblyoscope. Left externus shortened, Number 2 gut being used for fear of doing too much. This was an error of judgment, as the final effect was insufficient, there being a remaining deviation of 5 degrees of arc.

CASE 32.—One of 25 degrees arc in an eye practically blind from a corneal wound, the squint existing, however, before the injury. Jan. 30, 1916, left externus shortened, using Number 3 gut and a horizontal incision over middle of tendon, which made the operation somewhat more difficult but left a beautiful scar. The immediate effect was absolute parallelism which was maintained the last time I saw him, seven weeks later.

CASE 33.—One of pure insufficiency of convergence with headaches after near use of eyes and no discomfort in absence of such use. Diplopia occurred at $6\frac{1}{2}$ inches from rotation centers. He measured as a case of dextrophoria as rotations to the left in each eye were defective. Inward rotation of the right eye was but 40 by tropometer; therefore this was the muscle selected for shortening, which was done, Jan. 30, 1916. March 25, he tested as follows: absolute orthophoria in all directions and a convergence to $3\frac{1}{2}$ inches from centers. Since reaction from operation subsided he has had no headaches from use of the eyes as before.

CASE 34.—One of alternating esotropia of approximately 30 degrees in a child of $3\frac{1}{2}$ years. The refractive error was low, so nothing was to be expected from glasses. In view of the fact that the parents were en route to Honolulu for a three year stay, it was thought best to operate in order to maintain binocular vision. Accordingly the left externus was shortened under ether, March 2, 1916, using Number 2 gut and a medium width band, as an overcorrection was not desired. There was but little reaction, and on March 6, the date of sailing, the eyes were straight to naked eye appearance. As many of my similar cases have gained rather than lost during the healing process, I hope that she will at least maintain her status. This case is given simply to show the immediate effect.

CASE 35.—This was one of 25 degrees alternating esotropia in a child of 3 with good vision in each eye. The right externus was shortened under nitrous oxid anesthesia, March 3, 1916, using Number 2 gut and a medium width band. The tendon was very fragile. This was an absolute failure in that I got practically no effect. In other cases I have obtained corrections of 25 degrees from a Number 2 gut, but the probabilities are that the weak fragile muscle stretched.

SUMMARY

Out of the forty-two operations in thirty-five cases there were but three absolute failures as follows:

Case 8, owing to gonococcus infection several days after operation.

Case 15 on inferior rectus, owing to use of too small a catgut, and thus being an error of judgment excusable when it is remembered that it was my first operation on that muscle and I had no previous experience to guide me.

Case 35, owing also to use of too small a catgut. If this had been a case under cocaine the error of judgment could have been corrected at once. In future in such cases I shall allow the patients to come out of the anesthetic to see if enough effect has been secured, and if not, remedy the failure at once.

So far tenotomies have been done only to aid shortenings of the interni, and as it happened in all of these except one (Case 19) the interni were paretic or paralyzed. One case of esotropia (Case 29) will later require partial tenotomy of one or both interni; but this was one of very high degree. I believe this method reduces the need for tenotomy to an absolute minimum.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. TODD AND O'CONNOR

DR. H. W. WOODRUFF, Joliet, Ill.: In general I am in accord with Dr. Todd's deductions in regard to the cause of insufficient effect or over effect following operations on the eye muscles. I believe that the method of shortening by tucking, combined, if necessary, with tendon lengthening or weakening by partial or complete tenotomies is the most satisfactory method of treatment.

I have been a consistent follower of the principles of this operation for the past fourteen years and am unable to understand why so many still practice the uncertain and hazardous advancement which depends after all on a shortening effect on the muscle for its result. Whether the advancement operation is used or the tucking operation, some operation which will weaken the opposing rectus muscle is usually advisable. I see no objection to the tenotomy if it is properly performed and no over effect produced at the time. If such over effect is produced it must be controlled by a suture. There is also a difference in dealing with divergent strabismus as compared with convergence, if the effect of the operation is to be aided by tenotomy. In convergence no over effect is permissible, in fact a slight under effect is desirable. In divergence a slight over effect is a proper primary result. Most of the cases of extreme over effect and deformities following previous operations are cases of divergence secondary to too free tenotomies of one or usually both interni. Those which I have seen were results of operations performed by advertising doctors (The "cross-eyes cured in one minute without the use of the knife" variety). Some of these deformities were very disfiguring, as in addition to the divergence there was exophthalmos and a sunken caruncle and inability of the patient to adduct the eye. Concerning Dr. Todd's method of tendon lengthening, I have had too little experience to judge, but it is certainly less easily performed than a tenotomy and under no better control than can be obtained by a suture.

DR. W. C. POSEY, Philadelphia: I was first led to follow Dr. O'Connor's method because it seemed to offer a chance of advancing a muscle without putting in a scleral stitch. It is desirable often to sew a muscle forward at an early age, and yet most of us do not like to do this until the child is at least 9 years of age, on account of the thinness of the sclera and the consequent danger and difficulty of the operation. The surgical principles of the operation also seem correct, i. e., the bringing forward of the two lateral filaments of the muscle and using them as retaining supports until the main body of the muscle has had an opportunity to unite firmly with the sclera. Contrary to the experience of Dr. O'Connor, in common with my other colleagues at the Wills Hospital who have performed the operation, I have found the procedure a difficult one, one that taxed all my skill as a surgeon. The separating of the muscular fasciculi and the adjustment of the loops calls for considerable nicety of manipulation. Often after the separation of the lateral fasciculi, there is but little left of the middle portion of the muscle to advance, and in several cases where the muscle was very thin, I divided the muscle and brought forward the entire muscle by tightening the loops. While the effect was good for a time, on about the eighth or ninth day the eye slipped back into its faulty position again, showing that the catgut had been absorbed and that no union had occurred in the caught-up loops of muscle tissue. The result of the operation is attained, therefore, by the advancement of the tongue of muscular tissue, as Dr. O'Connor has stated. In several of my cases where the result was not altogether satisfactory, the failure was caused, I think, by tying the 00 catgut strands

too tightly about the No. 4 catgut loops, for I suspect that the muscle fibers were divided in consequence and no support given the tongue flap by the marginal strands. The author fixes the muscle tongue to the sclera by passing sutures through the rest of the muscle left adherent to the sclera. After the marginal loops have been brought forward, however, I have been unable to find this muscle root and have been compelled to anchor the sutures into the sclera. I have operated in seventeen cases, four with divergent, the remainder with convergent squint. No. 4 catgut was used in all of the cases, and I did not try to gage the effect of the procedure by a thinner or thicker gut in any instance. The amount of effect desired was obtained by varying the shortening of the central tongue of muscle fibers and by tenotomy of the antagonist muscles at the time of the advancement. The results were on the whole very good, though I cannot say they were any better than I have obtained by other methods of advancement. There was marked reaction in a number of the cases, and marked sloughing at the site of the operation in two instances. This may have been due to infection, though I suspect that the strangulation of the muscle tissue by too tightly tied gut may have been responsible. Dr. O'Connor's method, however, is a most ingenious one, and deserves to be given repeated trials, for if a muscle can be advanced as he claims without a scleral stitch, it marks a great advance in our operative treatment of squint in young subjects.

DR. OSCAR DODD, Chicago: In regard to those cases in which the internal rectus muscle has been entirely severed with practical loss of movement: We have had some men in Chicago who have advertised to correct strabismus "without the use of the knife." They have operated on these patients in their offices by severing the tendon entirely, or even the muscle itself. I have had the opportunity of operating in some of these cases later, and I have found that the muscle was retracted toward the orbital wall by the check ligament, and when we dissect down we find it drawn back in a mass where it can easily be loosened and brought forward. I think it is a good thing to keep in mind, that instead of simply bringing forward the capsule, as Dr. Todd mentioned, we should endeavor to bring forward the muscle also, as it will give a decidedly better result.

DR. L. HOWE, Buffalo: The discussion recalls by contrast a visit to Stephan Bernheimer of Innsbruck. He wrote the article on the third nerve published in the first edition of Graefe-Saemisch Handbuch. Nearly twenty years afterward I saw him still at work with experiments on the nucleus of the third nerve. The point is that we should hold fast to what we really know if we wish to understand new theories presented here.

DR. G. C. SAVAGE, Nashville, Tenn.: There is one important thing for us always to know, before we do any kind of operation on any muscle, and that is whether there is any thing else to correct than the error of that muscle. To illustrate: One should always know if an esophoria about to be operated on is complicated by a hyperphoria of one eye and a cataphoria of the other, and a plus or minus cyclophoria of both eyes. It is just as easy to correct two or three errors with one operation as it is to correct one error. It must be said that it is also easy, in trying to correct one trouble, to make another worse, or even to bring about a new trouble. But the one who knows what to do and how to do it need not hesitate to undertake muscle operations. The muscle shortening operation, in principle, is here to stay. I devised it twenty-five years ago, and I do not believe that any one of the numerous modifications which have been proposed is as good. This operation is easy to perform and is effective in results. None of the many modifications are as free from trauma, nor can they be more efficient. They are all more complicated and harder to perform. Todd's tenotomy (both tenotomy and a myotomy) will lengthen the too short muscle and is far preferable to a complete tenotomy. A complete tenotomy of a rectus muscle should never be done. A partial tenotomy, whether central or marginal, at the tendon attachment is easier and, I believe, is better, as to effectiveness. The cut fibers will always retract and the marginal or uncut fibers will stretch. The cut in the capsule

should be co-extensive with the cut in the tendon, else retraction will be hindered. No tenotomy should be done on a muscle unless that muscle has excess of tonicity. Always one should be careful not to sever too many fibers.

DR. WILL WALTER, Chicago: I have performed the O'Connor operation three times, and it is a successful operation as far as shortening of the tendon goes. I do not think it may be graduated in the way the tucking operation of Dr. Todd may be graduated. It seems to me, however, to be free from the danger of cutting and tearing that accompany the other operations. One of my cases will interest especially the author and those who have performed the operation. The case was one of about 50 degrees divergent squint with approximately equal adversion—about 30 degrees each eye. I decided to divide the operation between the two interni. I used No. 3 catgut on the first eye and I got about half the correction. When I undertook the other side a month later I could not find any tendon attachment. I undertook capsule advancement and it failed; it tore out. I later went back to the first tendon to see whether or not I could get further through shortening, and the tissues were found all matted. There was adhesion to the ball, about 2 or 3 mm. back from the original attachment. I take it that the hyperemia necessary to absorb the catgut produces tremendous irritation, with adhesions. As the shortening without suture under tension is *the great desideratum* and as the O'Connor operation has its faults, I have a shortening operation of my own and *without any sutures*. It is not sufficiently tried out to warrant its description now but next year I shall give it to you.

DR. WENDELL REBER, Philadelphia: My feeling is that no strabismus operation should be done until we have employed all known measures to secure thorough local anesthesia. Ordinarily sloughing is due to too strong anesthetic solutions. All the synthetic local anesthetics are protoplasmic poisons and if used too freely produce sloughing. It does not make a great deal of difference which operation one employs. I believe with Dr. Todd that any operation which does not disturb the primary insertion is to be preferred to one which does. One should learn to do some one good operation well under perfect local anesthesia. If ethyl hydrocuprein or quinin and urea hydrochlorid in 0.5 per cent. solutions are used the patient will oftentimes have perfect comfort eight to ten hours after the operation. I do the Worth, the LaGleyse and the tucking operation, and I have done Dr. Woodruff's operation. I think any operation, if we do it rightly and study the case as to its rotations before operation, and do it under local anesthesia, with the eyes under the same innervations as the patient ordinarily enjoys, (so that we can control the effect), is most likely to give the good results one is striving for.

DR. F. C. TODD, Minneapolis: The point of my paper was to call attention to the deformities produced by improper operation. It was brought out by Dr. Woodruff and myself that many of the most common deformities were those produced by complete tenotomy. I hope that we emphasized that sufficiently. I disagree with Dr. Savage in the idea that we get any effect unless we cut all the fibers. We do get effect if we do not cut all the fibers if we rupture the rest of them, and that is what it amounts to. I think it is very undesirable to cut the muscle. If you do, it reattaches itself farther back on the globe instead of merely lengthening, as it would if cut on the edges. I want to repeat the suggestion that the wound in the muscle must not be in contact with the wound in the conjunctiva. With the tucking operation that I have previously described, the attachment of the muscle is not changed. The fold in the muscle is forward, and here is where it binds itself down, not changing the attachment to a different location. Its principal advantage is the regulating effect.

DR. RODERIC P. O'CONNOR, Oakland, Calif.: Dr. Posey mentioned the difficulty of separating the marginal bands. The point is to have a large conjunctival incision which will lie back and permit the separation of the margins of the tendon from the capsule of Tenon, so that the entire tendinous portion of the muscle is free and in clear view. Then,

when that stage is reached, I have a hook, not an ordinary tenotomy hook with a curved end, but a probe bent at the end, the portion beyond the bend being straight and about 15 mm. long. This is placed under the tendon which then flattens out its full width. The ordinary hook will bunch it. With the tendon flat you can take a knife or spud and by running it between the fibers easily separate the marginal bands. Leaving the hook in place I then run a pair of blunt iris forceps under the central section, catch the end of the 000 catgut, withdraw and tie the gut about this section several millimeters from the insertion. I do not use a scleral stitch but pass it through the stump of tendon left at the old insertion. In this way the effect of a resection is obtained with a broad surface for union. The width of the marginal bands has a great deal to do with the result. The wider the band, the more muscle fibers are attached to it to take the strain and the less the chance of loss from stretching. The wider the band, within reason, the greater the effect you will get. As far as reaction and sloughing are concerned, I had a severe reaction in the one case in which I tried chromic gut. I have had one case of infection with sloughing but not enough to cause a total failure. This case was operated in a strange place and I found out later that the nurse had used an old stock solution of cocain which I blame as the cause of the infection. I have never had any trouble with 20 day non-iodized gut.

Dr. Posey spoke of two cases in which he thought his sloughing was due to tying the large gut too tightly. I do not think he meant this as the large gut should not be tied.

DR. POSEY: I meant the 00 gut.

DR. O'CONNOR: The 00 gut I put in for safety to hold the marginal shortenings simply by making a circle too small to permit reversal. It should be tied without any force in order to avoid constriction of the marginal bands and the consequent sloughing. Another factor that influences the result is the power of the muscle. A weak one will stretch and may require relief by partial tenotomy of the opponent, but that does not affect the shortening in the tendinous portion; there is no slip there. If any loss occurs it is in behind or due to some factor entirely outside the point of operation itself. Cyclophoria can be corrected by this method.

My method gives the same result as Dr. Savage's but it is not a modification of his. The principle is entirely new and I claim that mine is the only method in which tension and constriction are avoided without the use of tenotomies of the opponent. I use finely shredded kangaroo tendon throughout the operation, except where the shortening gut is used so the patient does not have to be bothered by removal of sutures. Tenotomies are not required except as a last resort and in my opinion that is one of the biggest advantages of the procedure.

The Research Mind.—The research mind keeps up to date in its correlations and brings the inspiration of the best and newest into each teaching day. Sometimes one feels that the external drive toward research by university sentiment leads to many puny efforts and to abortive results. Perhaps, however, even though the result to science is small, the effect on the individual is salutary. The greatest sport the world knows is the search for the absolutely new in any line. One need only sense the joy once to feel its lure.—R. L. Wilbur.

LINITIS PLASTICA

WITH REPORT OF CASE *

GILBERT M. BARRETT, M.D.

SAN FRANCISCO

History.—Mrs. J. F. W., aged 39, housewife, married, was troubled with disturbance of digestion for five or six years. Her husband died of cancer of the stomach. Her father did not have a "strong stomach." Both the father and the mother were troubled with hemorrhoids. The mother had "similar symptoms to daughter," she declared. The mother had recently died of valvular cardiac disease. The father was living and well. The patient was born in Nagasaki, Japan, and lived there until she was 16. When a girl of 16 or 17, she had attacks of "gas in the bowels." She had pneumonia. She was a singer, a strong swimmer, and athletic. She married at 21, and had three children, and a strenuous married life for twelve years. One child died of diphtheria at the age of 6 years. In 1905 the patient was operated on for trouble with the appendix, uterus and tubes and for the purpose of repair.

Present Illness.—The patient complained of gas on the stomach and indigestion, and a "fluttering in her heart" affecting "circulation and breathing." These attacks sometimes came on every two or three months, and occasionally every month for two or three months. If she ate heartily at night or after a long trip, an attack was sure to come on. One of her worst attacks came after eating ripe cherries. She was accustomed to go to St. Helena for rest and massage about once a year. She seemingly improved temporarily, but along with that for about five years she suffered gradual loss of weight, losing 10 pounds. She had attacks of gas and pain, and was given light diet and a digestant and improved. She rarely ate breakfast, and cared not at all for cereals. Chops and French-fried potatoes and asparagus formed a satisfactory meal, and 1911 and 19

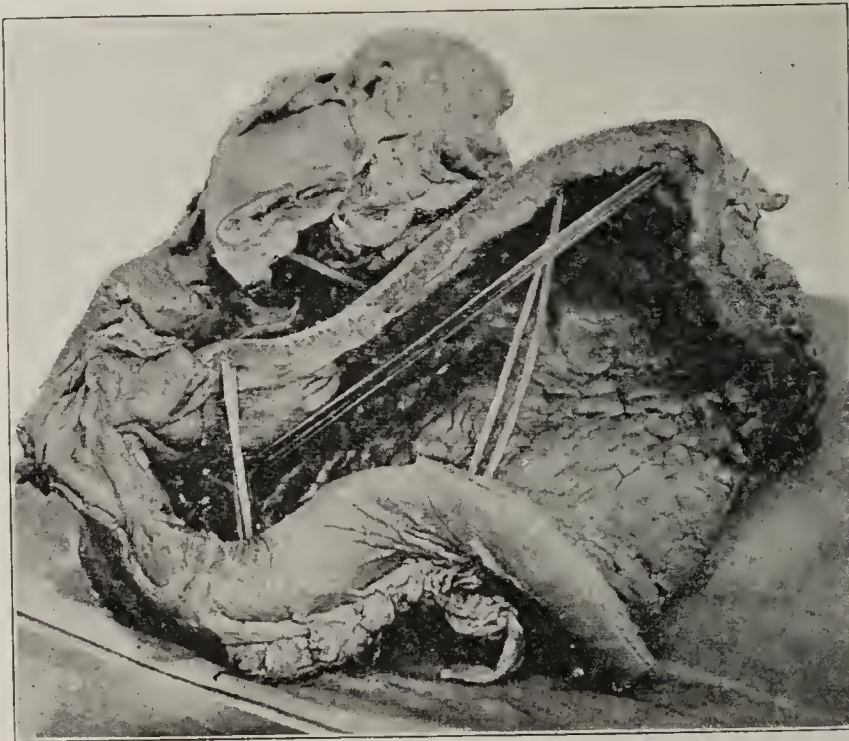


Fig. 1.—Appearance of interior of stomach, with thickened edge.

were the best years she had since becoming ill. Roentgenograms, when I first saw the patient in 1912, did not show such condition as the second plates, which were made in June 1913. Then in May, after another visit to St. Helena, she came again. There was little vomiting after taking food. Another Roentgen examination was made in June, 1913. There was not food in the stomach long enough to secure a specimen after twenty-five minutes. The patient's muscles had become soft and flabby for the last year. There were no tarry stools. The patient took little food at the last. There was no food which would suit the patient or digest. The abdomen was swollen. She said that she "could taste a secretion at times seeming to come from the esophagus." There was no disturbance of the urinary function. She had some gas, which was worse at times, but not at the same time daily. She had no headache except at times. Dyspnea was present during some attacks but not during all. During the period from October, 1912, to June, 1913, I did not see the patient, as she was feeling a little better, or at least thought she was.

Physical Examination.—The patient walked in for the first examination, looking a trifle pale, and somewhat thinner than she should be. Her principal complaint was an "in-

* Read before the San Francisco County Medical Society, St. Luke Hospital program, Dec. 7, 1915.

gestion pain" with a fluttering in her chest. There was no disease of the nervous system, nor any history pointing thereto. The head, throat, teeth, mouth, chest and heart were negative. The abdomen was no more prominent below the navel than normal; in fact, the patient had a flat abdomen with no areas of dullness in the flanks or in the hypogastrium on percussion. It was slightly tender in the epigastric

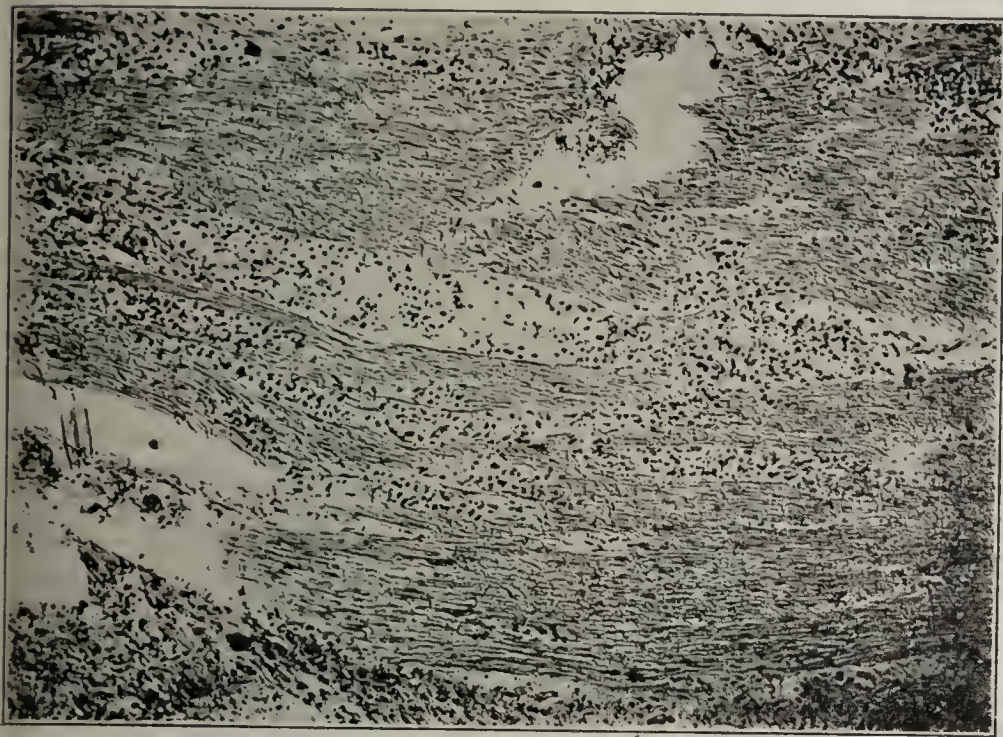


Fig. 2.—Microscopic appearance of cancer cells in muscularis.

region, but no mass could be felt, nor was any marked resistance noted. Roentgenoscopy at this time revealed an apparently normal stomach in outline with a questionable filling defect on the greater curvature. There was rather rapid emptying of the stomach. There was nothing absolutely definite as to organic disease.

Course.—The patient at this time would have nothing done to enlighten us further as to her condition, and we were forced to allow her to go home without a diagnosis, except the tentative one of a possible malignancy (which was told her husband), this view being considered tenable because of her loss of weight, the persistence of symptoms of gastric type and origin, and the Roentgen findings. Against that was the length of time she had these or similar attacks, five or six years and even more, her practically normal blood picture, and her apparent improvement under rest and massage and frequent small meals. The second time she was seen in bed, the facies drawn and the skin slightly wrinkled; she appeared anemic, more so than the blood count seemed to warrant, though with the concentration of the blood, because of a slow circulation and lessened fluid intake, the blood picture was somewhat misleading. There was a marked prominence of the abdomen, owing to the pressure of gas in the intestines and fluid free in the abdomen. The eyes and ears were normal, the teeth in excellent condition and the nose and fauces normal. The limbs were rather thin, and the musculature was flabby. This was in striking contrast to her former perfect physical development. The examination of the chest revealed nothing in the respiratory apparatus; the heart was in the normal position; the heart sounds were normal; the rhythm was normal except during attacks of distention when the pressure of gas in the bowels and stomach caused the heart to "flutter." The girth of the abdomen was increased; no mass was palpable, but fluid fluctuation could be elicited with a shifting dullness with changes in position. On Roentgen examination at this time the stomach emptied in ten minutes and appeared as a small shrunken tubelike organ, high up in the abdomen.

Though no tumor mass could be found, there was a resistance on palpation in the upper abdomen extending across just above the umbilicus, with tenderness over all the epigastrium with a gurgling which seemed to stop about the hepatic flexure of the large intestine, though we could not determine definitely that the delay of feces and gas occurred

in the large intestine. The patient entered the hospital June 5, 1914. The temperature varied from 95.6 F. on entrance to 99 before operation, and the pulse from 88 to 100. The urine was slightly cloudy, amber, acid, specific gravity 1.008, no sugar, a slight trace of albumin, few pus cells, few epithelial cells, no casts, and no blood. The Wassermann reaction was negative. The blood examination revealed: red cells, 4,250,000; hemoglobin, 87 per cent.; white cells, 11,000. Blood pressure was 119 mm. Hg. On gastric analysis, hydrochloric acid was absent. Lactic acid was present. There were no Boas-Oppler bacilli. The digestion appeared to be disturbed not so much by the character of the food as by any large quantity. There was no occult blood in the stools.

Operation and Result.—At operation the stomach appeared to all observers to be involved in a malignant growth, the omentum being shrunken and shortened and the glands large and hard. The transverse colon was a thick hard tube, rigid and unyielding. There was much fluid free in the abdomen; no growth resulted on culture from the fluid. The cecum and ascending colon to the hepatic flexure were normal, and the descending colon and sigmoid and rectum were not involved in the disease. No area large enough was found for making a gastro-enterostomy, and the patient's condition did not warrant a resection of the stomach and transverse colon. The abdomen was closed, and a few days later a shortcircuiting operation was to be made; but the patient was so distended with gas by this time, the obstruction at the hepatic flexure having become acute, that a

cecostomy was done to relieve the obstructive symptoms with a cecosigmoidostomy to be later added to shortcircuit the diseased transverse colon; but the patient succumbed within two days.

Microscopic specimens showed, after many serial sections, a muscle wall studded with cancer cells, the malignant cells



Fig. 3.—Thickening of wall of transverse colon at hepatic flexure.

lying thickly between the muscle fibers. The mucosa was not much altered, and the serosa only slightly thickened. From the microscopic findings, the diagnosis of scirrhus cancer of the stomach was made. The transverse colon showed grossly the same changes as the stomach, being an irregularly contracted tube with thick unyielding walls, the caliber barely enough to admit the middle finger.

COMMENT

Differentiation must be made from the usual and unusual disorders causing or associated with gastric disturbances: constitutional disorders, renal, cardiac, respiratory, hepatic and blood diseases. Also consideration must be given to other conditions which may give pain in a similar location, or even definite gastric symptoms, such as tabes, spinal disease, syphilis, abdominal arteriosclerosis, thoracic or abdominal aneurysm, plumbism and herpes zoster.

Differentiation from a syphilitic stomach must be made. As already mentioned, the syphilitic stomach is seen in younger patients, as a rule. The history, while similar in some respects, may or will differ in a positive history of some of the symptoms of syphilis, primary or secondary. A Wassermann test will show the true status (if repeated) in the acquired type. A history of hydrocephalus or other abnormal development, the teeth, adenopathy, etc., will serve to lead to the proper diagnosis in the congenital type. Roentgenoscopy will not furnish much help, for the appearance of a syphilitic stomach is very similar to a leather-bottle stomach, and the improvement in the general health under antisiphilitic treatment, with the restoration to normal of the stomach function and contour, will be convincing.

DIAGNOSIS

In patients from the third and fourth decade and on, there is an extended history of digestive disturbances without the typical ulcer or malignant symptoms; the latter are usually delayed till later. Or there is an abrupt onset of marked symptoms of gastric origin and type, sometimes the patient dating perfectly the onset of distress to the day, and occasionally to the hour.

If seen late, the patient is unable to take a full meal, and the amount of food found after a test meal is very small, sometimes none after from ten to twenty-five minutes. The hypochlorhydria or achlorhydria are not distinctive of this any more than in the more rapid forms of malignancy, if as much so, as it may be due to a true carcinoma or achylia gastrica.

The screen and plates will show, late in the disease, and most of these patients come late, whether the onset is slow or abrupt, the diminished size, the thickened and unyielding wall of the stomach and even the colon, when involved. The bismuth meal runs rapidly through the thickened tubelike stomach. In our case it required only eight or ten minutes for the stomach to be completely empty.

The usual annular deformity of the carcinoma of the pylorus, or the irregular indented outline of the carcinoma of the body are wanting.

Delirium and Convulsions After Neosalvarsan.—Langevin's patient had been given for four weeks an intravenous injection of a mercury salt five days of the week; the sixth day neosalvarsan was injected, the doses increasing from 0.15 to 0.6 gm. in the four doses that had been given. Convulsions, unconsciousness and delirium developed three days after the fourth dose. The clinical picture was exactly like that of the serous apoplexy which has been known to develop under salvarsan and to subside under epinephrin treatment. The delirium was of the delirium tremens type, coming on as the young man came out from the coma, and keeping up for several days. Venesection was done at once after which there were no further convulsions. During the four days of coma a quart of boiled water was injected slowly into the intestine every hour, and the man recovered. The case was published in the *Bull. et mém. Soc. méd. hôp. de Paris*, 1916, p. 647.

THE EFFECT OF ACTIVITY ON THE HISTOLOGIC STRUCTURE OF NERVE CELLS *

R. A. KOCHER, A.B., M.D.

SAN FRANCISCO

It has long been known that prolonged activity of mucous gland cells results in characteristic histologic changes in these cells, owing to the disappearance from the cell of certain granules (zymogen granules). This granular material is evidently used to make organic material of the secretion. It was doubtless on the basis of such observations that certain physiologists were led to seek for similar alterations in the highly specialized nerve cell following functional activity. Many of the investigations of these physiologists were confined to one or two experiments, the material was often not sufficiently controlled by normal tissue for comparison, and frequently the histologic technic was faulty.

There is the utmost divergence of opinion as to the nature of the changes taking place in nerve cells following activity, and one who tries to correlate the findings of the different workers in this field is utterly confused. The chief findings relate to (a) size of cell body and nucleus, and (b) amount and distribution of chromatic material. While one group of workers concludes that fatigue results in decrease in the size of cell and nucleus (Hodge, Van Durmé, Legendre), another group finds an increase in the size or change in the nucleus plasma relation. Lambert noted no change in the size of cell or nucleus. Increase in chromatic substance (hyperchromatism) as the chief result of fatigue has been noted by Nissl. Most workers, Van Durmé, Vas Lugaro and Mann, have described a decrease in chromatic material as the result of exercise. Dolley tried to reconcile these contradictions by regarding the hyperchromatism as a result of moderate activity, and the hypochromatism the result of excessive activity or exhaustion. He found that both stages may be found in the same animal simultaneously. Other changes, such as wandering of the nucleus toward the periphery of the cell, rupture of the nuclear and cell membranes (karyolysis and karyorhexis) have been described. Dolley noted thirteen stages of cell change from the hyperchromatism to disintegration or death of the cell, corresponding to the degrees of moderate activity up to complete exhaustion. Such divergence in the results is not so surprising when we stop to consider the complicating factors necessarily attending these experiments, such as (1) difficulty of separating the effects of normal activity from unavoidable shock or injury to the nervous system in killing the animal (the nervous system does not "die" as soon as the heart stops beating); (2) postmortem changes ensuing between the time of death and complete penetration of the tissue by the fixing agent owing to the action of autolytic enzymes present in all tissue; (3) varying chemical action of fixing agents; for example, formaldehyd coagulates protein by combination with the amino groups, alcohol by dehydration, sublimate by formation of salts, etc.; (4) the solvent action of materials used in fixation and in embedding for example, alcohol, xylene, paraffin; (5) varying

* From the Henry Phipps Institute of Psychiatry, the Johns Hopkins Medical School, Baltimore, and the George Williams Hooper Foundation for Medical Research, University of California Medical School.

* The data and other details of these experiments will be reported shortly in the *Journal of Comparative Neurology*.

effects of chemical reaction between basic or acid dyes used in staining and the different cell structures, and (6) effect of subjecting tissue to temperatures of from 50 to 54 C. (122 to 129.2 F.) in the paraffin oven for a period of several hours.

I have studied the effect of various grades of activity on nerve cells in a series of fifteen separate experiments. The animals used were dogs, cats, pigeons, sparrows, frogs and rats. Every experiment was carefully controlled by a resting animal of the same species, of the same approximate age and size, and the material from the two given identical treatment, except for the activity. The nerve cells studied were from the cruciate gyrus, from the cerebellum and the anterior horn of the spinal cord, and from the dorsal ganglia. In one of the experiments, over 3,500 nerve cells, classified into thirteen types according to the histologic characters, were counted to determine the relative frequency of characteristics which might be correlated with grades of activity.

In this series of experiments I attempted as much as possible to minimize the formation of artefacts, having in mind the above mentioned considerations. It was hoped that by using special care in the handling of material, the use of improved technic in fixation and staining by varying the kind and degree of activity in a long series of experiments, using different animals and studying various kinds of nerve cells, some degree of uniformity of results might be obtained. A resting control animal was used in each experiment. The animals were killed in most cases by bleeding after ether anesthesia, the nerve material removed as quickly as possible, cut into small pieces, and the control and fatigue specimens placed in the same fixing solution, embedded side by side in the same block of paraffin, cut with the same stroke of the knife, mounted and stained together on the same slide. In all fifteen experiments were performed. A great many forms of activity were used; normal activity, forced activity, activity resulting from electric stimulation, both faradic and galvanic, chemical stimulation, and shock being applied in the experiments. The microscopic technic used was varied considerably, not only as to the fixative but also as to staining fluid. The stain most frequently used was Held's modification of Nissl's method.

The examination of the material for comparison was facilitated by having both control and fatigue specimens mounted on the same slide. Changes such as have been previously described as resulting from fatigue were carefully examined for comparative amounts and distribution of chromatic substance, size of granules, nucleus plasma relation, relative size of cells and nuclei, etc. In order to determine whether any change in the size of the cell had resulted from activity, a large series of camera lucida drawings was made. These drawings were made of cells without selection. A field was taken, and every cell showing a nucleolus was included. This precaution was necessary in order to be assured that the cell was cut through the center. Cells were first drawn, a low power for orientation being used, each cell numbered on the paper, then the one-sixth or the one-twelfth objective was used to project the cell, care being taken to draw always at the same distance from the microscope. Over a thousand cells and nuclei were measured by computing the areas of the projected outline with the planimeter.

CONCLUSIONS

There could be found no constant difference in the size of the nerve cells or nuclei resulting from activity. An apparent difference in size which appeared here and there on counting a small number of cells was shown on enlarging the series to be counterbalanced by a similar variation on the part of the controls. Hence it must be concluded that any difference in size of cells found was within the limits of normal variation.

Furthermore, in no experiment did the histologic structure of the nerve cell following activity, even to the point of exhaustion, show any constant deviation from that of the corresponding resting cells of the controls.

Some very sweeping generalizations have been drawn from the conclusions of previous workers; namely, that fatigue, fear, shock and exhaustion may lead to permanent damage and even disintegration of nerve cells. Crile's present theory of surgical shock and of certain aspects of exophthalmic goiter, based essentially on these assumptions, may be cited to show to what extremes these deductions have led.

THE NATURE, MANNER OF CONVEY- ANCE AND MEANS OF PREVEN- TION OF INFANTILE PARALYSIS *

SIMON FLEXNER, M.D.

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Medical Research
NEW YORK

The Rockefeller Institute for Medical Research has been appealed to by so many physicians and laymen for information and advice on the subject of infantile paralysis that it has seemed desirable to relate the facts of present knowledge concerning certain highly pertinent aspects of the disease, together with deductions of practical importance derived from them.

Nature.—Infantile paralysis is an infectious and communicable disease which is caused by the invasion of the central nervous organs—the spinal cord and brain—of a minute, filterable micro-organism which has now been secured in artificial culture and as such is distinctly visible under the higher powers of the microscope.

Location of the Micro-Organism or Virus in the Sick.—The virus of infantile paralysis, as the micro-organism causing it is termed, exists constantly in the central nervous organs and on the mucous membrane of the nose and throat and of the intestines in persons suffering from the disease; it occurs less frequently in the other internal organs, and it has not been detected in the general circulating blood of patients.

Location of the Virus in Healthy Persons.—Although the micro-organism of infantile paralysis is now known, the difficulties attending its artificial cultivation and identification under the microscope are such as to make futile the employment of ordinary bacteriologic tests for its detection. Nevertheless, the virus can be detected by inoculation tests on monkeys, which animals develop a disease corresponding to infantile paralysis in human beings. In this manner the fact has been determined that the mucous membrane of the nose and throat of healthy persons who

* Presented to the New York Academy of Medicine July 13, 1916.

* For Discussion see p. 310.

have been in intimate contact with acute cases of infantile paralysis may become contaminated with the virus, and that such contaminated persons, without falling ill themselves, may convey the infection to other persons, chiefly children, who develop the disease.

Relation of Virus to Types of the Disease.—The virus has, apparently, an identical distribution irrespective of the types or severity of cases of infantile paralysis. Whether the cases correspond with the so-called abortive forms of the disease in which definite paralysis of the muscles does not occur at all, or is so slight and fleeting as often to escape detection; whether they correspond with the meningeal forms in which the symptoms resemble those of acute meningitis with which muscular paralysis may or may not be associated; or whether they consist of the familiar paralytic condition, the virus is present not only within the nervous organs, but also on the mucous membranes of the nose, throat and intestines.

Escape of the Virus from the Body.—Micro-organisms which convey disease escape from the body of an infected individual in a manner enabling them to enter and multiply within fresh or uninfected individuals in such a manner as to cause further disease. The virus of infantile paralysis is known to leave the infected human body in the secretions of the nose, throat and intestines. It also escapes from contaminated healthy persons in the secretions of the nose and throat. Whether it ever leaves the infected body in other ways is unknown. At one time certain experiments seemed to show that biting insects, and particularly the stable fly, might withdraw the virus from the blood of infected persons and inoculate it into the blood of healthy persons. But as the virus has never been detected in the blood of human beings, and later experiments with the stable fly have not confirmed the earlier ones, this means of escape of the virus must be considered doubtful. On the other hand, it has been shown by experiments on animals, so that the same facts should be regarded as applicable to human beings, that the virus seeks to escape from the body by way of the nose and throat, not only when inoculation takes place through these membranes, but also when the inoculation is experimentally made into the abdominal cavity, the blood, or the brain itself. From this it is concluded that the usual means of escape of the virus is by way of the ordinary secretions of the nose and throat and, after swallowing these, with the discharges of the intestines.

Entrance of the Virus into the Body.—The virus enters the body, as a rule if not exclusively, by way of the mucous membrane of the nose and throat. Having gained entrance to those easily accessible parts of the body, multiplication of the virus occurs there, after which it penetrates to the brain and spinal cord by way of the lymphatic channels which connect the upper nasal mucous membranes with the interior of the skull. Whether the virus ever enters the body in any other way is unknown. Certain experiments already referred to make it possible that it may be inoculated into the blood by insects, and other experiments have shown that under peculiar and extraordinary conditions, it may in monkeys enter through the intestines. But while the latter two modes of infection may operate sometimes, observations in human cases of infantile paralysis and on animals all indicate that the main avenue of entrance of the virus into the body is by way of the upper respiratory mucous membrane, that is, the membrane of the nose and throat.

Resistance of the Virus.—The physical properties of the virus of infantile paralysis adapt it well for conveyance to the nose and throat. Being contained in their secretions, it is readily distributed by coughing, sneezing, kissing, and by means of fingers and articles contaminated with these secretions, as well as with the intestinal discharges. Moreover, as the virus is thrown off from the body mingled with the secretions, it withstands for a long time even the highest summer temperatures, complete drying, and even the action of weak chemicals, such as glycerin and phenol (carbolic acid), which destroys ordinary bacteria. Hence mere drying of the secretions is no protection; on the contrary, as the dried secretions may be converted into dust which is breathed into the nose and throat, they become a potential source of infection. The survival of the virus in the secretions is favored by weak daylight and darkness, and hindered by bright daylight and sunshine. It is readily destroyed by exposure to sunlight.

Conveyance by Insects.—Since epidemics of infantile paralysis always arise during the period of warm or summer weather, they have been thought of as possibly being connected with or dependent on insect life. The blood-sucking insects have especially come under suspicion. Experiments have been made with biting flies, bedbugs, mosquitoes, and with lice. Neither mosquitoes nor lice seem able to take the virus from the blood of infected monkeys or to retain it for a time in a living state. In one instance, bedbugs have been made to take up the virus from the blood of monkeys, but they did not convey it by biting to healthy monkeys. Certain experiments did indicate that the biting stable fly could both withdraw the virus from the blood of infected and reconvey it to the blood of healthy monkeys, which became paralyzed. But more recent studies have failed to confirm the earlier ones. Moreover, experimentally inoculated monkeys differ in one way from human beings suffering from infantile paralysis, for while the virus may appear in the blood of the former, it has never been detected in the blood of the latter. The ordinary or domestic fly may become contaminated with the virus contained in the secretions of the body and serve as the agent of its transportation to persons and to food with which it comes into contact. Domestic flies experimentally contaminated with the virus remain infective for forty-eight hours or longer. While our present knowledge excludes insects from being active agents in the dissemination of infantile paralysis, they nevertheless fall under suspicion as being potential mechanical carriers of the virus of that disease.

Conveyance by Domestic Animals.—The attention which the recent epidemic of infantile paralysis has drawn to the diseases attended by paralysis has led to the discovery that domestic animals and pets are subject to paralytic diseases. The animals which have especially come under suspicion as possibly distributing the germ of infantile paralysis are poultry, pigs, and dogs and cats. But in isolated instances, sheep, cattle and even horses have been suspected. All these kinds of animals are subject to diseases in which paralysis of the legs and other parts of the body sometimes appear. In not a few instances, paralytic diseases among poultry or pigs have been noted to coincide with the appearance of cases of infantile paralysis on a farm or in a community. Experimental studies have, however, excluded the above-mentioned animals from being carriers of the virus of infantile

paralysis. The paralytic diseases which they suffer have long been known and are quite different from infantile paralysis. Their occurrence may be coincidental; in no instance investigated has one been found to be responsible for the other.

Routes of Travel.—Studies carried out in various countries in which infantile paralysis has been epidemic all indicate that, in extending from place to place or point to point, the route taken is that of ordinary travel. This is equally true whether the route is by water or land, along a simple highway or the line of a railroad. In other words, the evidence derived from this class of studies confirms the evidence obtained from other sources in connecting the distributing agency intimately with human beings and their activities.

Survival of the Virus in the Infected Body.—The virus of infantile paralysis is destroyed in the interior of the body more quickly and completely than, in some instances, in the mucous membrane of the nose and throat. It has been found in monkeys, in which accurate experiments can be carried out, that the virus may disappear from the brain and spinal cord within from a few days to three weeks after the appearance of the paralysis, while at the same time it is still present on the mucous membranes mentioned. The longest period after inoculation in which the virus has been detected in the mucous membrane of the nose and throat of monkeys is six months. It is far more difficult to detect the human than the monkey carriers of the virus since, as directly obtained from human beings, the virus displays a low degree of infectivity for monkeys; while once adapted to monkeys, the virus becomes incredibly active, so that minute quantities are capable of ready detection by inoculation tests. Yet in an undoubted instance of the human disease, the virus was detected in the mucous membrane of the throat five months after its acute onset. Hence we possess conclusive evidence of the occurrence of occasional chronic human carriers of the virus of infantile paralysis.

Fluctuation in Epidemics.—Not all epidemics of infantile paralysis are equally severe. Indeed, great variations or fluctuations are known to occur not only in the number of cases, but also in the death rate. The extremes are represented by the occasional instances of infantile paralysis known in every considerable community and from which no extension takes place, and the instances in which in a few days or weeks the number of cases rises by leaps and bounds into the hundreds, and the death rate reaches 20 per cent. or more of those attacked. While all the factors which determine this discrepancy are not known, certain of them have become apparent. A factor of high importance is the infective power or potency, or, technically stated, the virulence, of the micro-organism or virus causing the disease. This virus is subject to fluctuations of intensity which can best be illustrated by an example. The virus as ordinarily present in human beings even during severe epidemics has low infective power for monkeys. But by passing it from monkey to monkey, it tends to acquire after a variable number of such passages an incredible activity. However, occasional samples of the human virus refuse to be thus intensified. But once rendered highly potent, the virus may be passed from monkey to monkey through a long but not indefinite series. Finally, in some samples of the virus at least a reverse change takes place—the virus begins to lose its virulence until it returns to the orig-

inal or even to a diminished degree of infective power. In this respect the behavior of the virus corresponds to the onset, rise and then the fall in number and severity of cases as observed in the course of epidemics of infantile paralysis and other epidemic diseases. Hence either a new active specimen of the virus may be introduced from without which, after a certain number of passages from person to person, acquires a high potency; or a specimen of virus already present and left over from a previous epidemic after a resting period and similar passages again becomes active, and reaches an infective power which equals or even exceeds that originally possessed. Another but more indefinite factor relates to the degree of susceptibility among children and others affected, which at one period may be greater or less than at another.

Varying Individual Susceptibilities.—Not all children and relatively few adults are susceptible to infantile paralysis. Young children are more susceptible, generally speaking, than older ones; but no age can be said to be absolutely insusceptible. When several children exist in a family or in a group, one or more may be affected, while the others escape or seem to escape. The closer the family or other groups are studied by physicians, the more numerous it now appears are the number of cases among them. This means that the term "infantile paralysis" is a misnomer, since the disease arises without causing any paralysis whatever, or such slight and fleeting paralysis as to be difficult of detection. The light or abortive cases, as they are called, indicate a greater general susceptibility than has always been recognized, and their discovery promises to have far reaching consequences in respect to the means employed to limit the spread or eradicate foci of the disease.

Period of Incubation.—Like all other infectious diseases, infantile paralysis does not arise at once after exposure, but only after an intervening lapse of time called the period of incubation. This period is subject to wide limits of fluctuation: in certain instances it has been as short as two days; in others it has been two weeks or possibly even longer. But the usual period does not exceed about eight days.

Period of Infectivity.—Probably the period at which the danger of communication is greatest is during the very early and acute stage of the disease. This statement must be made tentatively since it depends on inference, based on general knowledge of infection, rather than on demonstration. Judging from experiments on animals, the virus tends not to persist in the body longer than four or five weeks, except in those exceptional instances in which chronic carriage is developed. Hence cases of infantile paralysis which have been kept under supervision for a period of six weeks from the onset of the symptoms may be regarded as practically free of danger.

Protection by Previous Attack.—Infantile paralysis is one of the infectious diseases in which insusceptibility is conferred by one attack. The evidence derived from experiments on monkeys is conclusive in showing that an infection which ends in recovery gives protection from a subsequent inoculation. Observations on human beings have brought out the same fact, which appears to be generally true, and to include all the forms of infantile paralysis, namely, the paralytic, meningeal or abortive, which all confer immunity.

Basis of the Immunity.—The blood of normal persons and monkeys is not capable of destroying or neutralizing the effect of the virus of infantile paraly-

sis. The blood of persons or monkeys who have recovered from the disease is capable of destroying or neutralizing the effect of the virus. The insusceptibility or immunity to subsequent infection, whether occurring in human beings after exposure or monkeys after inoculation, rests on the presence of the destroying substances, the so-called immunity bodies, which arise in the internal organs and are yielded to the blood. So long as these immunity bodies persist in the body, protection is afforded; and their presence has been detected twenty years or even longer after recovery from infantile paralysis. Experiments have seemed to show that the immunity bodies appear in the blood in the course of even the mildest attack of the disease, which fact explains why protection is afforded irrespective of the severity of the case.

Active Immunization.—Protection has been afforded monkeys against inoculation with effective quantities of the virus of infantile paralysis by previously subjecting them to inoculation with subeffective quantities or doses of the virus. By this means and without any evident illness or effect of the protective inoculation, complete immunity has been achieved. But the method is not perfect, since in certain instances not only was immunity not obtained, but unexpected paralysis intervened. In the instances in which protection was accomplished, the immunity bodies appeared in the blood.

Passive Protection.—By transferring the blood of immune monkeys to normal or untreated ones, they can be rendered insusceptible or immune, and the immunity will endure for a relatively short period during which the passively transferred immunity bodies persist. The accomplishment of passive immunization is somewhat uncertain, and its brief duration renders it useless for purposes of protective immunization.

Serum Treatment.—On the other hand, a measure of success has been achieved in the experimental serum treatment of inoculated monkeys. For this purpose blood serum derived either from recovered and protected monkeys or human beings has been employed. The serum is injected into the membranes about the spinal cord, and the virus is inoculated into the brain. The injection of serum must be repeated several times in order to be effective. Use of this method has been made in a few instances in France, where the blood serum derived from persons who had recovered from infantile paralysis has been injected into the spinal membranes of persons who have just become paralyzed. The results are said to be promising. Unfortunately, the quantity of the human immune serum is very limited, and no other animals than monkeys seem capable of yielding an immune serum, and the monkey is not a practicable animal from which to obtain supplies.

Drug Treatment.—The virus of infantile paralysis attacks and attaches itself to the central nervous organs. Hence it is not only reached with difficulty because nature has carefully protected those sensitive organs from injurious materials which may gain access to the blood, but it must also be counteracted by substances and in a manner that will not themselves injure those sensitive parts. The ideal means to accomplish this purpose is through the employment of an immune serum, since serums are among the least injurious therapeutic agents. The only drug which has shown any useful degree of activity is hexamethylenamin, which is itself germicidal, and has the merit of entering the membranes, as well as the substance of the

spinal cord or brain in which the virus is deposited. But experiments on monkeys have shown this chemical to be effective only very early in the course of the inoculation and only in a part of the animals treated. Efforts to modify and improve this drug by chemical means have up to the present been only partially successful. The experiments have not yet reached the point at which the drugs are applicable to the treatment of human cases of infantile paralysis.

PRACTICAL DEDUCTIONS AND APPLICATIONS

1. The chief mode of demonstrated conveyance of the virus is through the agency of human beings. Whether or not still other modes of dissemination exist is unknown. According to our present knowledge, the virus leaves the body in the secretions of the nose and throat and in the discharges from the intestines. The conveyers of the virus include persons ill of infantile paralysis in any of its several forms and irrespective of whether they are paralyzed or not, and such healthy persons who may have become contaminated by attendance on or association with the ill. How numerous the latter class may be is unknown. But all attendants on or associates of the sick are suspect. These healthy carriers rarely themselves fall ill of the disease; they may, however, be the source of infection in others. On the other hand, the fact that infantile paralysis is very rarely communicated in general hospitals to other persons, whether doctors, nurses or patients, indicates that its spread is subject to ready control under restricted and supervised sanitary conditions.

2. The chief means by which the secretions of the nose and throat are disseminated is through the act of kissing, spitting, coughing or sneezing. Hence, during the prevalence of an epidemic of infantile paralysis, care should be exercised to restrict the distribution as far as possible through these common means. Habits of self-denial, care, and cleanliness and consideration for the public welfare can be made to go very far in limiting the dangers from these sources.

Moreover, since the disease attacks by preference young children and infants, in whom the secretions from the nose and mouth are wiped away by mother or nurse, the fingers of these persons readily become contaminated. Through attention on other children or the preparation of food which may be contaminated, the virus may thus be conveyed from the sick to the healthy. The conditions which obtain in a household in which a mother waits on the sick child and attends the other children are directly contrasted with those existing in a well ordered hospital: the one is a menace, the other a protection to the community. Moreover, in homes the practice of carrying small children about and comforting them is the rule, through which not only the hands, but other parts of the body and the clothing of parents may become contaminated.

3. Flies also often collect about the nose and mouth of patients ill of infantile paralysis and feed on the secretions, and they even gain access to the discharges from the intestines in homes unprotected by screens. This fact relates to the domestic fly, which, becoming grossly contaminated with the virus, may deposit it on the nose and mouth of healthy persons, or on food or eating utensils. To what extent the biting stable fly is to be incriminated as a carrier of infection is doubtful; but we already know enough to wish to exclude from the sick, and hence from menacing the well, all objectionable household insects.

Food exposed to sale may become contaminated by flies or from fingers which have been in contact with secretions containing the virus; hence food should not be exposed in shops, and no person in attendance on a case of infantile paralysis should be permitted to handle food for sale to the general public.

4. Protection to the public can best be secured through the discovery and isolation of those ill of the disease, and the sanitary control of those persons who have associated with the sick and where business calls them away from home. Both these conditions can be secured without too great interference with the comforts and the rights of individuals.

In the first place, where homes are not suited to the care of the ill so that other children in the same or adjacent families are exposed, the parent should consent to removal to hospital in the interest of the sick child itself, as well as in the interest of other children. But this removal or care must include not only the frankly paralyzed cases, but also the other forms of the disease. In the case of doubtful diagnosis, the aid of the laboratory is to be sought, since even in the mildest cases changes will be detected in the cerebrospinal fluid removed by lumbar puncture. If the effort is to be made to control the disease by isolation and segregation of the ill, then these means must be made as inclusive as possible. It is obvious that in certain homes isolation can be carried out as effectively as in hospitals.

But what has been said of the small incidence of cases of the disease among the hospital personnel, and those with whom they come into contact, indicates the extent to which personal care of the body by adults and responsible people can diminish the menace which those accidentally or unavoidably in contact with the ill are to the community. Care exercised not to scatter the secretions of the nose and throat by spitting, coughing and sneezing, the free use of clean handkerchiefs, cleanliness in habits affecting especially the hands and face, changes of clothes, etc., should all act to diminish this danger. But in the end, the early detection and isolation of the cases of infantile paralysis in all of its forms, with the attendant control of the households from which they come, will have to be relied on as the chief measure of staying the progress of the epidemic.

5. The degree of susceptibility of children and other members of the community to infantile paralysis is relatively small and is definitely lower than to such communicable diseases as measles, scarlet fever and diphtheria. This fact in itself constitutes a measure of control; and while it does not justify the abatement of any practicable means which may be employed to limit and suppress the epidemic, it should tend to prevent a state of overanxiety and panic from taking hold of the community.

6. A percentage of persons, children particularly, die during the acute stage of the disease. This percentage varies from five in certain severe epidemics to twenty in others. The average death rate of many epidemics has been below 10 per cent. A reported high death rate may not be actual, but only apparent, since in every instance the death will be recorded, while many patients who recover may not be reported at all to the authorities. In the present instance it is too early in the course of the epidemic to calculate the death rate, which may prove to be considerably lower than it now seems to be.

7. Of those who survive, a part make complete recoveries, in which no crippling whatever remains.

This number is greater than is usually supposed, because it includes not only the relatively large number of slight or abortive cases, but also a considerable number of cases in which more or less of paralysis was present at one time. The disappearance of the paralysis may be rapid or gradual—may be complete in a few days or may require several weeks or months.

The remainder, and unfortunately not a small number, suffer some degree of permanent crippling. But even in this class, the extent to which recovery from the paralysis may occur is very great. In many instances the residue of paralysis may be so small as not seriously to hamper the life activities of the individual; in others in whom it is greater, it may be relieved or minimized by suitable orthopedic treatment. But what it is imperative to keep in mind is that the recovery of paralyzed parts and the restoration of lost muscular power and function is a process which extends over a long period of time—that is, over months and even years. So that even a severely paralyzed child who has made little recovery of function by the time the acute stage of the disease is over, may go on gaining for weeks, months and even years, until in the end he has regained a large part of his losses. Fortunately, only a very small number of the attacked are left severely and helplessly crippled. Lamentable as it is that even one should be so affected, it is nevertheless a reassurance to know that so many recover altogether, and that so much of what appears to be permanent paralysis disappears in time.

There exists at present no safe method of preventive inoculation or vaccination, and no practicable method of specific treatment. The prevention of the disease must be accomplished through general sanitary means; recovery from the disease is a spontaneous process which can be greatly assisted by proper medical and surgical care. Infantile paralysis is an infectious disease, due to a definite and specific micro-organism or virus; recovery is accomplished by a process of immunization which takes place during the acute period of the disease. The tendency of the disease is toward recovery, and it is chiefly or only because the paralysis in some instances involves those portions of the brain and spinal cord which control respiration or breathing and the heart action that death results.

Finally, it should be added that not since 1907, at which time the great epidemic of infantile paralysis of poliomyelitis appeared in this country, has the country or this state or city been free of the disease. Each summer since has seen some degree of accession in the number of cases; the rapid rise in the number of cases this year probably exceeds that of any previous year. But it must be remembered that in 1908, several thousand cases occurred in the greater city—possibly indeed many cases of and deaths due to the disease were never reported as such. Hence the present experience, severe and serious as it is, is not something new; the disease has been severely epidemic before and was brought under control. The knowledge regarding it now is far greater than it was in 1908; and the forces of the city which are dealing with the epidemic are probably better organized and in more general cooperation than ever before. The outlook, therefore, should not be regarded as discouraging.

Dependability.—A drug-taking nation is no stronger than a drug-taking man, and a drug-taking man is not very dependable, either in the factory or on the firing line.—*Health Letter*, Life Extension Institute.

Therapeutics

HEAT EXHAUSTION

The two conditions due to excessive heat, heat exhaustion and sunstroke, vary in their pathology and symptomatology. Heat exhaustion is a condition resulting from prolonged or continuous exposure to indoor heat or to the heat from the sun without direct exposure to the sun's rays. It occurs commonly in engine and furnace rooms, particularly among stokers on ocean steamers, and in foundries. On hot summer days it may even befall those remaining indoors in hot and poorly ventilated rooms.

SYMPTOMS

Heat exhaustion is an asthenic condition, and the symptoms are those of depression. It often results in collapse due to circulatory failure. Not only is there a congestion of blood in the splanchnic vessels with a corresponding depletion of the vessels in the brain and periphery, but also the excessive loss of fluids from the body by way of perspiration causes an increase in the viscosity of the blood. There result vertigo, pallor, at first faintness and weakness, and then prostration, the patient becoming semiconscious or losing consciousness altogether. The hands become clammy, cold perspiration may be present, and the body feels cold. The pulse becomes small and feeble, and the heart action is poor and weak. Often the condition is not allowed to proceed so far, and there are present only the weakness and faintness. With this may also be associated irritability, restlessness and sleeplessness. Occasionally there is delirium. In heat exhaustion there is hypothermia, the temperature falling as low as 95.

TREATMENT

In treating heat exhaustion it must be remembered that there is a depressed and hypothermic condition. Stimulants are indicated, perhaps best as caffeine or coffee. Camphor, strychnin and digitalis preparations may be given hypodermically if indicated. If the heart is weak, a hypodermic injection of $\frac{1}{1000}$ grain of atropin sulphate is good treatment. Friction of the extremities, and even dry heat may be advisable. The ice bath is absolutely contraindicated in this condition, as a subnormal temperature already exists. A warm bath will be better tolerated.

SUNSTROKE

In sunstroke the symptoms are due to causes different from those in heat exhaustion. Besides the action of the prolonged high temperature, it is probable that there is some direct action of the rays themselves. In this condition there is a congestion of the blood vessels of the cerebrospinal system and the periphery. This is caused by the effect of the heat directly on the brain. There may be premonitory symptoms, such as headache, restlessness, malaise, nausea, extreme thirst, rapid, shallow breathing, vomiting, and occasionally diarrhea. There also may be frequent micturition, and a hot, dry skin. If the exposure to the sun is continued, the symptoms are aggravated, and with them the face becomes flushed, the pulse full and frequent, and the breathing labored. The temperature may rise to 108, and even to 112 and 113 F.

The pupils are contracted, but become dilated preceding death. Symptoms of cerebral congestion and

disturbance of the cerebrospinal centers also manifest themselves. Twitching of the muscles occurs, and often epileptiform convulsions. Later there may result paralysis of the respiratory center. Preceding death there usually is suppression of the urine. Should there be recovery from a severe sunstroke, there may follow partial or complete paralysis, deafness, disturbance of vision or blindness, constant headaches, or dementia.

Lian¹ reports three atypical cases in all of which there were signs of meningeal irritation and lumbar puncture showed the cerebrospinal fluid to be under marked pressure. In one case there was only stupor, and in a second, sudden and acute dilatation of the heart with extreme arrhythmia.

TREATMENT

In sunstroke there will have to be combated the plethoric condition of the veins both at the periphery and in the cerebrospinal system. Besides this an attempt must be made to reduce the high temperature. The subject of the sunstroke should be brought to a cool, shady place, and the clothing loosened or removed. If there is poor respiration, artificial respiration should be resorted to. It must be cautiously done so as not to encourage possible cerebral hemorrhage. In cases of marked plethora, Grober² advises venesection, with the withdrawal of from 250 to 400 c.c. of blood. This will also be of assistance in warding off edema of the brain, and when asphyxia due to stagnation of the blood in the lungs has persisted for more than two hours.³

For the reduction of the temperature there should be tried a cold bath to which ice is added, or cool effusions. An ice cap should be constantly on the head. Friction of the body with pieces of ice will also be found useful. This should be continued until the temperature has fallen to at least 102. Often stimuli direct to the naked skin will be of service. This may be done by sprinkling the naked trunk with cold water, fanning the body, or by squirting cold carbonated water from a bottle on the body. Cold water enemas may also be tried.

Antipyretics aid in the attempt to reduce the temperature, but they should be used with discretion, and the heart should be carefully watched. The antipyretics that are best are antipyrin or acetphenetidin. These, with the cold water applications, should be continued as long as the high temperature persists.

To aid in the reduction of the cerebral pressure, lumbar puncture should be done. For convulsions or delirium, small doses of some sedative, such as chloral or the bromids, may be used.

AFTER-TREATMENT

The after-treatment of sunstroke or heat exhaustion is very important. Symptoms of the attack may persist for a long time. The patient should avoid all hot places, particularly those where he would be exposed to the sun. If his condition warrants it, he should bathe frequently in cool or cold water. If there is insomnia, veronal-sodium (sodium diethyl-barbiturate) or chloral may be given. A tonic containing strychnin can also be given. Alcoholic drinks should be avoided. There may be some loss of memory, such as forgetfulness, and headache, or irritability. These, however, usually disappear. Occasionally, when the sunstroke has been of an unusually severe character, there

1. Lian: Presse méd., 1915, xxiii, 556.

2. Grober: Deutsch. med. Wchnschr., 1914, xl, 1.

3. Hiller: Deutsch. med. Wchnschr., 1913, xxxix, 1185.

may remain permanently signs of brain injury, such as impaired memory, dementia, mania, epilepsy or partial paralysis.

HEAT COLLAPSE

A common condition from exposure to the sun, very often seen on hot summer days, is heat collapse. This is often called sunstroke, but it is too transient and mild for sunstroke. It is due to a short exposure to the heat of the sun's rays. There may be a transient unconsciousness; the temperature is normal or slightly elevated, and the respiration shallow and rapid.

Treatment consists in removing the patient to a cool or shady place, loosening the clothing, and spraying the face and body with cold water. He should be given a cup of strong tea or coffee. A hypodermic injection of strychnin or camphor may be needed.

ANTITYPHOID VACCINATION

The military experience of the past two years has tended to confirm the conclusions previously derived from army and hospital statistics during times of peace, concerning the value of antityphoid vaccination as a protective measure against typhoid fever. It has been urged by some that the elimination of typhoid fever from our army following the introduction of antityphoid vaccination was due not so much to vaccination as to improved sanitary conditions. This argument will hardly hold, however, in view of the success in controlling typhoid under the severe conditions of trench warfare on the western front in Europe.

The occurrence of typhoid in isolated instances in vaccinated persons has led some to raise the question as to whether after all vaccination is as efficient as army statistics would indicate. In addition to variations in quality of vaccine, and individual differences in the response to immunization, there are several factors which may influence the degree of immunity acquired by any individual of a series.

Immunity is a relative quality. Resistance in non-immunized persons is affected by many influences which tend to improve or depress body vigor. This is clearly evident in diseases having a slow onset and course, such as tuberculosis. Individual variation in immunity is seen also even in diseases such as scarlet fever, in which, while one attack usually protects for life, second attacks sometimes occur. Vaccination against smallpox confers a very stable immunity, but even here revaccination at intervals of a few years is found advisable. The duration of immunity conferred by typhoid vaccination is not definitely determined, but there is evidence to show that it may last for five years or more, though probably in a lessening degree. It has been customary to revaccinate at the end of two years, particularly if the persons concerned are liable to be exposed to unusual dangers of typhoid infection. It is said that revaccination every six months has been employed in some of the troops in the present European war.

Finally, the dosage of infected material which the immunized person is called on to withstand is an important factor in determining whether his protection will prove adequate. In nonimmunized civil communities, during epidemics due to infected water supplies, the proportion of persons who contract typhoid fever is only a fraction of the total number who ingest the infected water. This sparing of many of the exposed

population is probably due in part to the relatively greater natural immunity of some persons over others who may partake of the same quantities of water, and also in part to the circumstance that some persons take smaller amounts of infected water than others. The relatively greater incidence of typhoid among certain classes of large water drinkers was noted in the epidemic at Ithaca some years ago.

It seems evident, therefore, that the occasional failure of vaccination to protect against typhoid should not be allowed seriously to discredit a method for which the favorable evidence is so convincing.

TYPHOID AND PARATYPHOID

Vaccination against typhoid fever does not seem to protect against infections caused by paratyphoid organisms. During the early months of mobilization in the present war, certain troops were immunized against typhoid only. When these troops entered the field a few months later, typhoid fever was almost entirely absent, but paratyphoid was found in a number of instances. Subsequently paratyphoid vaccine was included with the typhoid for immunization.

Paratyphoid infections are not so common as typhoid, but since the circumstances of infection are similar in these diseases, it is advisable to include paratyphoid A and B with the typhoid organisms in the immunizing vaccine.

DOSAGE

The first dose of vaccine may contain 500 millions of killed typhoid bacilli, 250 millions of paratyphoid A and 250 millions of paratyphoid B. The second and third doses are each double the amount of the first injection, that is, 1,000 millions of typhoid and 500 millions each of paratyphoid A and paratyphoid B. The reactions following the vaccine containing paratyphoid in addition to the typhoid bacilli do not appear to be more severe than those following immunization by typhoid bacilli alone.

The dosage for children is determined by weight rather than by age. Children stand immunization well. For a child of from 8 to 12 years, half the adult dose may be safely given. In very young children the necessity for immunization is much less than in the older children; under ordinary conditions of life their food supply is better controlled and the opportunities for accidental infections are less than in older children whose activities take them into more varied and less sanitary situations.

Examination of Schoolchildren by Private Physicians.—

The large number of children to be examined in the public schools and the relatively small medical staff available led the department of health of New York City to allow physical examination of schoolchildren by private physicians if the parent so desired. The cards returned up to Feb. 1, 1916, that is, during the first semester of the school year, totaled 15,606, or 16 per cent. of the total number of children examined during that period. This indicated that about one sixth of the parents had availed themselves of the opportunity to allow a private physician to do public health work. The results of the examinations made by school inspectors and by private physicians have been tabulated for comparison, showing the percentage of defects found in the children examined. Taken as a whole there is a large degree of correspondence between the two sets of figures. There is, however, a high proportion of cardiac, pulmonary, orthopedic and nervous defects found by private physicians. It is estimated that these examinations made by private physicians has meant a saving of nearly \$12,000 to the department of health.

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CLINICAL CALORIMETRY

It cannot fail to be gratifying to Americans who are interested in the development and progress of the medical sciences to note the superior character as well as the increasing volume of the contributions that are being made from the laboratories of this country. In no field is the excellence and importance of this current scientific research more evident than in the domain of the study of nutrition. There was a time when the problems of metabolism were somewhat neglected for the pursuit of curative drugs or therapeutic serums. Today, however, we can point to substantial contributions to the theories of nutrition and to the knowledge of significant features of food and diet which are fundamental factors in the performance of the body in health or disease.

Prominent among the institutions which deserve credit for their contributions to the science of nutrition is the Russell Sage Institute of Pathology in Affiliation with the Second Medical Division of Bellevue Hospital, New York. For the second time since its inception, the *Archives of Internal Medicine* has devoted a special issue to papers based on investigations in clinical calorimetry.¹ These deal with a variety of topics, some of which depart widely from the questions of immediate physiologic interest and enter the domain of preeminently clinical interest, exemplifying the inevitable conclusion of most observant persons that much of clinical medicine in reality represents pathologic physiology.²

Elsewhere in this issue we quote the remark that it is not too much to say that the science of nutrition is founded on the study of the basal energy requirement.³ The latter, therefore, needs to be fundamentally understood and determinable by adequate methods. Calorimetry has helped to determine the energy needs by showing what the actual expenditures of the body are. To understand and control the processes by which the

body temperature is kept normal it has been necessary to discover a means for ascertaining at any time the actual quantities of heat produced and dissipated, and the effect on each factor of different normal and pathologic conditions. This is accomplished by calorimetry. One contribution to the science of metabolism which can be made only by a respiration calorimeter is a comparison of the direct and indirect calorimetry. The former method depends on the direct measurement of the heat of radiation, conduction and vaporization. The latter depends on the measurement of carbon dioxid and oxygen and the calculation of the foodstuffs metabolized each hour. Largely owing to the work of American investigators, it has been demonstrated definitely that the easier indirect method of calorimetry is in such substantial agreement with the direct method as to make it available for practical purposes. Indirect calorimetry has ready clinical application and advantages. It suffices to determine whether metabolism is higher or lower than normal, and thus becomes a guide to treatment and the management of the food supply. Henceforth the less expensive and less laborious technic of indirect calorimetry can be employed as a mode of clinical investigation with the assurance that it will suffice to furnish reliable data regarding the level of metabolism and related factors of importance to the investigator in medicine and to the diagnostician.

The Sage calorimeter has demonstrated,⁴ admittedly to the surprise of most students of metabolism, that the metabolism, that is, the energy expenditure, averaged 3 per cent. lower when the subject was in a semi-reclining position, represented by rest in a steamer chair, than when the subject was at complete rest, flat in bed. Muscular effort obviously increases metabolism; and most records on patients sitting upright or nearly so have shown an increased heat production over the resting condition. But it must be remembered, as Du Bois points out, that in the orthopneic posture either with back rest or steamer chair as used in these calorimeter experiments, there was complete support of the body and head. No more muscular tension was needed than when the subjects were lying flat and the pillows were so arranged that the men could fall asleep without change in posture. It is quite possible that the diminished pressure on the diaphragm lessened the work of breathing enough to account for the lower metabolism. We are reminded that "on steamers, in clubs, and in those parts of our country where laziness is a science, men assume a semi-reclining posture with the head, back and feet supported on any convenient object. Patients who are very dyspneic are obliged to sit up, and they can sleep only in the semireclining posture. The slight diminution in

1. Clinical Calorimetry, Arch. Int. Med., May, 1915, Part 2; *ibid.*, June, 1916, Part 2. Clinical Calorimetry in the United States, editorial, THE JOURNAL A. M. A., June 19, 1915, p. 2068.

2. The contributions of more distinctly clinical bearing will be commented on in a subsequent editorial note.

3. The Basal Metabolism in Obesity, and Its Significance, editorial, THE JOURNAL A. M. A., this issue, p. 288.

4. Soderstrom, G. F.; Meyer, A. L., and Du Bois, E. F.: Clinical Calorimetry, Eleventh Paper, A Comparison of the Metabolism of Men Flat in Bed and Sitting in a Steamer Chair, Arch. Int. Med., June, 1916, p. 872.

energy requirement may be a factor in leading them to assume the orthopneic posture, but with many cardiac and nephritic patients this economy is more than offset by increased muscular activity." At any rate, it is of no little interest to appreciate that the semireclining position which so many patients are required to assume for long periods represents no excessive expenditure of energy.

Fundamental researches on the basal energy requirement of adult man and of the young infant are now available.⁵ The facts regarding certain of the years of the intervening period are desirable because of the unique physiologic changes going on. Thus in boys the years immediately preceding puberty are of special interest. By this time the figure has lost most of its childish characteristics and the mind has reached a point of great intelligence. Although the individual has scarcely passed the half-way mark in the years of growth, and has attained only half his future weight, yet he resembles the adult much more than he resembles the infant. At this stage the sex glands have not yet begun the rapid development of puberty with its profound effect on the whole organism. Curiously enough there is a sudden increase in the rate of growth which takes place at this time. In fact, we may consider boys in the period of prepubescence as individuals of adult form but of small size, growing rapidly, and as yet scarcely influenced by the internal secretions of the sex glands. The new observations with the Sage calorimeter⁶ show a distinctly higher metabolism in boys of 12 to 13 years old. The heat production was 25 per cent. above the corresponding adult level. The fact that the metabolism is high, points, says Du Bois, to a specific increase in the metabolism of the growing organism.

Gephart and Du Bois⁷ have noted that there are many factors which influence the amounts of water given off by skin and lungs, the most important being the amount of water previously ingested, the amount of clothing, the temperature and humidity of the air and the rise or fall of body temperature. The amounts eliminated in consecutive hours may vary greatly, and even transient emotions may cause sweating. Under the atmospheric conditions of the calorimeter experi-

ments the average water elimination by normal men through the skin and lungs is 28.4 gm. an hour. About 24 per cent. of the heat production is dissipated in the vaporization of water.

HEREDITARY ANKYLOSIS OF FINGER JOINTS

From some points of view an individual may be regarded as representing a sort of arithmetical mean of both of his parents. There may be a blending of characteristics so that some features of each parent may be found in the offspring considered as a unit organism. In certain respects, however, definite qualities appear to be transmitted from parent to offspring either completely or not at all. Through Mendel's classic experiments and the subsequent enormous development of the study of heredity, it has become possible to formulate the plan in accord with which characteristics are transmitted so that they may appear as dominant in type and frequently manifest themselves, or may continue to be handed down in latent or recessive form until combinations of circumstances now definitely formulated lead to their cropping out. Genetics has become a more representative science than the study of breeding was a generation ago. In medicine, instances of hereditary transmission of bodily peculiarities and well defined structural anomalies have been known for a very long time. Inherited abnormalities of function have been described in growing number in recent years. The more carefully the cases are being studied and the family histories investigated, the larger becomes the number of instances which seem to obey the requirements of the mendelian rules of inheritance.

Illustrative cases of the investigated inheritance of defects, both chemical and morphologic, have been reviewed from time to time in *THE JOURNAL*. An unusually valuable addition to the literature of hereditary anomalies has been made by Cushing¹ of the Harvard Medical School on the subject of what he terms symphalangism. This is an anomalous malformation of the hand which appears to belong to the category of unit characters that are believed by present day geneticists to be inherited in accordance with mendelian laws. Familial tendencies have already been reported in cases of shortening of the fingers and toes which possessed only one instead of two interphalangeal articulations (hypophalangia or brachydactylism).² The symphalangism of Cushing refers to still another type of familial malformation previously described by Walker³

5. For the literature on infants, see Benedict, F. G., and Talbot, F. B.: *The Gaseous Metabolism of Infants*, Carnegie Institution of Washington, Pub. 201, 1914; *Studies in the Respiratory Exchange of Infants*, *Am. Jour. Dis. Child.*, July, 1914, p. 1. On adults, see Benedict, Emmes, Roth and Smith: *The Basal, Gaseous Metabolism of Normal Men and Women*, *Jour. Biol. Chem.*, 1914, xviii, 139. Benedict and Roth: *The Metabolism of Vegetarians as Compared with the Metabolism of Non-Vegetarians of Like Weight and Height*, *ibid.*, 1915, xx, 231. Benedict and Smith: *The Metabolism of Athletes as Compared with Normal Individuals of Similar Height and Weight*, *ibid.*, p. 243. Benedict and Emmes: *A Comparison of the Basal Metabolism of Normal Men and Women*, *ibid.*, p. 253. Benedict: *Factors Affecting Basal Metabolism*, *ibid.*, p. 263. Gephart, F. C., and Du Bois, E. F.: *Clinical Calorimetry*, Fourth Paper, *Arch. Int. Med.*, May, 1915, p. 835.

6. Du Bois, E. F.: *Clinical Calorimetry*, Twelfth Paper, *The Metabolism of Boys 12 and 13 years Old Compared with the Metabolism at Other Ages*, *Arch. Int. Med.*, June, 1916, p. 887.

7. Gephart, F. C., and Du Bois, E. F.: *Clinical Calorimetry*, Thirteenth Paper, *The Basal Metabolism of Normal Adults with Special Reference to Surface Area*, *Arch. Int. Med.*, June, 1916, p. 902.

1. Cushing, Harvey: *Hereditary Ankylosis of the Proximal Phalangeal Joints (Sympalangism)*, *Genetics*, 1916, i, 90.

2. Farabee, W. C.: *Inheritance of Digital Malformations in Man*, *Papers of the Peabody Museum of American Archaeology and Ethnology*, Harvard University, 1905, iii, 69. Drinkwater, H.: *An Account of a Brachydactylous Family*, *Proc. Roy. Soc. Edinburgh*, 1908, xxvii, 35; *Study of a Brachydactylous Family (Minor Brachydactyly)*, iv, *Conférence Internat. de génétique*, Paris, 1911, p. 549, *Account of a Family Showing Minor Brachydactyly*, *Jour. Gen.*, 1912, ii, 21; *Minor Brachydactyly*, No. 2, *ibid.*, 1914, iii, 217.

3. Walker, G.: *Remarkable Cases of Hereditary Ankyloses, or Absence of Various Phalangeal Joints with Defects of the Little and Ring Fingers*, *Bull. Johns Hopkins Hosp.*, 1901, xii, 129.

as a particular form of ankylosis involving more especially the midphalangeal joints. Aside from the possession of what the subjects designated as "straight fingers," in contrast to the "crooked fingers" of normal persons, there was no evidence of physical deterioration in the families studied. Cushing has secured records of 452 related individuals reaching into eight generations of the family which he has investigated. Their symphalangism, which is transmissible by either sex, appears in seven generations as a bony ankylosis of the proximal interphalangeal joints of one or more fingers. In its milder degrees, the preaxial (radial) fingers are less likely to be involved than the postaxial. Both hands and feet of the affected individuals may be involved. The trait may be transmitted in its most outspoken form by a parent in whom it is inconspicuous, but never by unaffected parents. Of the children of affected parents, about half were involved. Hence the trait behaves as a simple mendelian dominant with an equal chance, among the offspring of affected individuals, that it will be or will not be inherited.

The preference of inherited malformations of the sort described to manifest themselves in certain phalanges of the second row rather than in others raises interesting questions relating to development. It is suggested that the phenomenon is associated in some way with the late appearance of the ossification centers in this phalangeal row, the last of the three to ossify. There may be inherited inhibitory influences active at the prenatal period to account for these congenital anomalies. Cushing points out, however, that such a suggestion, though possibly explaining the underlying lesion characterizing brachydactyly, will not fully account for the condition with which we are dealing. For though a certain degree of brachydactylism does occasionally appear, the chief characteristic of symphalangism is a joint lesion. Although we do not know what is the chronological succession of development for the interphalangeal joints, it is quite probable that the articulations between the proximal and middle rows of phalanges are the last to be laid down, and that in these individuals an inhibitory influence checks their development at a stage a few days later than that which checks the formation of the ossification centers and produces the shortening of the fingers known as brachydactylism.

THE BASAL METABOLISM IN OBESITY, AND ITS SIGNIFICANCE

In a recent lecture, Du Bois¹ remarked, "It is not too much to say that the science of nutrition is founded on the study of the basal energy requirement." A large number of substitutes for this expression — basal metabolism, basal caloric requirement, basal heat production, minimal metabolism, postabsorptive metabolism, total gaseous exchange, etc. — are in current use;

and Du Bois suggests that on looking over this formidable list of synonyms one receives the impression that scientists have spent much time in coining phrases, and have tried to make two words grow where one grew before.

It is a credit to the development of science in America that in recent years so much of the valuable information regarding the fundamental facts of nutrition has been the outcome of research work in our own institutions. This applies, among other things, to the determination of the basal metabolism of man. Du Bois has summarized the results in this way: With most individuals the basal metabolism is surprisingly uniform from day to day and from year to year. Of course the heat production of a man depends largely on his size, but it is by no means proportional to the body weight. A large man gives off more heat than a small man, but for each kilogram of weight the small person has the higher metabolism. On the other hand, the metabolism of men of various sizes and shapes is rather closely proportional to the surface area of the body. Many years ago Rubner established this law of surface area, and was able to show that mice, rabbits, dogs, men and horses had almost the same metabolism per square meter of skin. The level of metabolism varies greatly with age. During the first few days of life it is very low, then rises rapidly during infancy, and reaches its highest level in the almost unexplored period between the ages of 2 and 6 years. After this it falls rapidly until about the eighteenth year, when the curve flattens out. Between the ages of 20 and 40 there is comparatively little change, but after this a slight fall, so that by the eightieth year the line is about 10 per cent. below the average level for the ages of 20 to 40. There seems to be a stimulation to the basal metabolism during the period of growth. Women show an average basal metabolism about 7 per cent. lower than that of men of the same age. Athletes are about 7 per cent. higher than men of sedentary habits. Confinement indoors or in bed reduces the metabolism. Prolonged undernutrition can reduce the metabolism 30 or 40 per cent. Benedict's subject, Levanzin, who fasted for thirty-one days, showed a marked reduction in basal metabolism, amounting to about 23 per cent. after three weeks' starvation.

In abnormal states metabolism may be modified to a surprising extent. Thus in exophthalmic goiter, which involves, as is commonly believed, an overactivity of the thyroid, the resting metabolism may be increased to twice its normal level, whereas in the hypothyroidism seen in myxedema the metabolic heat production is below normal. The fundamental revision of the subject of the physiology and pathology of basal metabolism is certain to furnish data of value in clinical medicine, particularly with respect to food requirement, which is determined by the energy exchanges and heat regulation incident to the varying heat production of certain diseases.

1. Du Bois, E. F.: The Basal Energy Requirement of Man, Jour. Washington Acad. Sc., 1916, vi, 347.

Obesity is sometimes looked on as a disease. There are, of course, pathologic conditions associated with abnormally large increments in weight and development of the adipose tissue. Is there a form of obesity indicative of a pathologically lessened power of energy exchange—an anomaly of metabolism? Measured on the basis of body weight there may appear to be a distinct difference amounting often to 30 or 40 per cent. in the basal heat production of fat and lean individuals, but they have almost exactly the same heat production in terms of surface area. Means² has found that the majority of obese subjects show no alteration in the basal metabolism, as expressed in terms of their surface area, even though the obesity is of a most extreme type.

Occasionally a slight reduction in metabolism occurs in obese persons. In Means' experience such subjects invariably show some clinical evidence of disturbed internal secretion. Hypopituitarism, which is often attended with adiposity, is an illustration of what is referred to here. Perhaps these facts will be of significance in the future in relation to the problems of differential diagnosis in obscure disorders of the endocrine glands.

SUPERSTITIONS CONCERNING MENSTRUATION

It is not surprising to find the mysterious phenomenon of menstruation involved in all sorts of superstitions and religious beliefs. Probably the most widespread assumption which permeated religious rituals and led to the establishment of curious customs associated with the menses was that menstruation periodically rids the body of woman of something undesirable that has accumulated in the organism, more specifically in the blood. To some it thus was a mechanism for removing an excess of nutriment from the body. According to the Mosaic law the mystery represented a process of purification: the impurities collected in the woman's blood were discharged in the menstrual flux, so that she underwent a recurring series of purifications. To the men of the monasteries, says Crawford,³ menstruation was a symbol of the essential sinfulness and inferiority of women, polluted like and polluting.

It is not difficult to trace a relationship between such ideas and the more magical beliefs that the menstruous woman is possessed by an evil spirit which resides in her blood. Accordingly, by the medium of her menstrual blood she may exert an influence for harm on her environment. The malign spell has at various times and among different races been assumed to exert a variety of potent effects; hence the numerous prohibitions found placed on the female members of

the household in the past. Thus is explained the seclusion of women from the cattle and the milk supply at certain periods among the Kafir tribes of South Africa. Frazer says that in Galela women at their monthly periods may not enter a tobacco field, and in Sumatra are forbidden the rice fields for fear of damaging the crop. Whole catalogues of uncanny phenomena attributed to the catamenial state might be enumerated, such as the belief, dating back to the time of Aristotle, that the glance of a menstruous woman takes the polish out of a mirror. Among certain races every house has two doors, one of which is used exclusively by the women during menstruation. Crawford naively asks whether "the altogether inordinate apprehensions of both nurse and surgeon as to the evils of operation during the menstrual state are tinged with the savor of this same superstitious fear."

The idea underlying these customs so interesting in the history of medicine has been summarized by Crawford as follows: There resides in the menstrual blood some agent powerful for good or for harm. Most of all is its power over the virility of the male, enfeebling him in the struggle for the survival of the fittest. The spirit of the woman resides in her blood, and is transferable therewith to the male. It is a special aspect and a special application of the universal primitive blood horror, founded on the same belief that the spirit of the person resides in his blood and emerges with it for good or for harm. In addition, there is something unintelligible about menstruation, something uncanny, and the primitive mind explains it as due to some spiritual agency, which may harm the woman if she does not take care of certain precautions, and may pass from her and harm others if they neglect the prescribed precautions.

The periodic changes in the uterine mucous membrane which initiate menstruation are now known to depend on the functional activity of the ovary. The onset of the period coincides with the first production of ripe ova in the ovary; it ceases with the cessation of ovulation at the climacteric or menopause. In cases in which the ovaries have been removed before puberty, menstruation never occurs. Removal of both ovaries from adults usually brings about a premature menopause. Ovulation and menstruation are thus obviously interrelated. Modern theories have usually assumed that menstruation is part of a preparation for the reception of the fertilized ovum. The facts are still too uncertain and conflicting to permit the formulation of a tenable hypothesis. The review of the mystical beliefs of the past always serves as a warning against hasty generalizations in the more enlightened days of modern science.

2. Means, J. H.: The Basal Metabolism in Obesity, *Arch. Int. Med.*, May, 1916, p. 704; Studies of the Basal Metabolism in Obesity and Nutritory Disease, *Jour. Med. Research*, 1915, xxvii, 121.

3. Raymond Crawford, *Proc. Roy. Soc. Med.*, 1915, ix, Section of the History of Medicine, p. 49.

The Growth of Wisdom.—What we call wisdom is the result, not the residuum, of all the wisdom of past ages.—Henry Ward Beecher.

Current Comment

POISONOUS PROPERTIES OF THE GARDEN DAFFODIL

The daffodil (*Narcissus pseudonarcissus*) has graced our gardens for generations. Although its poisonous properties have been known for a long time, little attention has been given to the subject by physicians. In 1910 Walsh¹ noted that the flower pickers of the Scilly Isles were subject to an irritating eruption on the hands, and he attributed this to the handling of the blossoms of the daffodil and narcissus. Neither the juice of the fresh plant, the alkaloid extracted from the plant nor the oil extracted from jonquil pomade produced any effect on the skin unless the skin was abraded. In a recent paper, McNab² calls attention to the dangers attendant on the accidental employment of daffodil bulbs as food. An ignorant cook prepared a soup from the bulbs in place of onions, with the result that those who partook of it suffered from nausea and violent vomiting and diarrhea. It was not until after the poisoning had been repeated several times that the error was discovered. There were no deaths. During the discussion, several obscure cases of poisoning were related, which appeared to be explainable by the assumption of similar mistakes. Daffodil bulbs contain an alkaloid (or alkaloids) whose physiologic action differs according to the stage of growth of the plant. If extracted from the flowering bulb the alkaloid produces dryness of the mouth, checks cutaneous secretions, dilates the pupil, quickens the pulse, and slows and weakens the heart contractions. The alkaloid extracted from the bulbs after flowering produces copious salivation, increases cutaneous secretion, contracts the pupil, and produces slight relaxation of the pulse, slight faintness and nausea. Such widely divergent physiologic effects indicate that there must be considerable differences in the nature of the alkaloids at the different times mentioned. Since the daffodil is so common in gardens it might be well to consider it in poisonings of mysterious origin.

THE BACTERICIDAL PROPERTY OF GASTRIC CONTENTS

That gastric contents possess the property of arresting putrefaction was observed in the middle of the eighteenth century by Spallanzani, who found that putrefying meat brought into contact with gastric secretion ceased to putrefy. With the advent of bacteriology this was explained as due to the bactericidal action of the gastric secretion, and the question arose whether under normal conditions pathogenic organisms could pass through the stomach. Koch was the first to show that cholera bacilli were killed by gastric secretion within a few hours. He further held that the organism could pass through into the intestine only in the presence of a disturbance of secretion or as a result of overloading the stomach. Other workers took up the problem, and it was found that cholera

germs, typhoid bacilli and pyocyaneus bacilli were killed in a very short time, while anthrax and tetanus bacilli (spore bearers) and the tubercle bacilli passed through unharmed. The mode of bactericidal action of the gastric juice has recently been investigated by Gregersen.¹ Forty-five minutes after an Ewald meal, gastric contents were secured from a variety of conditions, and the power tested on various organisms. He found that the bactericidal power varied directly as the free acid content, and was not influenced by the amount of combined acidity or the amount of pepsin. Furthermore, the bactericidal action of the juice was from three to four times as strong as similar strengths of the pure acid in water. This, he explains, is due to the bactericidal property of the bread used in the Ewald meal, which is activated by the free hydrochloric acid. Solutions of bread in water possessed very slight action, but the addition of pure acid to a percentage approximating that of the gastric contents resulted in increasing the bactericidal power to three or four times that of the two taken separately. That bacteria are constantly passing through the stomach is due to the rapid passage of water and foodstuffs in which the free hydrochloric acid does not reach a sufficient concentration to exercise its bactericidal power.

RURAL HEALTH AMERICA'S FIRST DUTY

Shortly after Congress convened, last winter, Senator Randsdell of Louisiana, chairman of the Senate Committee on Public Health and National Quarantine, introduced Senate Bill 2214, appropriating \$500,000 for the use of the United States Public Health Service, to be used in investigating and encouraging the adoption of improved methods of rural sanitation and especially for devising and demonstrating effective measures against malaria and typhoid, instructing farmers in the prevention of these diseases, carrying on necessary investigations and surveys, and cooperating with state and local authorities to eradicate these diseases in rural districts. Friday, July 14, in the Senate, Senator Randsdell presented a strong argument for his bill. He reviewed the history of health legislation in the United States, showing that local regulation had generally been ineffective and that most of our advances in federal legislation had resulted from disastrous experiences with epidemic diseases. As the representative of the Southern state in which the inroads of yellow fever have been perhaps most severe, Senator Randsdell is able to speak with authority and from personal observation. New Orleans' recent epidemic of bubonic plague and the brilliant work of the Public Health Service in stamping it out was vividly described. "Never again will there be an epidemic of bubonic plague in New Orleans," he said. "The people of that city realized that the conquest of this disease was one for the federal government. . . . Today as a result of the campaign against yellow fever and the campaign against bubonic plague, New Orleans is one of the healthiest cities in the world." After

1. Walsh, D.: Brit. Med. Jour., 1910, ii, 854.
2. McNab: Pharm. Jour., 1916, xcvi, 367.

1. Gregersen: Centralbl. f. Bakteriologie, I, O., 1916, lxxvii, 353.

reviewing the work of the Public Health Service and showing the limited means available, Senator Randsdell showed that in this country, in any line of progress, education is indispensable, and that, although much educational work has been done, and although the death rate throughout the nation has fallen during recent years, this decline has been much greater in urban than in rural communities. He then discussed the economic and vital loss due to malaria and typhoid, showing that these two diseases alone cost the United States over \$900,000,000 each year, and that both diseases are almost entirely preventable. Comparing the 1915 appropriation for the prevention of human disease with that for the prevention of diseases of animals, Senator Randsdell called attention to the fact that the total amount appropriated last year for human welfare was less than two million dollars, while the amount appropriated for animal and plant welfare was nearly six million. "The problem of rural sanitation," he declared, "is not a local problem, but one which concerns the health and physical integrity of our entire nation." Senator Randsdell's speech in favor of the passage of his bill is one of the strongest public health utterances ever made before Congress. While the bill is simple in its phraseology and provisions, its passage would result in widespread and lasting benefit to the entire country, and would greatly strengthen the Public Health Service. If Congress will pass this measure, it will deserve the gratitude and thanks of the public and especially of our rural population.

THE RESPONSIBILITY FOR PURE WATER SUPPLY

The courts have shown a more and more marked tendency of late to place on companies or corporations supplying water for drinking purposes the responsibility for its freedom from contamination. The farthest advance is made by the Court of Errors and Appeals of New Jersey, which has ruled that a water company supplying water for domestic purposes is liable to a consumer for damages resulting from illness due to pollution of the water, when the water company knew or should have known that the water was contaminated, and that the consumer met the burden of establishing the company's liability by the introduction of testimony which tended to prove open and notorious contamination of streams connected with the company's sources of water supply.¹ It is extremely regrettable that a judge of Pickaway County, Ohio, has shown a reactionary tendency in an instruction to the jury in a similar case.² A small epidemic of typhoid fever had been traced to the contamination of the water company's supply owing to a defect in a check valve established between the latter's mains and the extraneous water supply of a paper mill. The administrators of the estate of one of the victims of this epidemic sued the water company for damages. The jury returned a verdict for the defendants. There were several points in the case on which this verdict

may have been based. The judge in a remarkable instruction to the jury stated that, if it was a matter of common knowledge that the water was at fault, they should find a verdict for the defendant. He said further that it would be a matter of common knowledge if they found that the subject was discussed in conversation generally and that the newspapers had published recommendations to the consumers to boil the water. It will be seen that this view of the law is diametrically opposed to that which is taken by the New Jersey court in the case already quoted. As neither decision seemed to be based on statute but both on the common law, it is difficult to guess where the judge of the Circleville court can have found his law. It is unfortunate that the nature of the case was such that it was not carried to appeal, and it is to be hoped that should another occasion arise, a decision of the supreme court of the state of Ohio will be obtained.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

DISTRICT OF COLUMBIA

Infantile Paralysis.—To advise the residents of the District of Columbia with reference to anterior poliomyelitis and suggest methods and means for preventing the disease, a proclamation has been issued by the commissioners of the District of Columbia, 50,000 of which have been printed and are being distributed from door to door by the police. This leaflet speaks of the causation of the disease, the methods by which it is believed to be communicated, and gives rules for the protection of children.

Dinner for Dr. Glueck.—Thirty physicians and lawyers, friends of Dr. Bernard Glueck, Washington, tendered him a dinner, July 11, in honor of his recent appointment as alienist at the New York State Prison at Sing Sing. Dr. Glueck will leave his present position at the government hospital for the insane to assume his new duties in about two weeks. Dr. William A. White acted as toastmaster, and brief addresses were made by Drs. George M. Kober, Wilfred M. Barton, Francis R. Hagner and Prentiss Willson, and Messrs. E. J. Ayres, George C. Shinn and Frederick A. Fenning.

ILLINOIS

State Society Picnic.—The first annual picnic of the Illinois State Medical Society was held at State Reservation, Starved Rock, July 12 and 13, and was participated in by about 200. The two days were spent in hikes through the canyons near Starved Rock, in dancing, boating excursions, golf, etc.

Chicago

Disposition of Field Hospitals.—At a meeting of brigade officers at San Antonio, July 10, the disposition of the two field hospitals of the state was considered, and it was recommended that Field Hospital No. 1 be assigned to the First Brigade and Field Hospital No. 2 to the Second Brigade.

Psychopathic Laboratory Attacked.—At a meeting of the board of managers of the Chicago Bar Association recently, the committee appointed for that purpose recommended to the board of managers that the Psychopathic Laboratory connected with the Municipal Court of Chicago be discontinued.

Personal.—Lieut. Ray H. Davies, assigned Illinois Field Hospital No. 2, while entraining for the border at Springfield with his command, fractured two ribs.—Dr. Morris Lewison has succeeded the late Dr. Theodore B. Sachs on the advisory board of the Jewish Consumptive Relief Society.—Dr. John H. Noonan has been appointed assistant surgeon

1. Jones v. Mount Holly Water Company, 93 Atl. Rep. 860 (1915).
2. Grant v. Circleville Water Company, Court of Common Pleas, Pickaway County, Ohio, 1915, Engineering News, 1915, lxxiv, 631.

of the Park Hospital, Livingston, Mont.—Dr. John G. O'Malley has returned after a year of hospital service in the Ypres district of France.

First Conviction Under the Illinois Prevention of Blindness Act.—The secretary of the Illinois Society for the Prevention of Blindness reports that sixteen physicians and midwives have been prosecuted for failure to report cases of babies suffering from ophthalmia neonatorum within six hours after having observed the first symptoms. In one case the physician was convicted and fined \$50, but on plea of misfortune made by the defendant's lawyer, and concurred in by the official of the society, the fine was reduced to \$25. The attorney general has authorized the prosecution of nine more cases and the data on six additional violations of the law were forwarded to Springfield, July 15.—The Chicago Ophthalmological Society at its annual meeting adopted resolutions endorsing the efforts of the Society for the Prevention of Blindness. The two salient features in the law in question are the requirement that the attending physician or midwife advise the use of a prophylactic in the eyes of all new-born babies, and that report must be made of inflamed eyes irrespective of the cause of infection.

IOWA

Erection of New Hospital.—An isolation hospital having a capacity of forty beds is being erected in connection with the State University of Iowa, College of Medicine. It is reported that \$42,000 has been set aside for the construction of the institution.

Personal.—Dr. Walter L. Bierring, Des Moines, was reelected president of the state board of health; Dr. George F. Severs, Centerville, was elected vice president, and Dr. Guilford H. Sumner, Des Moines, was reelected secretary of the board.—Dr. Clinton E. Harris, Grinnell, has been appointed a member of the state board of health.—Mr. A. E. Kepford reentered the state employ, July 15, as tuberculosis lecturer, a position which he resigned a year ago to enter the evangelistic field.—Dr. Frank H. Clark has been elected president of the school board of Clarinda.

MAINE

New State Officers.—At the sixty-fourth annual meeting of the Maine Medical Association, held in Portland, June 7 and 8, under the presidency of Dr. Erastus E. Holt, Portland, the following officers were elected: president, Dr. Willis F. Hart, Camden; vice presidents, Drs. George R. Campbell, Augusta, and Ralph W. Wakefield, Bar Harbor, and secretary-treasurer, Dr. John B. Thompson, Bangor (reelected). The annual oration was delivered by Dr. Frank S. Meara of New York. After the annual banquet, an illustrated lecture on "Experiences of the Layman on a Journey of Three Months in Japan, Korea and China with Three Prominent Medical Men" was delivered by Dr. Wallace Butterick, secretary of the General Education Board of the Rockefeller Foundation.

MARYLAND

Personal.—Dr. Nathan Winslow of the University of Maryland, who has been ordered to the Mexican border as a member of the Medical Reserve Corps, has been sent to Field Hospital No. 3 on the line of communication under General Pershing.

Medical Officers Meet.—The second quarterly meeting of the deputy state health officers was held recently at the Medical and Chirurgical Faculty Building in Baltimore. Dr. C. Hampson Jones presided and an address was made by Dr. John S. Fulton, secretary of the state board of health. Newly appointed health officers received their commissions. An open discussion of the various phases of the domestic quarantine and contagious diseases was held.

MASSACHUSETTS

Personal.—Dr. Frankwood E. Williams, Cambridge, has been appointed by the governor a member of the advisory prison board.—Dr. Charles S. Curtis, Spencer, who has been on the staff of Dr. Grenfell's Hospital, St. Anthony, Labrador, for more than a year, will return to his home in a short time.

Psychologic Laboratory Established.—As a result of the adoption of a legislative act by the city council, June 23, the Boston police court will have a medical department and psychologic laboratory. Dr. Victor V. Anderson will be in

charge of the new bureau, which will pass on the mental condition of offenders.

Health Movies.—More than 5,000 people attended a moving picture show at Franklin Field, Boston, recently, the first of a series to teach hygiene and clean living. Other similar lectures will be given at various parks and playgrounds about Boston during the summer. The state department of health has initiated this work and is working in conjunction with philanthropic societies.

NEW JERSEY

Personal.—Dr. Robert R. Reed, Morristown, is announced as the winner of a photoplay competition for his play entitled "Witchcraft."

Doctors Enroll for Emergency.—Twenty of the prominent physicians of Atlantic City enrolled, July 8, as members of the Atlantic City branch of the American Emergency Corps. The call was issued by Dr. Philip Marvel, Atlantic City.

NEW YORK

Offers Farm for Sick Children.—Madam Edith Helena Rossi has telegraphed Commissioner of Public Health Emerson offering as a fresh air resort her farm of 60 acres at Dykeman, 52 miles from the Grand Central Station, in a virgin forest with a natural lake. Madam Rossi believes that several thousand children can be accommodated in tents if the health department or a charitable society in the metropolis can provide the tents and food for the children.

Training Camp for Doctors.—Maj.-Gen. Leonard Wood, Governors Island, announces that two training camps for medical men will be held in connection with the Plattsburg military training camp this month. The first was opened July 12, and the second will open July 24. The camps will be commanded by medical officers of the regular army. Physicians desiring to attend these camps should communicate with the Military Training Camps Association, 31 Nassau Street, New York.

Poliomyelitis Outside of New York City.—The number of cases of infantile paralysis that have occurred in the state outside of the city of New York since the beginning of the epidemic was 100 up to July 14. There have been in all eight deaths. The state department of health has sent out circulars of information to the health officers of the state as a guide in their campaign for the prevention and cure of the disease. The new instructions would require boarding house and hotel keepers and others to notify the health officers of the arrival of any children from infected districts. The city authorities have offered to take back any cases in other parts of the state that originated in the city. Officers of the state health department have been giving lectures in various parts of the state with a view of instructing health officers and physicians verbally concerning the control of infantile paralysis.

New York City

Provide Aid for Paralysis Cripples.—The Brooklyn Bureau of Charities is making arrangements to handle the aftermath of the epidemic of infantile paralysis and to see that children receive the necessary corrective treatment after being discharged from the hospitals. The committee appointed has decided to extend its activities so as to afford orthopedic care to about 500 children who are soon to be discharged from the Brooklyn hospitals. It is estimated that at the present time more than one half the children who leave the hospitals after an attack of poliomyelitis are crippled.

Personal.—Dr. Elbert M. Somers, Brooklyn, has resigned his position as superintendent of the Brooklyn State Hospital because of ill health.—Dr. C. Grana has sailed for Naples on the *Stampalia*.—Drs. Harry Plotz and George Baehr of the Mount Sinai Hospital have returned after a year spent in work with typhus fever in Serbia, Bulgaria, Austria and Hungary.—Dr. Peter K. Olitsky has returned after several months spent in Mexico in the study of typhus fever and other climatic diseases.—Dr. Franklin C. McLean has started for China, where he has been appointed the executive head at the medical school and hospital to be established in Peking, by the Rockefeller Foundation.

NORTH CAROLINA

State Board Election.—At the annual election of the State Board of Medical Examiners at Raleigh, Dr. Martin I. Stevens, Asheville, was elected president; Dr. Hubert A.

Royster, Raleigh, secretary-treasurer (reelected); Dr. Isaac M. Taylor, Morganton, delegate to the meeting of the council in Chicago, and Dr. Edwin G. Moore, Elm City, alternate.

Must Report Tuberculosis.—The Bureau of Tuberculosis of the state board of health is serving notices on all delinquent physicians and heads of institutions for the treatment of diseases that they are required to report all cases of tuberculosis under their charge to the Bureau of Tuberculosis within seven days after recognition of the disease.

Medical University Extension Lectures.—The medical course offered by the Extension Bureau of the University of North Carolina in connection with the state board of health was started by Dr. Jesse R. Gerstley, Chicago, on "Diseases of Children," July 4. The course is being taken by nineteen physicians and a number of nurses have also been invited to be present.—The first lecture to the Wayne County physicians who have registered for the course of postgraduate medicine was given, June 9, at Goldsboro by Dr. Lewis Webb Hill, Boston. The course consists of seventeen lectures.

Personal.—Dr. John R. Williams, formerly of Greensboro, out of late a resident of Tucson, Ariz., has returned to North Carolina and will practice at Asheville with his father, Dr. John Hey Williams.—Dr. William W. Perdue, formerly associated with Dr. Henry H. Briggs, Asheville, has resumed practice in Mobile, Ala.—Drs. William T. Shipp, formerly of Louisville, Ky., and George W. Shipp, recently of Newton, will be associated in the practice of medicine at Asheville.—Dr. Benjamin E. Washburn of the International Health Commission, whose headquarters are now at the Port of Spain, Trinidad, is visiting relatives in North Carolina and was in conference, July 5, with Dr. Watson S. Rankin, secretary of the state board of health of Raleigh.—Dr. James A. Speight, Rocky Mount, has been appointed whole time health officer of Nash County, succeeding Dr. James C. Braswell, Jr., Nashville, resigned.

Sanatorium Notes.—The opening exercises of the Anson County Sanatorium, Wadesboro, were held, July 4. In the morning a number of operations were performed and after lunch there was a literary program of four papers followed by a general discussion, and in the evening there was a general reception to the physicians and the public at the hospital.—Appalachian Hall, a sanatorium for the treatment of persons suffering from nervous disorders, has been opened at Asheville under the charge of Dr. Bernard R. Smith.—The deed for a six-room house at Durham to be used for an annex to the Lincoln Hospital for the care of colored tuberculosis patients has been recorded. The price paid for the house was \$1,600. The ladies of the Civic League will equip the hospital and the city and county will each appropriate \$25 a month toward current expenses.—Rowan County Medical Society has petitioned the county commissioners to provide a tuberculosis sanatorium for the county.

PENNSYLVANIA

Personal.—Dr. William S. O'Neill Sherman, Pittsburgh, has started for Europe, where he will do research work in various hospitals for the Rockefeller Institute. He is to make a special study of gangrene, tetanus and amputation.

Ice Cream Causes Typhoid.—Seventeen of the twenty-three cases of typhoid fever in Altoona have been traced to ice cream sold by one dealer, according to the report of Health Officer Thomas G. Herbert. He closed the plant where the confection was made. It was first supposed that the outbreak was due to impure milk, but an investigation showed that every family afflicted had bought ice cream from one dealer and that some had not purchased any milk. The health authorities are continuing their investigation.

Quarantine for Infantile Paralysis.—The advisory board of the Department of Health of Pennsylvania has adopted rules and regulations for the quarantine of infantile paralysis: All premises in which infantile paralysis exists are to be placarded, and no persons other than the attending physician and trained nurse shall enter or leave the said premises; the quarantine period shall be a minimum of twenty-one days from the date of onset until complete recovery or death or removal of patient; placard or placards shall remain in place until the expiration of the quarantine period, and shall be removed only by the health officer at the time when he shall disinfect the premises; after such disinfection, the householders shall thoroughly cleanse the room occupied by the patient and all articles of bedding, clothing, etc., used by the patient, with soap and water and thoroughly air the room

and admit as much sunlight as possible; the quarantine restrictions for acute anterior poliomyelitis relating to school attendance, exposure of patient in public places, use of conveyances by persons suffering therefrom, sale of bedding, clothing, etc., burial of bodies and funerals of persons dying therefrom, shall be the same as is now provided for diphtheria and certain other diseases; children under 16 in premises quarantined for anterior poliomyelitis, but not themselves affected with the disease, shall not be permitted to attend any school, church service, theater or moving picture show during the quarantine period, and all doors and windows in rooms occupied by persons suffering from acute anterior poliomyelitis must be screened from flies and other insects.

Philadelphia

Red Cross Campaign.—A large number of physicians and laymen met in the offices of the mayor, July 14, and outlined plans for the enlargement and extension of the South-Eastern Chapter of the American Red Cross. Efforts will be made to obtain 50,000 new members by July 20. Dr. Alfred Stengel presided at this meeting.

To Care for State Troops.—It has been decided to send a band of the South-Eastern Chapter of the American Red Cross to the border in order that the health of the Pennsylvania troops may be more carefully preserved. Materials in large quantities, including reading matter and tobacco, are wanted at once by the Red Cross. A call for 100 women to assist in preparing goods has been issued by Dr. Alfred Stengel, chairman.

Infantile Paralysis.—This city has remained comparatively free from the epidemic of infantile palsy, only two cases having been reported. No new cases have been observed during the present week and only eight cases have been reported throughout this state. At a meeting of the state department of health, rules were adopted placing infantile paralysis on the list of diseases for quarantine. This is the first time in the history of Pennsylvania that this malady has been in this category.

Year's Delay in College Merger.—The merger of the Medical School of the University of Pennsylvania and the Jefferson Medical College, which has been reported in THE JOURNAL, will not be consummated this year. The authorities find that it would be impossible to make proper and adequate preparation for the conducting of the two institutions jointly. The following statement was made by a dean of one of the institutions:

The members of the United Medical Committee, in charge of the Medical School of the University of Pennsylvania and the Jefferson Medical College, of Philadelphia, have agreed that it is advisable to postpone the consummation of the union agreed on by the plan adopted by the trustees of the two institutions, in order that further opportunity may be afforded for considering a number of important matters relative to the mode of administration of the new school, and have, therefore, determined that each of the schools shall conduct, separately from and independently of the other and of the United Medical Committee, the work of its college term for 1916-1917.

WISCONSIN

Women Charges to be Sterilized.—The State Board of Control, June 29, authorized the sterilization of the women inmates of the State Home for the Feeble-minded, Chippewa Falls.

District Turned Over to City.—At the meeting of the Milwaukee Society for the Care of the Sick, July 5, it was voted to turn over its three free dispensaries to the city provided that the municipality will accept and maintain them. The health commissioner presented a resolution to the council for an appropriation of \$500 to assume the work of the society.

Hospital News.—At a conference between the executive committee of the Milwaukee Chapter of the American Red Cross and J. J. O'Connor of the Central Division of the Red Cross, it was decided to organize a Red Cross base hospital in Milwaukee; a plan for the aid of dependent families of militiamen and other soldiers was perfected; arrangements were made for the production, warehousing, shipping and distribution of hospital and other supplies; a system of first aid work was established, and arrangements were made for the establishment of an information bureau of soldiers on the border or in Mexico. A fund of \$60,000 is to be raised, to be divided as follows: \$25,000 for equipment for the base hospital, \$15,000 for dependent families of Milwaukee militiamen, \$15,000 for supplies and \$5,000 for miscellaneous needs.—A brick hospital, two stories and basement in height, and 102 by 42 feet, will be erected at Plymouth this summer at a cost of \$24,000 by the Hospital

Association of that city.—The Evangelical Deaconess Hospital, Milwaukee, is to have a four story and basement addition, 42 by 90 feet, to cost about \$50,000 and will accommodate about sixty patients.

CANADA

Head of New Hospital at Coburg, Ont.—Dr. Fulton S. Vrooman, for the past three years superintendent of the Brockville (Ont.) Hospital for the Insane, has been appointed superintendent of the new Military Hospital at Coburg, Ont. This hospital has been established by the Canadian government for the treatment of shell shock and nervous cases among returned soldiers.

Infantile Paralysis in Canada.—The Ontario Board of Health reports infantile paralysis as having appeared in Ford, Ont., but so far only one or two cases. The chief officer of health has issued instructions to his aids and to the profession at large to be on the watch for the dread disease. Suggestions have also been made as to its detection, quarantine, etc. It is reported, also, that Montreal has five or six cases of the disease.

Toronto Women Physicians Meet.—The annual meeting of the Toronto Women's Medical Association was held in the Academy of Medicine during the past week. Instructive and interesting addresses were given by Dr. Haslem and Dr. Reta Kilburn, returned missionaries from India and China, respectively. The following officers were elected: president, Dr. Jennie Smillie; vice presidents, Drs. Haslem, Ellen A. A. Burt-Sherratt and Julia Thomas, and secretary-treasurer, Dr. Elizabeth L. Stewart.

Special Convocation at McGill University.—Fourteen medical students have received the degree of Doctor of Medicine at a special convocation held in McGill University, Montreal, last week. Acting-Dean Alexander D. Blackader presented the diplomas. These fourteen men went to the front a year ago with McGill Base Hospital, and after eight months' active service were asked by the British government to return to Canada to complete their studies. The entire number are returning to France with commissions in either the Canadian or British Army Medical Corps.

Toronto Base Hospital.—The old Toronto General Hospital is rapidly being fitted up as a base hospital. The regeneration is being conducted under the supervision of Lieut.-Col. Thomas B. Richardson, who has received the appointment of commandant. With him are to be associated the following: Capts. H. H. Harvie, R. L. Gingall, J. W. Livingstone, R. D. Mackenzie, Angus A. Campbell, Colin G. Campbell, Charles E. Treble, Herbert E. Wallace, Charles C. Ballantyne, Robert F. Slater, James E. Barry, Frederick B. G. Wilson and Alexander E. Macdonald. As soon as possible all the patients from Exhibition Camp, Toronto, will be transferred to the base hospital. The number is now 526.

GENERAL NEWS

Correction.—In THE JOURNAL for July 15, 1916, p. 163, Dr. Oliver S. Ormsby's discussion on the paper by Dr. F. Wise, the word "chrysarobin" should read "neorobin."

Bi-State Meeting.—The first meeting of the Federation of County Medical Societies of Northern Illinois and Southern Wisconsin was held at Freeport, July 6, when the executive officers of seventeen county medical societies convened to organize an independent society. Dr. William B. Peck, Freeport, was elected president and Dr. Nelson C. Phillips, Freeport, secretary.

Resolution on Age of Medical Officers.—House Joint Resolution No. 239, offered in the House by Mr. Lobeck, authorizes the Secretary of War to exempt from the age qualifications in Section 10 of the act approved June 3, 1916, entitled "An act for making further and more effectual provision for the national defense and for other purpose," those persons who had been heretofore designated or invited by the Secretary of War to take examinations for commissions in the medical corps of the army from the operation of said provision of said act.

The Plattsburg Camp.—The first camp of instruction for medical men was opened at Plattsburg, N. Y., July 12, with Maj. William DeWitt, M. C., U. S. Army, in charge. The second camp will open July 24, and while no camps have been established as yet, during the fourth and fifth periods of the camp arrangements for this can be made providing a sufficient number of applicants offer. The number of applicants for each camp is limited to two hundred. Applications should be made to Mr. R. N. McGill, 565 Federal Building, Chicago.

Anterior Poliomyelitis.—Appeal to Congress for \$135,000 for support of the public health service's campaign against the infantile paralysis epidemic in New York and to prevent its spread to other states was made by Secretary McAdoo of the treasury department, July 11, and Congress is urged to make the money available immediately. Dr. William C. Rucker, who is in active charge of the fight against the epidemic, believes it will cost about \$10,000 a month for the work of the service alone. Secretary McAdoo has offered the assistance of the public health service to the authorities of New York City in their efforts to suppress the disease, and as a result seven public health surgeons are cooperating with the officials there.

Would Inspect Army Food.—An investigation of the food supplied to the army and militia would be authorized under a resolution introduced in the House, July 7, by Representative Hulbert of New York. The resolution would authorize the president to appoint a civilian commission of not less than three members "to inspect the food supplied to the military forces of the United States, and to determine whether it conforms with the specifications of purchase and whether it is wholesome and adequate." The resolution would authorize the commission to serve during the "pleasure of the president," and would provide salaries of \$5,000 a year for each commissioner. The resolution was referred to the House Military Affairs Committee.

Bequests and Donations.—The following bequests and donations have recently been announced:

Medical College of the State of South Carolina, Charleston, a donation of \$1,000, to be used in purchasing equipment for the outpatient department, by an anonymous benefactor.

Touro Infirmary, New Orleans, a donation of \$14,000 for a new building for outpatients by an anonymous benefactor.

Babies Hospital, Philadelphia, a donation of \$7,000, the proceeds of lawn fêtes given in the neighborhood.

Johns Hopkins Hospital, Baltimore, \$500, the income from her gift of \$10,000, as a memorial to her little grandson who was drowned one year ago, by Mrs. John Mifflin Hood, the money to be applied for the care of sick children in the hospital.

For a new hospital at Spring Lake, N. J., and a convalescent home a bequest of land by Mrs. Anne Whartenby and a donation of \$42,000 by residents of Spring Lake.

Atlanta Medical College, \$25,000 toward an endowment fund, \$50 of which was received from Dr. Floyd W. McRae.

Maryland State University, an appropriation of \$25,000 a year for two years from the state legislature, for medical education.

Medical College of Virginia, pledges of over \$250,000, to be used in the erection of a hospital for contagious diseases, a hospital for colored patients and a nurses' home, these to be departments of the Memorial Hospital.

Ogdensburg (N. Y.) City Hospital, a gift of \$130,000 as an endowment by A. Barton Hepburn. The property will be taken over by the A. Barton Hepburn Corporation, which will be incorporated under the laws of the state.

Aid for Belgian Physicians.—The report of the treasury of the Committee of American Physicians for the Aid of the Belgian Profession lists no contributions for the month of June, 1916.

Previously reported receipts.....\$7,941.
Previously reported disbursements:

1,625 standard boxes of food at \$2.20.....	\$3,575.00
1,274 standard boxes of food at 2.30.....	2,930.20
353 standard boxes of food at 2.28.....	804.84

Total disbursements	7,310.
Balance	\$ 631.

F. F. SIMPSON, M.D., Treasurer,
5 Jenkins Arcade Building, Pittsburgh

Amendment of Alcohol Bill.—An amendment to the existing laws relating to the use of alcohol, free of tax, scientific institutions or colleges of learning, has been re twice in the Senate and referred to the committee finance. This act authorizes the secretary of the treasury to grant permits to withdraw alcohol from bond, free of tax, to any scientific university or college of learning constituted as such by any state or territory under its laws though not incorporated or chartered, and to any hospital maintained by endowment or otherwise and not conducted for profit, on the same terms and subject to the same restrictions and penalties already provided by Section 3297, Revised Statutes of the United States, and provided that alcohol so obtained may be used in surgical operations except as a beverage, in the treatment of patients, as provided further that the bond required may be executed by an officer of an institution for it and on its behalf, with two good and sufficient sureties on like conditions.

The Upson Foundation.—The Henry S. Upson Foundation was organized in 1915 to encourage the systematic study of problems wherein dental pathologic conditions are correlated with those of internal medicine, surgery, neurology and psychiatry. For several years before the death of the Prof. Henry S. Upson of Western Reserve University he has been initiating researches, collecting data and conferring with

those who might aid his quest. After Dr. Upson's death, Mrs. Upson volunteered to provide means for the further carrying out of Dr. Upson's aim. An organization was formed consisting of Dr. Edward Kirk, chairman; Drs. J. Madison Taylor, Charles E. DeM. Sajous, Nathaniel Gildersleeve, Herman Prinz and Arthur Hopewell Smith, all of Philadelphia. The executive committee of this commission selected a board of associate experts, in lines which include the more cognate subjects, consisting of Drs. DeForest P. Willard, orthopedist; Wendell Reber, ophthalmologist; G. Morris Piersol, internist; Charles R. Turner, prosthetist; Matthew H. Cryer, oral surgeon; John V. Mershon, orthodontist; Seymour DeW. Ludlum, neurologist; Ralph Butler, rhinologist and laryngologist, and Edward A. Schumann, pediatricist, all of Philadelphia. The commission proposes to issue a bulletin from time to time containing scientific communications and the like and the commission also desires to afford every facility in its power to research workers and will be glad to receive communications, suggestions and criticisms, which should be addressed to the Upson Foundation, in care of The Thomas W. Evans Museum and Dental Institute, Spruce and Fortieth Streets, Philadelphia.

Death of Metchnikoff.—The cable reports the death of Prof. Elie (Ilya Ilyich) Metchnikoff, the discoverer of the phagocyte, aged 71. He was born in Sivanopka amid the steppes of southern Russia, where his father, an officer of the Imperial Guard, bred horses for the Russian cavalry. His mother was a Polish Jewess. He became especially interested in natural science at the age of 8, when a medical student with a taste for botany came to tutor an older brother. After obtaining a degree corresponding to our Bachelor of Arts at the University of Kharkoff, Metchnikoff studied in Giessen under Leuckhart, at Göttingen under Henle, and at Munich under Siebold, devoting himself almost from the first to zoology and anatomy. He never took a degree in medicine. His researches on embryology and microzoology were done mostly at the Naples Marine Station. In 1870 he returned to Russia and was professor at Odessa for twelve years but resigned his chair then on account of the political disturbances following the assassination of Alexander the Second by a student at that university. He returned to Italy, settling at Messina and it was there that he discovered phagocytosis from research on the individual cells of sponges and other low forms of animal life. In 1886 he returned to Russia and was appointed director of a bacteriologic station at Odessa, but the influx of patients that had been bitten by dogs and wolves was so great that he had scant time for research and resigned his post. After wandering about Europe for a time he settled in Paris and offered his services to Pasteur, who at once placed a laboratory at the Pasteur Institute at his disposal. Here he had remained ever since, declining offers from Russia and America and devoting himself to his studies and teaching. He was appointed sub-director of the institute some years ago, and the Osiris bequest to the institute of over \$2,000,000 has supplied the means for exceptional research on large numbers of monkeys. This has proved particularly useful in studying the chemical prophylaxis of venereal diseases. In 1908 the Nobel prize was divided between Metchnikoff and Ehrlich; the \$20,000 which Metchnikoff thus received he devoted entirely to scientific research.

In 1911 he went to Russia to study the plague bacilli in the Asirakhan district. His earlier published works were on cholera, plague and anthrax, the comparative pathology of inflammation, and on immunity in infectious diseases. In 1903 he published his "Etude sur la nature humaine, essai de philosophie optimiste."

With Besredka, in 1912, and later, he insisted on the superiority of sensitized living typhoid bacilli for antityphoid vaccination, their experimental research having shown that even when large numbers of the living bacilli are injected subcutaneously, none are found in the excreta.

Metchnikoff's later studies have been on means to avoid pathologic old age. It was his view that an anthropoid mother cons ago gave birth to freak children. They had abnormally large brains, lodged in an abnormally large skull, permitting intellectual development, and thus were the first human beings. But they were freaks; the man's body was not ready for the man's brain. Man, he declared, is the victim of a lot of troublesome rudimentary organs that the monkeys had not had time to get rid of and others that man has not had time to develop. Chief among these "disharmonies" is the large intestine, which is necessary only to the digestion of grass and grain eaters. Its only use seems to be to breed poisonous toxins, mostly the production of the

colon bacillus. By overcoming the production of indols and phenols by the colon bacillus, much of these toxins can be avoided, and he was convinced that acid-producing bacteria accomplished this task of subjugating the colon bacilli.

FOREIGN NEWS

Sodré, a Physician, Appointed Prefect of Rio.—Our Rio exchange, the *Brazil Medico*, relates that its founder and editor in chief, Prof. Azevedo Sodré, has been appointed prefeito of the federal district, a position equivalent to governor of the city and district of Rio de Janeiro. He has long held the chair of clinical medicine in the University of Rio, and served as president of the Brazilian Association of the Medical Press, and for the last year as chief of the department of public instruction.

WAR NOTES

Base Hospital Unit Established.—A base hospital unit is being organized at the German Hospital, New York, under the direction of Dr. Frederic Kammerer, who has just returned from active service with the German army.

Surgical Units Reach Berlin.—The two American surgical units, headed respectively by Drs. John R. McDill, Milwaukee, and Dr. Paul F. Martin, Indianapolis, have arrived in Berlin and left, June 24, to join the war hospitals to which they have been assigned. Dr. McDill is to be stationed in Cologne and Dr. Martin in Budapest. Each unit consists of four surgeons and four nurses.

Great Britain Will Not Permit Red Cross Shipments to Central Powers.—It is reported from Washington that Great Britain has again refused a plea of the American Red Cross for permission to make additional shipments of Red Cross supplies to Germany and Austria and that Great Britain cannot entertain the suggestion that supplies be sent under guarantee or that their distribution will be supervised by a satisfactory commission of Americans.

OUR TROOPS ON THE BORDER

Comforts in Border Hospitals Needed.—In reports from El Paso it is stated that of the twelve pavilions of the base hospital at Fort Bliss, only two have electric fan equipment and the temperature ranges more than 100. Twenty additional pavilions in connection with the hospital have already been built, and a laboratory is to be provided. Each pavilion will accommodate thirty-eight patients.

New Base Hospital.—A letter has been received at the American Red Cross headquarters from Dr. William J. Mayo, Rochester, Minn., stating his willingness to organize a base hospital, the personnel and equipment of which is to be furnished by the Mayo Clinic. The number of medical officers in such a hospital is twenty-three, the number of beds 500, and the cost of the equipment is \$25,000.

Red Cross Supplies for Texas.—Supplementary instructions for the collecting of military relief supplies for the American troops on the Mexican border just issued by the American Red Cross name six intermediate depots in railroad centers of the United States where supplies should be sent to be assorted and classified, and three distributing depots from which final distribution of supplies be made to troops at the front. The points selected and districts embraced are as follows:

New York District, Red Cross Supply Depot, Bush Terminal No. 19, 39th Street and Second Avenue, South Brooklyn, N. Y.; includes all New England and the eastern part of New York State.

Cincinnati District, headquarters in Cincinnati; includes Pennsylvania, the western part of New York, New Jersey, Delaware, Maryland, West Virginia, Ohio and Indiana.

Chicago District, headquarters Red Cross Supply Depot, Clearing Argo District, Chicago; includes Minnesota, Wisconsin, Michigan and Northern Illinois.

Kansas City District, Red Cross Supply Depot, care Montgomery, Ward & Co., Kansas City, Mo.; includes North and South Dakota, Nebraska, Iowa, Northern Missouri and Northeastern Kansas.

Denver District, headquarters in Denver; includes Montana, Idaho, Wyoming, Utah and Northern Colorado.

San Francisco District, headquarters Red Cross Supply Depot, care Mr. A. B. C. Dohrmann, San Francisco; includes Washington, Oregon, Nevada and Northern California.

The headquarters of the following additional three districts are designated "distributing depots":

Douglas, Ariz., headquarters Red Cross Supply Depot, care Mayor W. H. Adamson; for all of Arizona and the southern part of California (Los Angeles).

El Paso, Tex., Red Cross Supply Depot, 516 San Francisco Street, El Paso, for all supplies from intermediate depots at Kansas City, Denver, San Francisco and from all territory west of Kansas not otherwise embraced.

San Antonio, Tex., District, headquarters Red Cross Supply Depot, Avenue E and Fourth Street, San Antonio; for all supplies from intermediate depots at New York, Cincinnati, Chicago, and from all southern states situated to the east of a north and south line through the western boundary of Kansas.

Each depot is under the charge of a manager who has general supervision over the receipt, storage and shipment of supplies and of their final disposition.

LONDON LETTER

LONDON, June 26, 1916.

The Causes of the Falling Birth Rate

A report of the commission of inquiry into the falling birth rate has aroused a good deal of commentary in the press. Dr. Mary Scharlieb writes that the increase of excessive stature among women does not affect the birth rate at all; but the question of girls' sports is a subject for special attention from the medical profession, parents and heads of schools. The statement that violent exercise prevents women later in life from nursing their children is not true. It is largely a question of habit and imitation. The limitation of families is due to many causes and not always to selfish ones. The question is whether the government ought not to attempt some plan of scholarships or insurance, say 2 cents a week paid from birth by the parents, the government to pay an equal sum, the total to be used when the child needs it for education, apprenticeship, or a good start in life.

The important bearing of the question of housing on the birth rate and on the prevention of infant mortality is emphasized by Miss Halford, secretary of the Association of Infant Welfare and Maternity Centers, who says that landlords refuse to accept as tenants people with large families. Other tenants object to the noise. Large families, for whom basements are often the only housing accommodation available, suffer in health. At an infant welfare center the difference in children born and bred in basements was pointed out. Professional women have in many cases come to regard themselves as a class destined to celibacy. The opinion is expressed that the ban on the marriage of women officials (temporarily relaxed from necessity during the war), which is imposed by government departments, ought to be removed. This attitude has its effect on other than government employers, and means the enforced retirement on marriage of women who have been earning good incomes.

The Demand for Army Surgeons

The army has now taken 11,000 physicians from private practice and is asking for another 4,000. This, with the 1,500 medical officers in the permanent service, gives a total of 16,500. In a letter addressed to the civilian medical profession, Sir Alfred Keogh, director general of the army medical service, points out that the profession has now been entrusted in a very special manner with the responsibility of working out in cooperation with the government the mobilization of the whole of the medical services of this country for its civil needs on such lines as shall enable the pressing requirements of the army to be met with the least possible injury to the civil population. He is convinced by close and continuous observation of the problem that it is only by means of such a national organization of medical services, effected by the profession itself, that the profession can be assured of serving the country with the maximum of efficiency and with the minimum of disturbance and friction in the case of individual physicians. The scheme adopted by the army authorities does not touch the question of how physicians over military age who do not come forward are to be dealt with, and this is its weak point. Sir Alfred Keogh has no authority to dispose of these men. But unless these men can be moved to areas where their services are required, the fullest efficiency cannot be attained. For example, three physicians over military age may choose to remain in one area while another area has no physician. This difficulty can be solved only by the application of compulsion to the whole medical profession. There is no very cogent reason why compulsion should not be applied, and there are many reasons why it should be. The necessity of carrying on and winning the war overrules all personal considerations. Medical men, old as well as young, must go where they are required. As the success of Sir Alfred Keogh's scheme depends, to a great extent, on the possibility of moving older physicians to the places where they are required, it is suggested that a committee of representative physicians should be formed and a scheme of general mobil-

ization drafted by them. Parliament, which has dealt with munition workers, should not hesitate to deal also with men on whose labors the future health of the people, and especially of the children, so largely depends.

A State Medical Service

The insurance act marked a great advance in the government control of medical service. But the physicians employed are simply under a contract to attend the wage earners in the country, and otherwise are free to do as they will. It is now generally admitted both by the friends and the foes of the act that much modification is necessary, and this will certainly take the direction of further state control which will probably terminate in time in a state medical service in which the physicians will be officials in exactly the same position as other government officials, or like the permanent army surgeons. A complete system of specialists, physicians, health officers, nurses and hospitals will probably be evolved. While it may be admitted that both the public and the profession will lose something by the reduction of the independent physician to an official it cannot be gainsaid that the scheme does not offer great advantages. Dr. J. P. Walker, health officer of the Isle of Wight, makes the following trenchant comments on the drawbacks of the present system, which he regards as on a wrong basis altogether. Every physician is now in competition with his fellows for his daily bread, and this competition is good neither for the physician nor his patients. Medical success is not necessarily dependent on a physician's skill and knowledge; it depends on much besides, for example, the size of his house, the luxuriance of his motor car, the charm and ability of the physician's wife; all these influence his worldly success. But should he venture to criticize those who employ him? How fares he, for example, should he tell his best paying patient there is nothing really the matter with her, that she needs work, and that employment would rob her of all her fancied ailments? Should he tell his chief magnate that the death rate from consumption is due to his germ-breeding cottages, how would he fare? Dr. Walker goes on to show how impossible it is for physicians to keep up their knowledge by attending hospital, except in a few cases, and how the public suffers thereby. It also points to the bad distribution of physicians, giving in 1910 one physician to 356 persons in Hampstead and one to every 5,582 in Shoreditch.

Vital Statistics

The report of the registrar-general, Dr. Stevenson, on the vital statistics for 1914, has just been issued. The population of England and Wales in the middle of that year is estimated at 36,960,684, made up of 17,877,052 males and 19,083,632 females. The marriages during the year numbered 294,401, giving a rate of 15.9 persons married per thousand population, or 0.2 above the rate for 1913, and 0.4 above the average rate in the decade 1901-1910. It was the highest rate recorded since 1907. The provisional figures for 1915 indicate a further rise of 3.5 per thousand. The birth rate in 1914 was 23.8 per thousand, being 2.1 below the average for the preceding decennium. It was the lowest on record, the next lowest being 23.9 in 1912, and the highest 36.3 in 1876, since which date the rate, with a few insignificant exceptions, has fallen year by year. The total number of births registered was 879,096; 447,184 were males and 431,912 were females. Tables are given showing that while the proportion of women of childbearing age to the total population rose from 23.1 per cent. in 1871 to 24.9 per cent. in 1911, the proportion of these women who are married fell from 49.6 to 47.7 per cent., and the average age of married women of childbearing age has steadily increased. While these changes would tend to influence the birth rate, the first making for its increase and the other two for its decrease, the conclusion is that "the net fall in the birth rate of the present day must be due to a diminution in the fertility of these women from whatever cause including that resulting from increase in their average age." From tables showing the birth rates of different parts of the country, it appears that the rates are highest in Wales, next highest in Lancashire, Cheshire, Yorkshire and the counties north of them, and much the lowest in the South. These differences are attributed to real differences in fertility. Compared with 1913, there was an increase in the rural districts of the North and in the smaller towns in Wales, and a decrease in all other areas except the county boroughs of the North. While the birth rate was lower than in 1913, the death rate was higher, the rate of natural increase for 1914 being only 0.1 above that of 1911, which was the lowest yet recorded.

The total number of deaths registered in the year was 16,742. This gives a rate of 14 per thousand population, 0.2 higher than in the preceding year, but 1.4 below the average for the ten preceding years. Of the total number of deaths registered, 91,971, or 17.8 per cent., were those of infants under 1 year of age. This corresponds to an infant mortality rate of 105 per thousand births, being 14 per thousand below the average for the preceding ten years, and the lowest on record, excepting an equal rate in 1910 and a lower one in 1912. The provisional infant mortality rate for 1915 shows an increase to 110 per thousand births—no doubt because of the disturbing influence of the war.

PARIS LETTER

PARIS, June 22, 1916.

The War

HEAD WOUNDS CAUSED BY PROJECTILES

At a meeting of the Société de Chirurgie de Paris, Dr. Hartmann, professor of clinical surgery at the Faculté de médecine de Paris, presented a report of 154 cases of cranio-cerebral wounds caused by projectiles, which report was submitted to the society by Drs. Okinczyc, Halphen, Prat, Monod, Métivet. In regard to the distribution of these wounds, the most frequent are those of the parietotemporal (from 60 to 65 per cent.), the next those of the frontal (20 to 30 per cent.), and then those of the occipital region (6 to 18 per cent.). Generally (130 cases out of 150) there was an obvious complete fracture of the skull, and in eighty-five of these the dura mater was injured. The brain generally presented injuries which were more extensive than the lesion of the dura mater would lead one to expect. With regard to the symptomatology of these wounds, the reporters insist on the fact that the patients suffering from cranial lesions sometimes present no functional trouble of any kind. They are able to walk and to speak and to move in a normal manner without any difficulty; indeed, they sometimes do not even have the slightest headache. As a result of these facts, soldiers suffering from serious head injuries are sometimes sent to ambulance stations for minor wounds. In other cases definite symptoms exist, some of them general, such as headache, stupor, coma or delirium, and other localizing symptoms, such as jacksonian epilepsy and visual disturbances. The prognosis in these lesions is grave, and varies not only according to their intensity but according to the region affected. The most serious are the lesions of the temporal region; next come those of the parietal region, then those of the frontal region, and finally those of the occiput. In reality, the death rate is often higher than that indicated by the statistics of most surgeons, in the first place because those who operate at the front do not learn of the deaths from secondary complications of those patients whom they have been obliged to send to the rear, while, on the other hand, the surgeons in the rear do not see those smashes of the skull which, being followed almost immediately by death, have not allowed of transportation. The most common cause of death is meningitis. This occasionally makes its appearance at some distance from the original wound, a fact which is explicable either by the depth and length of the track ploughed by the projectile in the cerebral substance, or by the production of infection along the cracks in the bone.

With regard to treatment, Prat, Métivet, Okinczyc and Monod are in agreement that it is indispensable to practice an immediate exploration, exposing the bone in all firearm wounds of the skull. Métivet prefers a crucial incision, the others a flap. Prat insists on the necessity of opening the skull even when the bone lesion is small. He does not, however, consider it necessary to follow up all the cracks which radiate from the point of penetration. As a guide for the diameter of the trephining, he takes the extent of the lesion in the dura mater and he enlarges the opening until he finds himself in the presence of a normal dura. The dura mater, if it does not pulsate, must be freed and the cerebral substance exposed, all fragments removed and a siphon drainage installed.

In the last session but one of the Réunion médico-chirurgicale de la XVI-e région at Montpellier, two resolutions in the following sense were voted: First, on account of the very reserved prognosis which should always rule in cases of serious craniocerebral injury, it is not considered prudent to return to active service those who have suffered from such lesions. If they do not present any serious disturbances they may be kept in the rear formations under

medical observation, or they may be sent to auxiliary services, care being taken that they shall be selected for work which does not expose them to violent effort or to sudden changes of temperature or atmospheric pressure. On the other hand, if there are still evident unfavorable symptoms, they should be discharged from the service.

The second resolution dealt with the question of communicating to the special services in the interior of the country details concerning the injuries, operations undergone and the general condition of wounded soldiers. In order that this may not be entrusted to the wounded man himself, or to some intermediary who may be negligent, it is recommended that these communications should be made on a small register of wounds and injuries similar to the individual military pass. These resolutions, after having been voted by the Réunion médico-chirurgicale de la XVI-e région, have also been submitted to the recent common session of the Société de chirurgie de Paris and the Société de neurologie de Paris (Paris Letter, June 1, 1916).

THE RIGHT OF THE WOUNDED TO REFUSE TREATMENT

Continuing the discussion opened last week at the Académie de médecine (THE JOURNAL, July 15, 1916, p. 217), on the right of a soldier to refuse treatment, Professor Grasset of Montpellier laid stress on the urgent necessity of obtaining an official or even legislative interpretation of the instructions of April 5, 1915 (THE JOURNAL, Aug. 21, 1915, p. 729). These instructions dealt with treatment intended only for immunization or cure; they did not cover interventions for diagnostic purposes. They defined the simple and noncutting methods of treatment, such as massage, mechanotherapy, thermotherapy and electrotherapy, which the wounded may not refuse. As the result of this drafting, numbers of the wounded refuse slight operations for diagnostic purposes, such as lumbar puncture and the taking of blood for Wassermann reactions. In the centers where a considerable number of psychoneurotic cases are concentrated these refusals have been particularly numerous. The recalcitrants are not always malingerers, but sometimes they are persons who have a real fear of pain or others who, having received a wound which keeps them away from the front, have no desire to see their cure hastened or to diminish the amount of indemnity which they receive. In these circumstances the urgency of the need for setting the matter at rest is evident. If this question is not settled very soon the time will come when men will refuse not merely a lumbar puncture but a simple bleeding, a wet cupping or a hypodermic injection.

MEDICAL EXAMINATION OF PHYSICIANS UNFIT FOR SERVICE

M. Justin Godart, undersecretary of state for the military health service, has just ordered a reexamination of the physicians who have been rejected as unfit. In a circular on this subject, addressed to the regional directors, the secretary of state says: "There exists in every region a certain number of physicians rejected as unfit for service whose unfitness is hardly confirmed by their appearance or by the activity which they daily display. In a certain number of cases this state of affairs has unfavorably affected public opinion and has caused these physicians a certain amount of moral prejudice. I have, therefore, decided to submit them to reexamination. This examination must be particularly careful and it must be carried out under your direction and in your presence by two surgeons of the army already chosen by the recruiting commissions. You may also consult specialists should you think it necessary."

INAUGURATION OF A SCHOOL FOR THE REEDUCATION OF CRIPPLES

The union of foreign colonies in France in favor of victims of the war, in which are grouped eighteen foreign colonies under the presidency of M. Shoninger, honorary president of the American Chamber of Commerce, has founded at the Grand-Palais in Paris a school for the vocational reeducation of the wounded and cripples of our army. This school, which has just been inaugurated by M. Justin Godart, undersecretary of state for the military health service, contains workshops for machinery, electrical fittings, joinery, cabinet making, locksmith's work, shoemaking, saddlery, harness making and tailoring. The men working in these different shops are paid at the rate of 15 centimes (3 cents) per hour and as soon as their work becomes productive they receive the price of it. To this school is attached a section where the pupils study French, stenography, typewriting, accounting, industrial and architectural drawing and English.

Marriages

CHARLES EDWARD PETERS, M.D., National Soldiers' Home, Danville, Ill., to Miss Frances Pitt Stack of National Military Home, Marion, Ind., July 3.

GEORGE LOUIS ALEXIS HAMILTON, M.D., Kansas City, Mo., to Miss Louise Alice Moening of Washington, D. C., at Marceline, Mo., July 6.

WILLIAM BREESE MCWHORTER, M.D., Acting Assistant Surgeon, U. S. P. H. S., Rome, Ga., to Miss Annic Berry, at Athens, Ga., June 17.

CHESTER ARTHUR SKELTON, M.D., St. Elmo, Chattanooga, Tenn., to Miss Gertrude Schultz of Cleveland, Tenn., July 2.

JOHN ALLEN GENTRY, M.D., Atlanta, Ga., to Miss Marguerite Love Sasser, Sasser, Ga., in Atlanta, June 25.

JAMES HOWARD ANDERSON, M.D., Marytown, W. Va., to Miss Marguerite Emery of Kenton, Ia., June 28.

JOHN ELIAS FREED, M.D., Terre Haute, Ind., to Miss Mary McManus of Brazil, Ind., in Paris, Ill., June 21.

ALEXANDER DAVID MCCrackin, M.D., Kellogg, Ida., to Miss Florence McFarland of Bovill, Ida., June 29.

GEORGE MINOR MACKENZIE, M.D., to Miss Eleanor Whiteside Hobson, both of New York City, June 22.

MARTIN HAYWARD POST, JR., M.D., St. Louis, to Miss Dorothy Lee Ricc, New York, July 22.

CHARLES AUGUSTUS YOUNG, M.D., to Miss Jettie L. Coffman, both of Rio, W. Va., July 3.

LAWRENCE HEMPSON MAYERS, M.D., to Miss Antoinette Redfield Hale, in Chicago, July 1.

FRED ERLAND DEAL, M.D., Weir, Kan., to Miss Winnie George of Slater, Mo., June 30.

HARTWELL WEAVER, M.D., to Miss Imogene Slayden, both of Dickson, Tenn., June 17.

CHARLES A. CATTERMOLLE, M.D., to Miss Alberta Long, both of Pueblo, Colo., July 1.

Deaths

Alfred Cleveland Cotton, M.D., Chicago; Rush Medical College, 1878; aged 69; a Fellow of the American Medical Association; a veteran of the Civil War, in which he served as drummer in Company F, One Hundred and Thirty-Seventh Illinois Volunteer Infantry; died at his home, July 12, from heart disease. Dr. Cotton had been engaged in practice in Chicago since 1878, specializing in pediatrics during later years. He was professor of pediatrics in Rush Medical College; attending physician to the children's department of Presbyterian Hospital and consulting physician to the Central Free Dispensary and Jackson Park Sanitarium. For many years Dr. Cotton was physician in charge of the infectious disease ward of Cook County Hospital and he was once City Physician of Chicago in charge of the isolation hospitals and the bridewell. He had been president of the Illinois State Medical Society, Chicago Medical Society, American Pediatric Society, Chicago Pediatric Society and Chicago Medical Examiners' Association and medical referee of the Prudential Insurance Company of America. He was the author of textbooks on "Diseases of Children," "Anatomy, Physiology and Hygiene of the Developing Period," and "Care of the Infant," in addition to many monographs on pediatric and allied subjects.

Surg. Charles Poindexter Wertenbaker, U. S. P. H. S.; aged 56; one of the oldest and most esteemed officers of the corps; died at his home in Charlottesville, Va., July 12. Dr. Wertenbaker was a native of Charlottesville, and was a graduate of the Medical Department of the University of Virginia, Charlottesville, in 1882. After postgraduate study in the medical schools and hospitals of New York he entered the Marine Hospital Service as assistant surgeon, Aug. 18, 1888, was promoted to passed assistant surgeon, Sept. 4, 1892, and was made surgeon, Feb. 16, 1904. He was a member of the National Guard of Virginia for thirteen years before entering the United States service. Dr. Wertenbaker was a Fellow of the American Medical Association, a member of the Association of Military Surgeons of the United States, and its president in 1911. He was well known as an expert

on communicable diseases, and of late years had been especially interested in the tuberculosis problem among the negroes of the South. Dr. Wertenbaker was also sanitary director of the Jamestown Exposition. In his death the Public Health Service loses one of its most efficient officers and the medical profession a physician of high attainment.

John F. W. Whitbeck, M.D., Rochester, N. Y.; University of Pennsylvania, Philadelphia, 1870; aged 72; a Fellow of the American Medical Association; president of the Medical Society of the State of New York in 1912, and Rochester Academy of Medicine, and a fellow of the American College of Surgeons; formerly surgeon general of the state and commissioner of the Rochester Board of Health; one of the most prominent surgeons of western New York; for many years president of the staff of the Rochester General Hospital and president of the board of managers of the Iola Sanitarium; died at his home, July 3, from acute dilatation of the heart. The Rochester Academy of Medicine and Monroe County Medical Society, at special meetings, adopted resolutions eulogistic of Dr. Whitbeck and expressive of affection and regret.

Charles Hamilton Hughes, M.D., St. Louis; Washington University, St. Louis, 1859; aged 77; a Fellow of the American Medical Association; a well-known neurologist and medicolegal expert of St. Louis; major of cavalry and surgeon in charge of hospitals during the Civil War; formerly superintendent of the Fulton, Mo., State Hospital for the Insane, and lecturer on medicine; professor of nervous and mental diseases and president of medical college faculties in St. Louis; one of the founders of the Marion-Sims Medical College; a member of the American Academy of Medicine, Association of Military Surgeons of the United States, and once president of the Mississippi Valley Medical Association; died at his home, July 13.

John Patrick Corrigan, M.D., Pawtucket, R. I.; New York University, New York City, 1883; aged 59; formerly a Fellow of the American Medical Association; a member of the Rhode Island Ophthalmological and Otological Society and formerly president of the Pawtucket Medical Association; surgeon to the eye and ear department of the Memorial Hospital, Pawtucket; who had been studying four years for the priesthood and was about to enter the Dominican Order; died in Providence Hospital, Washington, D. C., July 6, from heart disease.

Joseph Addington Gale, M.D., Roanoke, Va.; Bellevue Hospital Medical College, 1866; aged 73; a Fellow of the American Medical Association; a member of the Southern Surgical and Gynecological Association; president of the Medical Society of Virginia in 1903-1904 and a Fellow of the American College of Surgeons; chief surgeon of the Norfolk and Western Railroad for twenty-five years; hospital steward in the Confederate Army during the Civil War; died at his home, July 5.

Francis Sorrel, M.D., Washington, D. C.; University of Pennsylvania, Philadelphia, 1848; aged 89; assistant surgeon U. S. Army, from 1849 to 1856; a member of the legislature of California in 1860 and 1861; a Confederate medical officer during the Civil War and medical director of the General Hospital, Richmond, Va.; died in his apartments, in Washington, June 30.

Joseph William Henry, M.D., San Francisco; University of Southern California, Los Angeles, 1897; aged 45; a Fellow of the American Medical Association; a member of the staff of St. Mary's Hospital, San Francisco; who was taken ill while making an automobile trip; died at O'Connor Sanitarium, San Jose, June 28.

Joseph Camp Phillips, M.D., Port Arthur, Tex.; Tulane University, New Orleans, 1908; aged 40; a Fellow of the American Medical Association; a specialist on diseases of the eye, ear, nose and throat; formerly professor of chemistry in Mississippi Medical College, Meridian; died at his home, July 3, from meningitis.

Henry Horlbeck, M.D., Columbia, S. C.; Medical College of the State of South Carolina, Charleston, 1897; aged 44; a Fellow of the American Medical Association and a specialist on diseases of the eye, ear, nose and throat; died in Summerville, S. C., May 6, from laryngeal and pulmonary tuberculosis.

Thomas Irwin, M.D., Moberly, Mo.; Washington University, St. Louis, 1873; aged 68; formerly a Fellow of the American Medical Association; consulting surgeon to the Wabash System and local surgeon to the Missouri, Kansas and Texas Railway; died at his home, July 5.

Edward N. Flynn, M.D., Jeffersonville, Ind.; Hospital College of Medicine, Louisville, 1897; aged 48; a member of the Indiana State Medical Association; mayor of Jeffersonville from 1905 to 1909; died at the home of his sister in that city, July 9.

Thomas Henderson, M.D., Detroit; Detroit College of Medicine and Surgery, 1886; aged 61; a member of the Michigan State Medical Society; president of the board of education of Detroit in 1898-1899; died at his home, July 4, from uremia.

E. W. Dean, M.D., Hiram, Ga.; Medical College of Georgia, Augusta, 1883; a member of the Medical Association of Georgia; a well-known banker and physician; died in a sanatorium in Atlanta, July 4, after a surgical operation.

William H. Winkler, M.D., Applecreek, Ohio; University of Wooster, Cleveland, Ohio, 1872; aged 72; a practitioner and druggist of Applecreek for thirty-one years; died at his home, July 6, from cerebral hemorrhage.

Erwin Eugene Britton, M.D., McClure, Ohio; Cincinnati College of Medicine and Surgery, 1879; aged 66; for six consecutive terms mayor of McClure; died at his home, about June 28, from cerebral hemorrhage.

John Philip Van Voorhis, M.D.; Fairdale, Ill.; Eclectic Medical Institute, Cincinnati, 1856; aged 82; for more than fifty years a practitioner of Fairdale; died at his home, July 4, from senile debility.

William Washington Denny, Pink Hill, N. C. (license, thirty years' practice, 1890); aged 83; an honorary member of the Medical Society of North Carolina; died at his home, July 2, from senile debility.

James Theodore Roan, M.D., Waycross, Ga.; Southern Medical College, Atlanta, 1882; aged 63; formerly sanitary officer and county physician for Brooks County, Ga.; died at Townsend, Ga., June 30.

James Henry Waite, M.D., Eagle Bridge, N. Y.; University of Michigan, Ann Arbor, 1890; died in the Samaritan Hospital, Troy, N. Y., from inoperable carcinoma of the stomach, June 9.

Andrew Jacob Koontz, M.D., Independence, Va.; College of Physicians and Surgeons, Baltimore, 1887; aged 57; a practitioner and druggist; died at his home, June 20, from heart disease.

Pearson William Yard, M.D., Trenton, N. J.; New York University, New York, 1889; aged 52; died at his home, June 28, after an illness of six months, from septicemia due to the scratch of a pin.

Charles L. Stiles, M.D., Owego, N. Y.; Geneva (N. Y.) Medical College, 1865; aged 81; a member of the Medical Society of New York; died at his home, April 21, from cerebral hemorrhage.

Lynn W. Hendershott, M.D., Mill Shoals, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1881; aged 66; for more than forty years a practitioner of Illinois; died at his home recently.

I. R. Aultman, M.D., Meigs, Ga.; Medical College of Georgia, Augusta, 1893; aged 56; a practitioner and druggist; Meigs since 1891; died at his home, June 23.

Robert M. Marshall, M.D., Shenandoah Junction, W. Va.; University of Maryland, 1866; aged 72; for half a century a practitioner of West Virginia; died, June 22.

Thomas Gillespie, M.D., Kenosha, Wis.; Hahnemann Medical College, 1880; aged 81; a clergyman, teacher and physician; died at his home, July 4.

George Salisbury Clarke, M.D., Amherst, Mass.; Toledo (Ohio) Medical College, 1892; aged 62; died at his home, June 22, from nephritis.

Anna D. Varner, M.D., Wilkesburg, Pa.; Cleveland (Ohio) Homeopathic Medical College, 1896; died at her home, June 26.

Samuel J. Carpenter, Wichita, Kan. (license, Kansas, 1901); aged 93; a practitioner for seventy-one years; died at his home, June 29.

Andrew Nicholas Sprafka, M.D., Chicago; Northwestern University Medical School, 1914; aged 26; died in Chicago, June 22, from appendicitis.

John C. Tatman, M.D., Oak Creek, Colo.; Rush Medical College, 1867; aged 73; died at his home recently.

James Lynd Savage, M.D., Fargo, N. D.; Milwaukee Medical College, 1897; aged 43; formerly coroner of Cass County; died at his home, July 2, from heart disease.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

WINE OF CARDUI SUIT

(Continued from page 231)

May 23, 1916, Morning

TESTIMONY OF DR. ARTHUR HILL GRIMMER

The Court met pursuant to adjournment. Dr. Arthur Hill Grimmer was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. WALKER

Dr. Grimmer testified that he is a physician practicing in Chicago. He graduated from the Hahnemann Medical College of Chicago, and is now adjunct professor of materia medica. In addition to his work for the college, he practices medicine. He teaches the homeopathic system of medicine and gives medicines by mouth.

Q.—How do you obtain the medicines that are used in your school of medicine? A.—As all—first, all of the drugs are proven on a healthy subject, on healthy subjects. That is, before any drug is given to the sick there is a proving on the healthy.

Q.—What do you mean by provings? A.—Healthy subjects are taken and examined by competent men to find out whether they are healthy or not, and when they are found to be normal they are given these drugs until they produce symptoms, either subjective or objective symptoms and those symptoms are recorded and kept track of and a great number of individuals showing those symptoms constitute what is known as a proving.

To those symptoms are added all those cases of poisons or symptoms that arise from poisoning cases of various drugs.

Then another class, a smaller class of symptoms are added, which are known as "cured symptoms." Symptoms that have never been brought out in a proving to have been—but have been cured repeatedly by the drug.

All those symptoms taken together constitute what is known as a finished proving of the drug.

Q.—Suppose a prover—is that what you call the healthy person who is taking the drug? A.—The prover, yes, sir.

Q.—Suppose a prover is taking it for the purpose of finding out whether a drug has any efficiency or potency how do you keep track of the man himself and under what conditions are the provings made so as to get the objective symptoms that you speak of, for instance? A.—I do not know as I quite understand your question.

Q.—Well, suppose I was a healthy subject and you were proving a drug on me. How is the progress of the drug watched or controlled in the individual? That is what I mean by it. A.—Well, the master prover, the one who is in charge of the provings, of course interrogates the prover every day in regard to his symptoms, and observes—at the present time, bringing the methods up to the present date—they make analyses of the urine and of the blood, the blood pressure and those things are observed now. In former times until those things became more in vogue, they were not used. The original provings only constituted subjective symptoms, and they were kept track of by the master prover. Any sensations or change from the normal in any way.

Q.—What is the distinction between subjective provings and objective provings? You say you take both the subjective and objective symptoms? A.—Subjective symptoms are those symptoms felt by the patient and related by the patient. Objective symptoms are symptoms that are observed, changes that are observed by the physician in charge.

Q.—If the individual prover would perspire, that would be an objective symptom? A.—That would be an objective symptom.

Q.—And if you were informed that he had a pain in the back, you could not see that, and that would be a subjective symptom? A.—Correct.

Q.—If his face flushes, or anything that is observable, by pulse or eye or feeling, or in any other way by the doctor, that is objective, is that right? A.—Yes, sir.

Q.—Now, do you make any provings upon women? A.—Yes, indeed.

Q.—How do you obtain the drugs that are used in your school of medicine for diseases that are peculiar to women? A.—Those drugs are first proven on the healthy subjects, healthy individuals, and the symptoms are recorded and when we meet such a set of symptoms in the sick, those are the drugs that are given.

Q.—In making your provings in those cases, are the provings on women? A.—Yes, they are on women.

Q.—You make your provings—you ascertain, do you, of the medicines as I understand it—you ascertain what medicines are efficacious or indicated in diseases of women, by the provings on women? A.—Yes, sir.

Q.—Now, you, in your giving of a sketch of your method, of proving, you included something else which I did not quite catch

besides the symptoms, objective and subjective symptoms of the prover. What was the other? A.—Why, cases of poisoning, people who have been poisoned by drugs, the symptoms are observed, the physiological or toxic symptoms of the drugs are also noted and included in the provings.

Q.—In the case of poisons then, is that the way some of the poisons that you find to be poisons get into your pharmacopeia or into your medicine? A.—They are admitted, those symptoms are admitted as only exaggerated provings, because they are such.

Q.—You take that as a proving? A.—That is included in the proving.

Q.—What was the other? A.—The other is where there has been repeated curings of symptoms that have not as yet been observed in the proving, perhaps the proving is incomplete, that is, there has not been sufficient provers to make it out, yet the administration of the remedy on the indications that were present has cured certain symptoms a number of times, then those symptoms are admitted as being genuine symptoms of the drug, because of the drug's ability to cure them.

Q.—In that latter case, is that in the treatment of the sick or medicine to the well? A.—No, treatment of the sick.

Q.—That is a clinical observation of the action of the drug on the sick, is that right? A.—Yes, sir.

Q.—And those three constitute the proving of a given drug? A.—Yes, sir.

Q.—Are all drugs proved on the same person? A.—No, sir, rarely so. There are some provers who have proved more than one drug, but as a rule most of the drugs have been proven by a number of different provers, different sets of provers.

Q.—Do you make your provings in your school on neurasthenics? A.—No, indeed, they are not included as normal human beings.

Q.—Is it part of your method—or state whether it is or not, assuming that a drug has been tried on one individual, to try another on that same individual during any period that the first drug could have affected him? A.—Absolutely not.

Q.—Or her, either way. What precautions, if any, doctor, are taken to prevent imaginary symptoms being incorporated in the homeopathic materia medica, if you know? A.—The main precautions are that the—

Q.—Speak out loud. A.—The main precautions are that the provers, after being ascertained to be healthy are then told that some of them have no medicine. They are all taken—some of them are taking merely alcohol and water, unmedicated alcohol. They do not know which one of the provers are taking the nonmedicated fluid, so that they are used as controls, two or three of them in a class of provers are used as controls, and are given no medicine and yet they are told to record their symptoms and are examined the same way as the other provers who are taking the medicine.

Q.—What do you mean by "control?" A.—Those people who are taking no medicine who think they are taking medicine, and do not know but what they are taking medicine, are told to keep track of their symptoms in the same way as the others.

Q.—What is the purpose of that? A.—Simply to eliminate the possibility of imaginary symptoms creeping in.

Q.—Now, doctor, are you familiar with the two drugs known as—I withdraw that. Are you familiar with the drug known as *carduus benedictus*? A.—I am.

Q.—How long have you been familiar with that drug? A.—Practically during most of my practice.

Q.—State whether or not in your school of medicine, *carduus benedictus* is a drug in frequent use where indicated, in diseases of women?

Mr. T. J. Scofield:—That is objected to and I move to strike out the answer till I get my objection in. I am not objecting to his stating what he knows about it in his personal knowledge of the practice, but for him to be permitted to say that it is frequently used in his school, it seems to me would be very objectionable, and necessarily based on hearsay.

Mr. Walker:—I will change the question, and put it in another way.

Q.—How frequently within your knowledge, is *carduus benedictus* used in the homeopathic treatment for women's diseases?

Mr. T. J. Scofield:—That question, if the Court please, I object to.

THE COURT:—Your personal knowledge, not from reading, but from actual observation.

A.—Quite frequently.

Mr. Walker: Q.—Do you know what the custom is among your school of medicine in connection with that drug and its use? A.—Yes.

Mr. T. J. Scofield:—That is objected to, if the Court please. THE COURT:—He may answer.

To which ruling of the Court the defendants, etc., excepted.

A.—It is in quite frequent use.

Mr. Walker: Q.—Now, state whether or not, Dr. Grimmer, the drug known as *carduus benedictus* has provings in your school of medicine? A.—What is the question?

Q.—Are there provings of that drug in your school of medicine? A.—There are.

Q.—*Carduus benedictus*? And when you speak of provings, you have reference to the methods that you have related as to the provings of drugs as just described, is that right? A.—Yes, sir.

Q.—Are you familiar with the drug known as *viburnum prunifolium*? A.—I am.

Q.—State whether or not that drug is used in your school of medicine in diseases that are peculiar to the female? A.—It is.

Q.—How long have you known of that drug as being in use in the troubles that arise—that are peculiar to the woman? A.—Since I have been in practice.

Q.—State whether or not, as far as—whether in your knowledge that is a drug of frequent use in the profession in your school? A.—It is.

Q.—Are you accustomed—have you knowledge of the custom in your profession in the use of that drug in diseases of women? A.—I have.

Q.—Now, Doctor, will you please tell the jury whether or not you are familiar with the organs of the woman, the genital organs, the organs of generation? A.—I am.

Q.—You say you are? A.—Yes, sir.

Q.—Before I get to that subject, Judge Hough calls attention to the fact that I neglected to ask you whether or not in your school of medicine *viburnum prunifolium* has been proven? A.—It has.

Q.—As you have illustrated before the method? A.—Yes, sir.

Dr. Grimmer stated that he has treated practically all functional disturbances peculiar to women. He does not perform surgery. He has used *viburnum prunifolium* and *carduus benedictus* many times with very good results. About 10 per cent. of female diseases are surgical cases and not over 5 per cent. in his experience. The witness stated that these medicines are of value when surgery is indicated.

The witness has treated all cases from early infancy to old age, through puberty to the menopause. The witness stated roughly, 50 per cent. of girls suffer at the time of puberty, and that some of the women who consult him seem to have a fair knowledge of what is the matter with them from their symptoms. On the other hand, many of them are mistaken. He does not always make an examination before he treats the case. At least 75 per cent. of his cases are treated without examination and he considers that he has had very excellent results. He considers that *viburnum prunifolium* and *carduus benedictus* are indicated in practically anything that women may have peculiar to them, any of their sicknesses. He mentioned amenorrhea, menstrual disturbances of all kinds, leukorrhea, inflamed conditions of the uterus and tubes, and the vagina, threatened abortion, all of which he has treated with good results. The witness mentioned cases of sterility which might be treated by medical means.

The witness has never used *viburnum prunifolium* and *carduus benedictus* in any way except in alcoholic solutions. He stated that the general rule in homeopathic practice is to give the smallest dose possible to effect the cure, as the best dose.

He defined high dilution as low strength.

Q.—Well, what is the theory upon which your school get results use their medicines as to such small doses? A.—The theory is known as the law of similars; that which will produce on the healthy similar symptoms to what we meet in the sick will cure those symptoms in all curable cases. In some cases we all admit they are incurable. In all curable diseases that law is universal.

Q.—How do you establish the fact that there is efficiency in the various infinitesimal doses that you give? A.—By two processes. In proving it on the healthy and by curing the sick when we meet these similar symptoms in the sick.

Q.—In your provings, in your proving a drug do you prove it in different dosages—I withdraw that. How do you ascertain that in proving of the drug, the minimum or very small dose—has more efficiency—do you prove that? A.—By getting the effects on the healthy giving it through long periods of time to the healthy until symptoms are developed. Very frequently our best provings are made with high potency.

Q.—When you say high potency— A.—The 30th potency.

Q.—That means the smallest amount of drug, is that right? A.—Yes, sir.

Q.—You have said, doctor, that there are certain percentages which you treat without a physical examination. Well, why is that? A.—Why, a great many object to it, and in young girls we hesitate to make an examination unless it becomes absolutely imperative.

Q.—Do you make the examination wherever it is permitted? A.—Yes, sir, I do.

Q.—State whether or not as a physician you deem it advisable that where it can be done, the examination be made? A.—Where it seems necessary I always insist on it. Then if they refuse, of course, we can only treat them and tell them that the responsibility is with them.

Mr. Walker:—Now, doctor, is there any difference—well, I know this answers itself. I was going to ask the doctor, Judge, whether there was any difference in taking a drug that was poisonous and one that was not in the quantity that he would give it, and I see that would be ridiculous.

Q.—Doctor, what attention do you pay to the alcohol, as alcohol in the remedies that you give in your profession? A.—We regard it as being negative, the alcohol that is in the drugs that we give.

Q.—Do you make any distinction between alcohol as alcohol and alcohol when used in combination with a drug or with medicines?
A.—Yes. When we give alcohol as alcohol, we give it for the stimulating effects and give it in doses sufficient to obtain those effects.

The witness stated that he had heard the Home Treatment Book for Women read. He stated that he has treated cases of vaginitis and gonorrhea and he would consider medicine by mouth invariably indicated in these conditions and that this medicine contains alcohol. He would consider the alcohol in the hypothetical medicine as being negligible. He would not consider that the alcohol would heighten the passions of a girl at puberty, and he would not consider that it would give her an alcoholic habit. He stated that medicines are always indicated during pregnancy for symptoms. He would not consider the hypothetical medicine as injurious to the health because of its alcoholic content. Dr. Grimmer stated that a medicine could act both as a sedative and a tonic. He would consider that the hypothetical medicine might be indicated at the time of the menses, and that it could not mask a cancer. He would say that about 60 per cent. of women in the menopause suffer with distressful symptoms.

Q.—Now in your school do you combine drugs? A.—It is not in accordance with the tenets of the homeopathic teaching although many of the men, clinicians, clinically do combine and use the drugs and most of our pharmacists give out combinations with very good effects.

Q.—In your treatment do you give two different drugs to the same patient—I mean one drug following the other, like— A.—Very frequently one drug will complement another, yes.

Q.—How do you give it as you, yourself, practice? A.—In my own practice I give one drug at a time, and then if I get my results, I may follow it with another that is very similar to that drug.

Q.—That is, take *carduus benedictus*, for instance, at one stage, then could you follow that up, would it be proper in your method to follow that up with *viburnum* within an hour or two? A.—They are compatible.

Q.—Those two? A.—Yes.

Q.—Is that the way you use drugs when you use two drugs? A.—If I use two drugs, yes, sir.

Q.—What is the largest amount of alcohol in each dose of the homeopathic medicines which you give? A.—Most of the drugs that I give are given in dilution so that the alcohol is practically negligible.

Q.—A very small amount? A.—Yes, when I do use the tinctures, then it would be only a few drops of the tincture.

Q.—Doctor, have you looked into the subject at all as to what amount of alcohol can safely be taken by an adult without a bad effect?

Mr. T. J. Scofield:—I object to that.

Mr. Walker:—I mean in a medicinal solution.

Mr. T. J. Scofield:—If he knows anything about it, that is a different proposition.

THE COURT:—That is another way of asking him whether he knows anything about it.

To which ruling of the Court the defendants, etc., excepted.

Mr. Walker:—If he has not looked into it I won't press it.

A.—I have not specially looked into it, but I have a knowledge of the subject from reading.

Q.—What, in your opinion, doctor, as a physician, can an adult human being—the amount of alcohol that he can take in 24 hours with safety? A.—I would say that would vary with the individual.

Q.—Well, the minimum? A.—From three ounces say carried over a long period, not at one dose at one time, but diluted and given through a period of 24 hours.

THE COURT: Q.—Is that absolute alcohol or whisky? A.—Absolute alcohol.

Mr. T. J. Scofield:—Three or four ounces every 24 hours? A.—About three ounces of absolute alcohol.

Mr. Walker: Q.—That is diluted? A.—Diluted and given over a period of 24 hours in divided doses.

Q.—To what dilution would you say? A.—Oh, half and half.

Q.—That would be equivalent, would it, doctor, to six ounces of whisky? A.—About six ounces of whisky.

Mr. T. J. Scofield:—Well, six or eight.

THE COURT:—Depending on whether it was three or four ounces.

The Witness:—Yes. Well, I said three ounces was the minimum. I did not quite understand the question when it was first given, if it was absolute alcohol I would say three ounces.

The witness then defined inflammations of the uterus such as endometritis, and stated that when there are adhesions, the condition is not always surgical, and that there are such cases that may be treated by medicine through the mouth. The drugs mentioned are among those used for this purpose. The witness stated that these drugs are those indicated to make childbirth easier. Dr. Grimmer stated that he would not give a girl treatment at the time of puberty unless she had symptoms. If the hypothetical medicine was given to a

girl at puberty who had no symptoms, it would not, in his opinion, hurt her or create an alcoholic habit.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that if a girl took the medicine at puberty without symptoms and continued it over a great length of time she might develop a proving and would then discontinue the remedy. He stated that if she continued to take the medicine past that time, she might develop something that would be harmful to her. Dr. Grimmer testified that in the dosage prescribed, 48 drops, three or four times a day, he did not think the alcohol would hurt her or create an alcoholic habit, and he did not think it would not hurt her over a period of years. She could take it right through a lifetime but he would not necessarily recommend it, nor would he recommend the medicine to a girl who had no symptoms because such are better off without any medicine.

The witness says that he does not agree that all girls should take this medicine at puberty whether they have symptoms or not. He considers that 50 per cent. of girls need medicine at the period of puberty. He stated that he arrives at this conclusion from the patients who come to his office, and that his statement is merely a rough sort of guess. The witness stated that in a susceptible individual, the hypothetical medicine might produce symptoms if taken sufficiently long, say from two weeks to a month. It might produce nervous symptoms, mental symptoms, functional disturbances of the menses, irregularities, etc. It would not produce gonorrhea; it might produce a slight degree of prolapse; it might produce catarrhal inflammation; it would not produce any sort of infectious inflammation. He stated that practically all inflammations are infectious.

He could not name any inflammation which was not infectious. The witness considers that the use of this medicine might in some way lower the number of inflammations that might follow and might lower the vitality of these parts if taken through a long period of time in sufficiently large doses. Dr. Grimmer testified he does not agree with the statement in the Home Treatment Book for Women that all girls should take this medicinal solution all through the period of puberty and that it can do nothing but good. He agrees with the part that it could do nothing but good. He does not believe in self medication; in a few cases it might lower the resistance and might lay the patient open to infection. He has always used *carduus benedictus* as a homeopathic tincture and *viburnum prunifolium* in the same way, and has never used them in combination. The witness stated that he could not tell the percentage of alcohol, but believes that they are made up with 90 per cent. of alcohol, although he has no absolute knowledge regarding the making of the tinctures. The witness stated that he teaches only the symptomatology and the therapeutic action of the drugs, and not the pharmacology of the drugs.

Dr. Grimmer testified further that he has never used *carduus benedictus* until within the last three months and that he used *carduus marianus* until up to the time he testified in Chattanooga for the Chattanooga Medicine Company. He took up the use of *carduus benedictus* as a result of the testimony he heard at Chattanooga. The testimony he had reference to was that of Dr. Ward and Dr. Thornton.

The witness stated that he has been in the employ of the Chattanooga Medicine Company since he testified in Chattanooga. The reason he came home from Chattanooga and began to use *carduus benedictus* is because he was struck with the possibility of its use. The witness says he has never made any provings of *carduus benedictus*. There are provings of *viburnum prunifolium*. He mentioned those of Hale and Higby.

The witness stated that the *viburnum prunifolium* in the hypothetical medicine would not be the homeopathic tincture and *carduus benedictus* would not be the homeopathic tincture. The witness stated that his experience with the remedies was only with the homeopathic tincture.

The witness stated that if it was assumed that the *viburnum prunifolium* in the homeopathic tincture was extracted with 50 per cent. alcohol and that the *viburnum prunifolium* as extracted with 20 per cent. of alcohol does not contain all

the medicinal properties, he would have no opinion as to the value of the viburnum prunifolium as contained in the latter mixture. The witness stated that if viburnum prunifolium is given to a girl who is not menstruating, it would be indicated for the sum total of her symptoms. In other words, the physician would have to direct the giving.

He stated that amenorrhea might be caused by a number of conditions. Viburnum is indicated if the patient has all the other symptoms for this indication. For this one must go to the provings. He mentioned Hale and Clark.

The witness stated that he does not know that Hale in 1882 stated that there were no provings of viburnum. The witness stated that he obtained the provings from Hale's new book, titled "New Remedies." In this book Hale does not give the complete provings but only some symptoms. Viburnum prunifolium is not a completely proved drug. The witness stated that he has used carduus benedictus perhaps a half a dozen times since February and with success and as a result, he feels qualified to say that carduus benedictus is a therapeutic agent. He gave it in the middle of March for a case of dysmenorrhea and also for a case of menstrual suppression. He would not give the names of the patients. He gave carduus benedictus to a girl with dysmenorrhea for a few days until the period had passed. He gave her a drop of the tincture to nine drops of alcohol, which is the second dilution. Of this he gave her five drops in a quarter of a glass of water and of this quarter of a glass of water he told her to take two teaspoonfuls every two hours until the pain was gone. She took it for about two days. He also gave it to her in April. She was so well in May that he discontinued the medicine. He would therefore consider that the medicine was indicated for that condition. He did not make any examination of the girl, so that he does not know whether there were any sort of uterine laceration, flexions, salpingitis, endometritis or inflammations of the tubes and ovaries.

In the case of suppression which he considers was caused by taking cold, he gave the same dosage. He gave it in the month of March. The girl who had dysmenorrhea he told to use the hot water bottle on the abdomen. The one with the suppression he told to go to bed and keep warm. The patient, however, remained "up and around." The witness stated that he thought the menses would probably have returned with no medicine whatever, but he believes that the medicine helped to bring them around. He gave carduus benedictus in two cases of leukorrhea during the month of April. One was a married woman, the other a girl 19 years old. He did not try to make any diagnosis of the cause in either case. He made no examination. The married woman told him that she had never borne children. He made an examination of her uterus a year or so ago, and he stated that there might be a vast difference in the position of the uterus after a year. He gave the medicine simply on the symptomatology. In the month of March, he gave carduus benedictus to one case with a general run down condition which he believed was due to overwork and poor nutrition. He had made no effort to determine the cause of the condition except by talking to the patient. He again refused to mention the names of the patients either privately or publicly and says that he has not mentioned them to the attorneys of the Chattanooga Medicine Company.

The witness stated that he has been proving the medicine on two cases, but he has not advanced sufficiently to say anything about it. One of them has been taking it for about a month and the other about a week. One is a married woman and the other a girl 21 years old. They had no symptoms of any kind. He made no examination to determine whether there was anything wrong with them nor did he make any other kind of an examination. He simply took the subjective history. The medicines have produced no action whatever.

Q.—Let us assume a case, doctor. Let us assume the case of a married woman who had a number of children, and that she had, following her confinements, a prolapsus of her womb to the extent it was down near the external opening; also that it was turned wrong side up—A.—Wrong side out?

Q.—Wrong side up. And that she could feel it in this abnormal position. Assume that this condition had existed for approximately two years. Have you an opinion as to whether, taking six bottles of the hypothetical medicine, or of the medicinal solution that Mr.

Walker called your attention to, in doses of a tablespoonful three times a day, could turn the misplaced womb back the other way and restore it to its normal position?

Mr. Walker:—That is objected to. It is not cross-examination of anything.

THE COURT:—Is this a quotation taken from the book?

Mr. Walker:—No.

Mr. T. J. Scofield:—No.

Mr. Walker:—No. Not at all. He thinks he is construing some deposition of his own—testimony of his own.

Mr. T. J. Scofield:—He has said that to a certain extent the medicine might tone up the ligaments.

THE COURT:—We have nothing in the record at the present time to base this hypothetical question on, that I recall.

Mr. T. J. Scofield:—Yes, there is, absolutely.

Mr. Loesch:—It was read yesterday.

Mr. T. J. Scofield:—Read yesterday from one of their own depositions.

Mr. Walker:—It is not cross-examination of anything.

THE COURT:—Did this appear in the depositions of yesterday?

Mr. T. J. Scofield:—Yes.

Mr. Walker:—Something like it appeared in somebody's deposition, but it is not cross-examination.

Mr. T. J. Scofield:—Well, we can test his knowledge.

Mr. Walker:—No. You can call him, when you get done, call him as your witness—he is an expert—and pay him like we pay him, for coming for us.

THE COURT:—They have a right to test the general knowledge of this professional man. He may answer.

To which ruling of the Court the plaintiff, etc., excepted.

Mr. T. J. Scofield: Q.—What do you say, doctor?

The Witness:—Well, I would like the question again.

Mr. T. J. Scofield:—Read the question.

(Question read.)

The Witness:—I have an opinion, yes.

Mr. T. J. Scofield: Q.—What is that opinion? A.—I don't believe it would. I don't believe any medicine would. That is an extreme case.

REDIRECT EXAMINATION BY MR. WALKER

The witness stated that beyond being employed as an expert, he was not in the employ of the Chattanooga Medicine Company. The witness stated that it was not his experience that provers when they get symptoms go on taking the drug so as to keep them up, that in a case of a slow acting drug, it is necessary to keep up the practice for months even to a year.

RE-CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that the quantity of the medicine in a dose does not make any difference just so it is under the toxic dose.

Adjournment was taken until 2 p. m., May 23, 1916.

May 23, 1916, Afternoon

TESTIMONY OF JOSEPH ALEXANDER DICKSON

The Court met pursuant to adjournment. Mr. Joseph Alexander Dickson was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Dickson testified that he lives in Heaton County, Tennessee. He knows Rice Stanfill, who runs a store. The witness denied that he had held any conversation with Rice Stanfill concerning Wine of Cardui, and stated that he had never asked Rice Stanfill for a drink of Wine of Cardui or of anything else intoxicating. Mr. Dickson stated that if he ever saw a bottle of Wine of Cardui he has no recollection of it; that he has known Dr. W. B. Keaton for 20 years and that Dr. Keaton had never seen him with a bottle of Wine of Cardui.

Mr. Scofield called attention to the fact that Dr. Keaton made no statement whatever about Mr. Dickson. The Court ruled that this be stricken out.

Cross-examination was waived.

TESTIMONY OF NEWT G. GAILBRAITH

Mr. Newt G. Gailbraith was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Gailbraith testified that he lives at Sunny Point, Chester County, Tennessee. He knows Rice Stanfill. The witness

stated that he was not in Rice Stanfill's store in 1912, that he passed through Ragen, Tennessee, in which Stanfill's store was located, but had not stopped. He had been there also in the fall of 1911. He stated that he had not taken a drink of Wine of Cardui in Stanfill's store nor anywhere else. He does not know Dr. W. A. Keaton personally, but he has known him by sight for three years. The witness stated that he has never had a bottle of Wine of Cardui. Mr. Gailbraith stated that he drinks; that Tennessee has been dry for five or six years but that liquor may be obtained from boot-leggers. It may be purchased in all kinds of bottles from nigger boot-leggers. He does not know that he has ever seen liquor in Wine of Cardui bottles. Mr. Gailbraith testified that he met Dr. Heizer and that Dr. Heizer wanted a statement from him to the effect that he had drunk Wine of Cardui; that when speaking, Dr. Heizer took a roll of bills from one pocket and transferred it to another. The witness stated that he told Dr. Heizer that he had never drunk Wine of Cardui. Dr. Heizer offered to pay him for his time, but the witness refused it.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that he sometimes gets drunk; and that when he is drunk, he does not know what he is drinking if he drinks while he is in that condition. He would not know whether it was Wine of Cardui or Hostetter's Bitters. He goes on periodic sprees about every three or six months. The witness stated that he buys whisky from boot-leggers. If he cannot get whisky, he might get Manola. He is not sure whether he ever drank Hostetter's Bitters. The witness stated that he has been trading at Power's store at Ragen and that Dr. Keaton might have seen him drunk there at the time.

TESTIMONY OF L. V. M'MURRAY

Mr. L. V. McMurray was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. McMurray testified that he lives in Sardis, Tennessee. He knows Rice Stanfill and considers his general reputation for truth and veracity in his community as bad. He would not believe him on oath. The witness is a farmer and runs a saw mill.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that he has known Rice Stanfill for twelve or fifteen years. He had some dealings with Mr. Stanfill in 1912. Mr. Stanfill is a merchant operating a general store. There is one other general store in the community, that of Mr. Powers. There is a small settlement. Mr. Stanfill does a pretty good business.

The witness stated that he heard some parties talk about Mr. Stanfill in 1912. One of them was Mr. J. O., a farmer. The witness stated that Mr. J. O. stated that he had bought whisky from Mr. Stanfill and stated that Stanfill had said he would swear to a d— lie before he would turn a man up for selling whisky.

The witness knows of no one else who has talked about Mr. Stanfill. The witness stated that he had been talking this matter over lately. The first person to speak to him about it was Mr. Hassel, a druggist in Sardis, who sells Wine of Cardui. The witness came to Chicago with Mr. Gailbraith. The witness drinks beer and whisky. The witness has seen Gailbraith drink. He expects to receive his expenses for coming to Chicago and a per diem, also, he does not know the meaning of the word "veracity."

TESTIMONY OF J. W. HASSEL

Mr. J. W. Hassel was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Hassel testified that he resides in Sardis, Tennessee. He is a druggist. He was formerly postmaster and United States Commissioner in New Mexico. The witness stated that he knows Mr. M. T. Crouch. He considers Mr. Crouch's general reputation for truth and veracity in his community as bad and would not believe him on oath. The witness stated that there is only one drug store in Sardis. There are about five general stores, some of which carry a few drugs. The witness has been carrying Wine of Cardui off and on for

about 20 to 25 years. The witness knows of no other store in that community where Wine of Cardui can be obtained except at Ragen, seven miles away or Scott's Hill. Crouch is a farmer living near Sardis. The witness stated that his books show that Crouch purchased only one bottle of Wine of Cardui in his store. He possibly may have bought some and paid cash.

The witness stated that there are about 500 people in the town, that his store represents approximately 1,000 families. He looks after his business personally. When he is away, he has a man in the store. He stated that Mr. Crouch usually pays cash for his Coca-Cola, but that is about all.

Mr. Crouch also paid for the goods he bought in the past week. The witness stated that he came to Chicago at the request of Mr. Richter, a representative of the Chattanooga Medicine Company, arrangements being made some two weeks ago.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

Mr. Hassel stated that Mr. Richter is not the man who sells him Wine of Cardui. Mr. Richter first came to his town two or three years ago and he has seen him several times since. He also went 18 miles to Lexington to see Mr. Richter. Mr. Hassel has sold Wine of Cardui off and on for 20 years.

Q.—Did you sell it while you were United States Commissioner? A.—No, I did not sell it while I was United States Commissioner—I sold it while I was U. S. Commissioner, yes.

Q.—Where was this? A.—In New Mexico.

Q.—Were you running a drug store? A.—A grocery store, and I handled Wine of Cardui.

Q.—And any other tonics? A.—Well, I think that is the only line, their's is about the only line I handled.

Q.—Didn't you sell Hostetter's Bitters down there? A.—No, sir. Q.—Just selling Wine of Cardui and running the United States Government? A.—I think that was all I sold.

Q.—What did you do as United States Commissioner, take an acknowledgment sometimes? A.—I accepted and filed claims and contests, leaves of absence, and work of that kind pertinent to the land business there.

Q.—What did you do with them? A.—I sent them to the U. S. Land Office.

Q.—You had sort of a filing desk down there? A.—There was no great big amount of work, no, sir.

Q.—Then you don't mean to predicate any great amount on your being United States Commissioner, do you?

Mr. Hough:—That is objected to.

The Witness:—Well, I do not, no, sir.

THE COURT:—Yes, I wondered why it was gone into at all by either side.

Mr. T. J. Scofield:—They went into it and I wanted to go a little further in it, that is all.

Mr. Hough:—The statutes prescribes what the duties are of a United States Commissioner.

Mr. T. J. Scofield:—We are very much obliged to you to get the information on that subject.

Mr. Hough:—You are perfectly welcome.

Mr. Hassel stated that he is a licensed druggist, he also fills prescriptions, and he has had license to sell alcoholic preparations since a year ago June.

Q.—What is the date of that license? A.—Well, I could not state the date of that license just now. The license is dated back.

Q.—You had that license dated back some three years, didn't you? A.—Yes, sir—no, sir.

Q.—Because you had been selling stuff there in violation of the law? A.—No, sir. Now you hold on.

Mr. Fowler:—Let him explain.

The Witness:—Since June was a year ago, something like that, I believe.

Mr. T. J. Scofield:—Yes, you had it dated back three years, didn't you? A.—No, sir.

Q.—You did not? A.—No, sir.

Q.—What did you mean a while ago when you said that you had it dated back? A.—It was dated back from the time I filed the application for it, if I understand it right.

Q.—Had you ever had a license before that? A.—No, sir.

Q.—Were you not required, since that was dry territory down there, to have a permit or license for that sort of business? A.—No, sir, not unless you handle it.

Q.—You did handle it, didn't you? A.—No, sir, not prior to that.

Q.—When did you commence to handle it? A.—About that time.

Q.—What is it you refer to now that you commenced to handle? A.—Since June it was a year ago.

Q.—O, handle what? A.—Intoxicating liquors. You understand it is—let us get this clear. I had this license for this purpose in case that I should want to fill a prescription. I don't do this now. I do not handle it. I did not like it after I had the license, on account of the red tape there was to it, and I dropped it.

Q.—So you do not keep any liquors now? A.—No, sir.
Q.—Of any kind? A.—No, sir.
Q.—You don't fill any prescriptions? A.—No, sir.
Q.—But you do sell Wine of Cardui? A.—I do, yes, sir.

The witness stated that he handles about \$40 worth of Wine of Cardui and Black Draught a year. That is at the wholesale price. There are other stores in that neighborhood that handle Wine of Cardui, one about three miles away. The witness stated that Mr. Crouch is a farmer. Mr. Crouch has had an account in his store and the balance is 90 cents. He has never paid his account in full, but his bill at present amounts to 90 cents. Mr. Crouch has been trading with him for three years. The witness was asked what he understands as "general reputation" and he stated that there are some people who think that Mr. Crouch would sell his vote. The witness did not define what he understood by general reputation.

REDIRECT EXAMINATION BY MR. FOWLER

The witness stated that by general reputation, he meant by what he heard from people sitting around the stove in his store. The witness stated that he occasionally fills prescriptions and for that reason, he obtained the government license. The government license is only required where he would sell a quart to a pint of *spiritus frumenti*.

RE-CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that when he said that he sold \$40 worth a year, he included Black Draught and Wine of Cardui.

TESTIMONY OF A. S. MONTGOMERY

Mr. A. S. Montgomery was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Montgomery testified that he lives in Sardis. He has been cashier in the bank and previous to that was in the mercantile business. He also carried a line of drugs in connection with his general store. He sold Cardui at that time; there was also a drug store which carried Cardui. He carried on a business with drugs some seven or eight years. The witness testified that in going through his books, as soon as this case came up, he was unable to find that Mr. Crouch had bought a bottle of Cardui from him. He may have paid cash for it.

Mr. Montgomery testified that he met Dr. Heizer on the stairway of the courthouse in Lexington. Dr. J. T. Keaton introduced him to Dr. Heizer. Dr. Heizer came into the bank the next morning and cashed a draft for \$175 which was endorsed by Dr. John T. Keaton. The witness stated that Dr. Heizer had said that he had taken quite a lot of money to get evidence in the South, and that Dr. Heizer had said that he intended to spend several thousand dollars before returning home, perhaps as much as \$10,000.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

Mr. Montgomery stated that he met Mr. Richter, Feb. 1, 1916, in the bank. Mr. Richter introduced himself and entered into a conversation concerning the lawsuit. The witness understands that Mr. Richter represented the Chattanooga Medicine Company. Mr. Richter came again about three weeks ago. The witness did not look about to see whether Mr. Richter had money promiscuously in his pockets. Mr. Richter arranged with the witness to come to Chicago and asked him to testify to the fact that Dr. Heizer had had a draft cashed and that Dr. Heizer had some money. The witness is here for that reason and expects to be paid for it.

TESTIMONY OF J. W. KNIGHT

Mr. Knight was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Knight testified that he resides in Inverness, Florida. He has been chairman of the school board of the county and a member of the state legislature from his county. Mr. Knight testified that he had a daughter named Miss Mattie Clare Knight. Mrs. Knight has been dead since September, 1910. Miss Mattie Knight is also dead. The witness knows H. O. Byrd of Trilby, Florida. Dr. Byrd saw Miss Mattie Knight in June, 1912. The witness furnished her with all

her spending money prior to that time. The witness does not know of her ever taking a drop of Wine of Cardui, prior to the time she was with Dr. Byrd. The witness testified that his daughter had a severe case of pleurisy. When she met Dr. Byrd, the doctor said she had a slight infection of one lung. She had been getting better. The witness stated that he did not hear his daughter tell Dr. Byrd that she had taken any Wine of Cardui.

The witness stated that Dr. Byrd took her into the sanatorium and kept her until October. In October, she was removed from the sanatorium and died a few days later. His daughter had no female troubles that he knew of.

Mr. T. J. Scofield stated that there was nothing he cared to ask the witness as there was no contradiction.

TESTIMONY OF MRS. A. O. PIERCE

Mrs. A. O. Pierce was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mrs. A. O. Pierce testified that she lives in Tuca, Florida, and she had a daughter named Grace who is now dead. This daughter was in charge of Dr. Byrd, the second or third week in May, 1915. She remained in Dr. Byrd's sanatorium five days. Her daughter had been married before she saw Dr. Byrd and had given birth to a child. She had laceration. She was separated from her husband, but had not had a divorce. The witness testified that her daughter had not drunk Wine of Cardui at home and that she had never known of her taking Wine of Cardui. The witness testified that Dr. Byrd did not refuse to take her daughter into the sanatorium but was anxious for her to come into the sanatorium.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

Mrs. Pierce stated that her daughter was in the sanatorium from Sunday to Thursday. She herself was not in the sanatorium, so she does not know anything about what her daughter told Dr. Byrd during that time.

DEPOSITIONS

Depositions were read and an adjournment was taken until May 24, 1916, at 10:30 a. m.

May 24, 1916, Morning

TESTIMONY OF DR. MALCOLM L. HARRIS

The Court met pursuant to adjournment. Dr. M. L. Harris was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. HOUGH

Dr. M. L. Harris testified that he is a physician practicing in Chicago. He identified a prescription as his own; he also identified a letter to another patient as his own. He has treated diseases of women. He stated that he used viburnum prunifolium early in his experience, then stopped using it and tried it again recently. He had not figured out exactly how much alcohol there was in each dose in the prescription he identified. When asked whether he had ever prescribed by mail without an examination he stated that under certain conditions he had. These conditions are if he knows the patient and knows the trouble, or if there is some emergency about the case which makes it desirable that the patient has advice pending his coming in for examination.

The cross-examination of Dr. Harris was deferred (see p. 307).

TESTIMONY OF DR. ARTHUR HORACE GORDON

Dr. Arthur Horace Gordon was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. HOUGH

Dr. Gordon testified that he is a physician practicing in Chicago, where he has resided since 1884. He graduated from the Hahnemann Homeopathic Medical College in 1887, and has been professor of the theory and practice of medicine in this school. He conducts a clinic and is state medical examiner for a large life insurance company. Dr. Gordon testified that he is a member of the Chicago Homeopathic Medical Society, the Illinois Homeopathic Medical Society and

the American Institute of Homeopathy. He was a delegate to the International Society of Homeopaths in 1911, and has been chairman of the bureau of clinical medicine of the Illinois Homeopathic Society and of the bureau of materia medica and general therapeutics of the national society. He has been doing postgraduate work every year for the past fifteen years.

The witness defined a homeopathic physician, the rule of similars, etc. The witness stated that he knows *viburnum prunifolium*, *carduus benedictus*, *viburnum opulus*, and *carduus marianus*. He stated that *carduus marianus* and *carduus benedictus* are of the same family and their provings show that they are very nearly related, in their action on the human organism; the same pertains with *viburnum opulus* and *viburnum prunifolium*. The witness described the provings. He stated that they are very carefully done. He stated that *carduus benedictus* and *viburnum prunifolium* are indicated for amenorrhea, dysmenorrhea, metrorrhagia, vaginitis, menorrhagia, cystitis, endometritis, metritis, prolapsus, threatened abortion, sterility and leukorrhea. He has used the drugs himself with excellent results. The homeopathic school aims to use the smallest dose possible that will make a cure. He described tincture, lower and higher potencies, and stated that alcohol is used as a menstruum to dilute and keep remedies in good condition, and also for its extractive purposes. He stated that in their work, the homeopaths consider two ounces of alcohol about the limit that a human body can oxidize in 24 hours. He thinks that two ounces are about 480 drops.

Mr. Hough stated, "do you mean to an ounce?" The witness answered, "To the ounce." The witness stated that it is not strictly in accordance with the homeopathic teachings to combine drugs but as a matter of practice, homeopathic physicians often combine them. This is a personal matter with the physician. The witness stated that strictly homeopathic teachings do not recognize the synergistic action of drugs and do not advise mixtures. They sometimes follow up one drug with another and call this complementary action.

There was described to the witness the hypothetic medicine containing 60 grains of *carduus benedictus* or the extractives from it, and 6 grains of *viburnum prunifolium* to the fluidounce, in a menstruum of 20 per cent. of alcohol, in a dosage of a tablespoonful, either two or three or four times a day. He considered that such a mixture might be of service, although he has personally never used it. He would not consider the alcohol as having a deleterious effect on a girl at puberty nor would it, he believed, tend to excite her passions, or create a habit. The witness stated that he did not believe that there would be any danger in administering such a medicine to a woman at the menopause. Such medicines are indicated during that period. He thinks it would be all right for a woman who had disturbing symptoms to take this during the menopause, and that it would be all right for a young girl who had disturbing symptoms at puberty to take it. He considered also that *carduus benedictus* and *viburnum prunifolium* are indicated during pregnancy to make childbirth easier and for any disturbing symptoms.

The witness stated that in homeopathic preparations, of these drugs from 50 to 60 per cent. of alcohol is used. These drugs were originally used as a tea or an infusion by extraction of the medicinal properties by hot water. He does not know the exact percentage of alcohol required to extract the virtues of the drugs. The witness stated in what way these drugs would benefit cases of sterility, and in what way they could benefit infection; namely, by building up the defensive powers of the body. Uterine displacements would also be benefited in this way. In the same way, he stated they would benefit gonorrheal infections. The witness stated that both of these drugs are in the homeopathic pharmacopeia which indicates that they have been proved and accepted by the committee on drug provings of the American Institute of Homeopathy.

The witness did not think that this medicine would mask a cancer.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that in a large majority of cases, cancer progresses to fatality. He has seen cases apparently cured by arsenic given homeopathically in one case. Cancer of the stomach was diagnosed from the symptoms of the patient with a cure following the giving of arsenic. There were no exploratory incisions. The witness stated that cases of syphilis are not the same as cancer, as the cachexia of cancer is peculiar to itself. He would not attempt to diagnose cancer of the stomach by reason of the cachexia only. The witness mentioned emaciation, and pain in the pyloric region of the stomach as symptoms of cancer. He stated that pain might also mean gallstones, or an ulcer of the stomach, and that there are many things which might produce these symptoms, but the pain of cancer is not the same in his experience. He knows the pain only as it is described by a patient.

Another symptom was the coffee-ground vomiting, which he thinks is peculiar to cancer. He does not think that this might come from any condition of liberating blood in the stomach. He does not think it would come from an ulcer.

Q.—What produces the coffee-ground appearance? A.—Disintegration of the blood.

Q.—It is the action of the gastric juice, isn't it? A.—I do not think that I am a sufficient specialist in stomach diseases to absolutely be sure of that, but that is my impression, that it is the result of the diseased condition there from—of the cancerous degeneration as well as the action of the gastric juice.

Q.—You diagnosed this condition, didn't you? A.—I did with the help of the laboratory.

Q.—Oh, then, you did not depend upon yourself in diagnosing the condition? A.—Not entirely.

Q.—You say you did with the help of the laboratory. What do you mean by that? A.—They made an examination of the contents of the stomach.

Q.—Did they find any cancer cells? A.—As I remember the examination, they did not.

Q.—They did not? What did they find? A.—They found lactic acid.

Q.—Found what? A.—Lactic acid.

Q.—Why, you have that in the stomach when you drink milk, don't you? A.—It depends on whether the milk is sweet or sour.

Q.—Whether it is sweet or whether it is sour, don't you have lactic acid in the stomach after you drink milk, sweet or sour? A.—I do not think so. My opinion is—

Q.—Do you know? A.—My opinion is that we do not.

Q.—I say do you know whether it is or not, whether you would or not? A.—I am not a laboratory man, Mr. Scofield. I rely for my information on those points, on the laboratory men.

Q.—Doctor, lactic acid is the acid of milk, isn't it, and is always in it whether it is sour or whether it is sweet, isn't that right, in the process of digestion? A.—I do not think so, Mr. Scofield, I do not think so. I am not positive, though. I am not, as I have said before—I am not competent to tell you.

Q.—You used the word "lactic acid." Tell us what lactic acid is as you find it in the stomach under such conditions and why do you attach so much importance to it? A.—Because if you give a test meal, so far as my knowledge of those test meals go, you do not find lactic acid in a healthy stomach.

Mr. Hough:—I did not want to make an objection earlier, but it does not seem to me that this is directly on the point. I thought maybe Mr. Scofield was interested and wanted to find out, just on account of curiosity.

THE COURT:—Well, it is testing the general knowledge of the witness.

Mr. Hough:—Yes, but at the same time it was not responsive to any question I asked. I simply asked whether this medicine would mask the symptoms of cancer.

THE COURT:—Yes.

Mr. T. J. Scofield: Q.—What else did you depend upon in diagnosing the cancer of the stomach at that time than the lactic acid and the coffee-ground condition of the blood? A.—Pain.

Q.—What sort of pain was it? A.—Sharp.

Q.—You diagnosed the condition on that? A.—Not on the pain alone; from the symptoms and physical signs, as I before stated.

Q.—There were three things, the lactic acid, coffee-ground color of the vomited matter, and the pain. There are three things? A.—And the cachexia.

Q.—What? A.—The cachexia and emaciation.

Q.—That is the appearance? A.—Yes, sir, and the physical signs.

Q.—Either one of those things that you have enumerated and upon which you say you diagnosed this condition may be produced by other conditions, might they not? A.—I don't believe that those symptoms complex could be produced by other conditions, and we have not gotten yet to the physical signs.

Q.—Now, then, doctor, you said a while ago that cancer might be produced by ulcer, ulcerous conditions of ulcer of the stomach? A.—It usually precedes cancer.

Q.—Can't all that condition that you have just referred to, that is, all those symptoms that you have spoken of, result from an ulcerous condition of the stomach, without cancer? A.—I don't think so. I don't think you will get that symptom complex.

Q.—Have you ever had any other experience in considering the question than in that one case where you have cured cancer with medicine? A.—Yes, sir.

Q.—How many different times? A.—Well, I could not state in the length of time it runs over, so many years, perhaps 28 or 29 years as mine has, immediately, without thought, how many times, but I have seen and treated a great many cases of cancer of the stomach.

Q.—You have cured a great many cases of cancer, haven't you? Mr. Walker:—He did not say that.

Mr. T. J. Scofield: Q.—Have you or not? A.—I have cured two that I am fairly positive of. One in my own private practice, and this one that I am positive of, as far as I can be positive of anything.

Q.—How is that? A.—I am as positive of it as far as I can be positive of anything.

Q.—Did you use arsenic in both cases? A.—Yes, sir.

Q.—In what sort of dilution? A.—I used the 6-X potency.

Q.—You used that in a low dilution? A.—No, sir, that is considered a high potency.

Q.—What is 6-X? A.—Well, 6-X is the tincture diluted six times.

Q.—Well now, explain that to us so that we can understand what you mean by it. How much arsenic was there? How much did you take first? A.—I gave her three tablets.

Q.—What? A.—Three tablets of arsenic, 6-X.

Q.—Three tablets what? A.—Six-X. Do you wish me to figure it out?

Q.—First, what is 1-X? A.—One-X is one-tenth of a grain.

Q.—Now, what would 2-X be? A.—One-one-hundredth of a grain.

Q.—What would 3-X be? A.—One one-thousandth.

Q.—What would 4-X be? A.—One ten-thousandth.

Q.—What would 6-X be? A.—One millionth.

Q.—That is, one millionth of a grain of arsenic? A.—Yes, sir.

Q.—And that is the way you treated cancer of the stomach, is it?

A.—Yes, sir, and I have full belief in its curative power.

Q.—With arsenic. That arsenic was just the same as any other arsenic? A.—Yes, sir.

Q.—So that you used in the treatment of that case, one millionth of a grain per dose? A.—Yes, sir.

Q.—How many doses did you give? A.—Well, it was more than one-millionth of a grain because I gave three tablets at a time. It would reduce just the same.

Q.—Then you had three-millionths of a grain? A.—Yes, sir.

Q.—At a dose? A.—Yes, sir.

Q.—You did not think there was any danger of poisoning the man, did you, doctor? A.—Not at all, although I have seen—

Q.—How many—

Mr. Hough:—Let him finish.

The Witness:—I have seen marked aggravations.

Mr. T. J. Scofield:—I am speaking of this time.

The Witness:—(Continuing.) From those doses.

Q.—I am speaking of this man, and asking you whether you thought there was any danger of poisoning him? A.—No, I did not.

Q.—Now, you sometimes go beyond in your work 6-X don't you?

A.—We often use the thirtieth, yes, sir.

Q.—What would that represent, could you estimate it? A.—I would have to figure it out, thirty ciphers.

Q.—It would take a row of figures pretty near across this room—the fraction of a grain? A.—Not so far as all that.

Q.—How do you progress, by hundredths or thousandths or what? A.—By tenths.

Q.—Yes, but past three, don't you go by hundredths? A.—Oh, you mean in the amount of medicine?

Q.—Yes? A.—Yes, sir.

Q.—After you pass six, how do you go? A.—Well, figure it out.

Q.—I am asking you to figure it out. You are a doctor, I am not. A.—It is mathematics.

Q.—You are a physician, and you know what you give, don't you? Suppose it was 10-X, how much are you giving your patient, what part of a grain? A.—Well, we figured the 6-X up to a millionth, you can carry it out by adding ciphers, you add one cipher for each one.

Q.—How about 10-X? A.—I have never estimated it.

Q.—Have you ever given it? A.—Yes, sir.

Q.—Given it up as high as 30-X? A.—Yes, I have given it up as high as 200-X.

Q.—Up as high as 200-X? A.—Yes, sir.

Q.—But you don't know how much there would be in it? A.—I have never figured it out, but I have full confidence in its curative power.

Q.—Isn't 6-X one-billionth of a grain, instead of a millionth? A.—It may be, I did not figure it.

Q.—So that you don't know how much you are giving? A.—We know what potency we are giving, and what we expect from it.

Q.—Now, getting back to the cancer question. You have never cured it with anything else than that sort of a dosage of arsenic? A.—In each case that I treated, that was the main prescription. I did use other medicines intercurrently for other conditions, but that was the main treatment. It revolved around that treatment, small doses of arsenic.

Q.—The other medicines given were for other conditions? A.—Yes, sir.

Q.—You did not use viburnum prunifolium? A.—No, sir.

Q.—You did not use carduus benedictus? A.—No, sir.

Q.—Nor did you use a combination of the two in a 20 per cent. alcoholic menstruum, did you? A.—No, sir.

Mr. Walker:—In cancer of the stomach?

Mr. T. J. Scofield:—Well, suppose it had been cancer of the womb, would you have used the same treatment that you did? A.—If it were indicated.

Q.—When you say if it were indicated, what do you mean by that, doctor? A.—I mean that if the drug—if the picture of the disease fits the picture of the remedy.

Q.—Now, let us take that—you have used that term "if it were indicated," practically every time you have answered Mr. Hough's questions. Now, let us commence with one of the first things that you talked about, which was amenorrhea, and in which you said that this medicine, such as he described to you (which simulates Wine of Cardui as I understand it), would be good if it was indicated. Is that what you said? A.—Yes, sir.

Q.—How often do you think you would find it indicated in amenorrhea? A.—That is a question that would be impossible to answer.

Q.—Yes. Now, let us understand what you mean by "it would be a good medicine, if indicated." How would you determine the question as to whether it was indicated or not? A.—Well, we have a certain list of remedies that we think of, when a certain condition appears in a diseased subject. We have those in our mind. They have certain given, noted symptoms, which are strong, and frequently occur to us. Then we take the case, and we take our books from our library shelves (just as you do, I suppose, when you have a case that needs looking up), and we fit the remedy to the provings and to the symptoms as they are given in those reference books.

Q.—All right. Now then, doctor, in that case, the case of amenorrhea, you go to the books, and you hunt up the list of symptoms that are indicated in that condition; is that right? A.—Yes, sir.

Q.—There are a lot of different drugs which you give in your school that are indicated, as you say, for these different sets of symptoms? A.—Yes, sir.

Q.—There might be 50 or 60 or a hundred different drugs that might be given under these circumstances, depending upon what the symptoms were; isn't that true? A.—Yes, sir.

Q.—All of them for amenorrhea; isn't that true? A.—Yes, sir.

Q.—So that, in determining what you will give for amenorrhea, you would not give viburnum prunifolium or carduus benedictus in all cases of amenorrhea; would you? A.—No, sir.

Q.—But you would try to see first what the particular symptom was, or set of symptoms, and having ascertained that, you would then go to your medicines, and your provings, for the purpose of saying what particular medicine or medicines were indicated for those particular purposes? A.—Yes, sir.

Q.—Now, that being true, it is not very often, is it, doctor, that in the treatment of amenorrhea you use the same medicine? A.—Yes, because—we do often use the same medicines.

Q.—Then you often use it. You don't always use the same medicines? A.—No, sir.

Q.—There are—frequently you find a set of symptoms that induces you or induces within you the belief that the proper treatment is a certain medicine? A.—Yes, sir.

Q.—And then you find for amenorrhea certain other symptoms that were indicated, that induced you to believe that another medicine is the medicine to use? A.—Yes, sir.

Q.—And then you find a set of symptoms that will, in accordance with your school, require a different medicine? A.—Yes, sir.

Q.—And so on through, until you take the gamut on some fifty or sixty different medicines that you give, depending upon what the symptoms were; isn't that right, doctor? A.—Hardly as many as that.

Q.—Well, a great number? A.—A number.

Q.—A great number—a number? A.—Yes, sir.

Q.—In other words, now, if I understand you, doctor, you don't want to be understood here as saying that any one remedy or combination of remedies responds to the symptoms of amenorrhea? A.—No, sir.

The witness then stated that in treating amenorrhea, he takes into consideration the causes and mentioned the various causes of amenorrhea. He stated that the treatment would vary with each of the cases and be determined on the symptoms. He would not give the same medicine each time to a woman with amenorrhea; some medicines are more frequently indicated than others. He would not undertake to treat all cases with certain drugs because they are indicated oftener than the others. It was necessary in treating diseases, he believed, to diagnose the condition, and it is best to have a physician for this purpose; in most cases an examination is necessary, in some cases the symptoms are sufficient so that an examination is not necessary for a treatment. If new symptoms manifest themselves, it would be necessary to change the medicine and he would change it. Such new symptoms frequently occur in diseases. The witness stated that in answering Mr. Hough, when he stated that the hypothetical medicine might be good for various conditions, when it was indicated, he meant to say that if it met the requirements of certain symptoms, he would give it and if he did not meet the symptoms, he did not give it. There was described to the witness a hypothetical case of a married woman who had suffered two miscarriages, after which she became pregnant and gave birth to twins. Following the delivery of the twins, there was a uterine pro-

lapse so marked that the womb might be felt by the patient just inside of the opening.

He stated that the hypothetic medicine would not cause the womb to return to its normal position. He stated that he could not tell whether the woman would be able to feel the womb going back to this normal position because he is not a woman and has no idea as to how a woman would feel in such a condition.

The witness then stated that one method of proving medicine was by trying it on a patient with symptoms, and in this way drugs might be proved for use in threatened miscarriage. The witness did not remember of having heard that a woman may go to bed threatened with a miscarriage and so recover. In using viburnum prunifolium, he uses the homeopathic tincture or the fluidextract. The testimony given referred to the use of this preparation, the same thing applied to his use of carduus benedictus. There was described to the witness the hypothetic case of a tumor developing in a woman on the left side of the abdomen just below the "short ribs." It was hard in the center and somewhat softer on the outer edges. It increased in size for six months until it required both of the woman's hands to cover it. It could plainly be seen through the clothing of the woman when she was dressed. In addition to this the woman suffered from headaches and pains in the back; her menstrual periods were not regular, and she had menorrhagia.

The witness stated that the hypothetic medicine might be indicated in such a condition. He was asked to assume that the woman began taking this medicine, in tablespoonful doses three times a day. It was his opinion that it was possible for the tumor to begin becoming less in size after using this medicine two or three days and that after using three bottles of this medicine over a few months, the tumor would grow so small that it could not be felt, and that after using four bottles, six months from the time it was begun, the tumor would entirely disappear.

The witness reiterated that such a case was possible.

REDIRECT EXAMINATION BY MR. HOUGH

The case was again described to the witness by Mr. Hough. The witness stated that very likely the woman was mistaken in her diagnosis. He would not say that she was mistaken as to her symptoms. The witness stated that he has known cases of slight prolapse, where after taking medicine the womb has gone back into place. The witness knows of drugs used by allopaths in homeopathic doses. He mentioned tuberculin which he says is given in infinitesimal doses. He mentioned adrenalin chlorid as of the same class.

RECROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness testified that he considers tuberculin a medicinal substance. He stated that it was a poison, consisting of the germs of tuberculosis ground up. Adrenalin is an exceedingly violent poison. He did not know whether tuberculin was as dangerous as strychnin. He would not consider a thirtieth of a grain as a safe dose.

REDIRECT EXAMINATION BY MR. HOUGH

The witness stated that arsenic is a very powerful poison. He would give an infinitesimal dose about once in three hours.

TESTIMONY OF DR. MALCOLM L. HARRIS

Dr. Malcolm L. Harris resumed the stand for the plaintiff.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

Dr. M. L. Harris stated that he discontinued viburnum because he did not get any favorable results. He used it again comparatively recently, to see if there had been any change, and see if his former opinion of it was still correct, and he found that it was. He did not get any favorable effects from viburnum prunifolium.

REDIRECT EXAMINATION BY MR. HOUGH

Mr. Hough asked the witness how he knew the effects of the prescription on the patient. The witness stated that the prescription had nothing whatever to do with the letter which had been identified, and requested Mr. Hough to identify the patient for whom the prescription was given; this was not done. Adjournment was taken until 2 o'clock of the same day.

(To be continued)

Correspondence

The Index Catalogue and Index Medicus

To the Editor:—In THE JOURNAL, July 1, p. 39, your editorial writer indulges in certain comments on the *Index Catalogue* and the *Index Medicus* which seem to be conceived in a spirit *propter invidiam*, inasmuch as these publications seem to be regarded as commercial competitors of the *Quarterly Cumulative Index* issued by the Association. Without wishing to criticize this publication, which undoubtedly has its proper use and value, it should be obvious that the *Index Catalogue* and *Index Medicus* do not and have never entered into competition with any publications or bibliographic compilations whatever, and it seems strange that any new publication of the kind specified should be pitted against them, as the *Index Catalogue* is a government publication and the *Index Medicus* is published by a scientific institution.

The *Index Catalogue* and the *Index Medicus* were originally designed as complete bibliographies of the literature of medicine through the periods of time covered by them, and, as such, they have a definite and positive value for the workers of the future as well as for those of the present. There are many bibliographies of the different branches of medicine which are apparently not known to the writer of the editorial, but the great drawback in all is that they are confined mainly, sometimes exclusively, to the language of the countries in which they are issued, which is not the case with the *Index Catalogue* and the *Index Medicus*. That the latter indexes may, in the words of your editorial, "leave much to be desired" is also the case with any scientific publication, except perhaps a table of logarithms. In this sense, even such classical bibliographies as those of Laehr on neurology or Abderhalden on alcoholism left something to be desired a few years after their respective dates of publication. In regard to the statement that the *Index Catalogue* is "out of date" and that the *Index Medicus* is "never up to date," I beg to say that such criticisms have never, to my knowledge, been advanced by any reasonable person using them extensively. The slow rate of production of recent numbers of the *Index Medicus* is due to the fact that since the outbreak of the European war, the falling off in amount of medical literature has been so pronounced that it has been actually necessary to wait for the accumulation of the proper amount of material before sending copy to the printers; but the monthly numbers contain all that has accumulated up to the time of publication. Thus, the *British Medical Journal*, which contained 1,652 pages in 1913, contained only 1,124 in the latter half of 1914, 1,104 pages during the first half of 1915, and probably less than 1,000 pages during the first half of 1916. The medical literature of France has fallen off to an even larger degree, that of Belgium is practically extinct, little Russian and no German literature whatever is now coming into this country at present, and with the exception of Italy, the output of the other combatant countries is fitful and irregular. As soon as the pressure of the war is removed and the backwash of literature becomes obtainable, it is proposed to print the accumulation in bulk and as rapidly as possible in the *Index Medicus*. The necessity of keeping the present numbers of the periodical up to a certain standard of size is therefore obvious. The annual indexes of the *Index Medicus* for 1912, 1913 and 1914 were issued early in July, 1913, 1914 and 1915, respectively, and that for 1915 will appear in a few days.

F. H. GARRISON, M.D.,

Surgeon-General's Office, Washington, D. C.

[COMMENT.—If our editorial carried the impression that the *Quarterly Cumulative Index* is to compete with the *Index Catalogue* and the *Index Medicus*, the language must have been obscure. On the contrary, our editorial pointed out the necessity for an index supplementary to the two mentioned—one that would be of practical value to the every-day worker in literature. The two indexes issued from the Surgeon-General's office are inclusive and exhaustive; the *Quarterly Cumulative Index*, it is definitely stated, will not be either. It will contain an index of the cream of the medical literature of the world, up to date and of easy reference, but will in no sense be comparable with the *Index Medicus* or the *Index Catalogue*.—Ed.]

Health Conditions in British Somaliland

To the Editor:—Through the courtesy of the medical officer of the Somaliland Protectorate, I have come in possession of the following interesting information regarding a section of Africa concerning which the available information is far from satisfactory and complete.

"Leprosy is of extreme rarity in British Somaliland, though the Somalis seem to have some traditional knowledge of it. I fancy any such patient would be killed for purposes of public safety anywhere in the interior. In this connection it is of interest that although sea fish of many varieties are plentiful all along the coast, no Somalis will eat them, though the Arabs, Indians and Europeans do. There is no reason for this beyond custom, which is of a strength unknown among western nations.

"Malignant diseases, cancer and sarcoma of all varieties are practically unknown. In the course of twelve years I have only had one case and that proved to be a transitional form of growth occurring at the pylorus and junction with the duodenum. Rodent ulcer exists but is very rare also.

"I am completely at a loss as to why there should be no breast cancers when the skin must so frequently be subject to excoriation from sand. But as regards intestinal new growths, it is noteworthy that this collection of tribes (1) never consistently overeat; (2) never make a daily practice of eating meat; (3) never eat pork or eggs under any conditions whatever, including lard or eggs if contained in cakes of any kind; and (4) seldom, if ever, eat any vegetables. Of the things they do and do not eat, the following are the most noticeable:

"(a) They live by preference on camel, goat and cow's milk, occasionally killing and eating these animals.

"(b) Luxuries are: tea (no coffee is drunk nearer than Abyssinia, where the husk only is used, the bean being considered too heating; dates, which are imported, as is tea, and which are invariably eaten and swallowed with the date-stones—why, it is difficult to say except that it is custom. Human droppings almost invariably contain about a dozen of these; sugar is a much valued food, as is honey; tobacco is not smoked or chewed by more than perhaps one in 300 Somalis and shows no signs of coming into favor, though extensively used by the Arabs. Any form of stimulant except tea—that is, coffee, tobacco, alcohol, kat (a shrub of mildly astringent properties with no alkaloids contained in it) is never taken. The result as regards surgical operations on such people, using chloroform almost invariably, as the anesthetic, is most satisfactory; none of the troubles frequently met with elsewhere ever occur."

The reports of Dr. A. J. M. Paget, senior medical officer, have thrown much light on obscure medical questions regarding the primitive population of this important region, and the preceding statement may therefore be accepted with confidence as being both conservative and conclusive.

The general health conditions affecting the European population appear to be fairly good. The country is more or less liable to native uprisings, and a voluminous correspondence on the subject has been published by the British government. The heat in the coast belt is excessive, the country being unusually dry and arid. The fine sand which is held in the air during the summer months precludes flies or mosquitoes. According to Dr. Paget, "Malaria is found to be chiefly propagated through the water vessels standing in the houses, this being difficult to control in any way without the aid of an inspector or staff of any kind. A practically complete clearance of all mosquitoes occurs in the summer, owing to the sand storms." The sanitary situation is described by the doctor in the statement that "the general native attitude is that it is fashionable to show a complete disregard of any form of European education, teaching or advice."

FREDERICK L. HOFFMAN, Newark, N. J.

Statistician, the Prudential Insurance Company of America.

Alcoholism at Altitudes.—There is another very striking fact in mountain climbing worthy of note, namely, that persons who consume much alcohol are much more susceptible than others to mountain sickness. This is akin to the fact noticed by us that alcoholics are also very susceptible to poisoning by carbon monoxide.—Glaister.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SKIN MANIFESTATIONS IN PELLAGRA

To the Editor:—1. Are skin diseases in general, or the skin manifestations in pellagra in particular, affected favorably or unfavorably by the deficiency of atmospheric pressure, at an altitude of 7,000 feet in the Rockies?

2. The hair fell out *only* on the extremities, some four years ago, in a case of pellagra with no specific taint. Is such loss not unusual in pellagra? Will the hair return when the skin manifestations disappear?

3. Are the skin or the psychic manifestations the last symptoms to disappear in pellagra? Which and, if neither, what?

4. Will the change in the viscosity of the blood, at the altitude mentioned play a part for or against a pellagrin?

5. Is a neurotic, who is a pellagrin, more apt to have one of the neurotic skin diseases as a complication, than otherwise?

6. Will any one, and especially a pellagrin, be more disposed to have any one of the circulatory diseases than otherwise, at the foregoing altitude. If so, which?

JAMES R. ANTHONY, M.D., Indianapolis.

ANSWER.—1. Neither skin diseases in general nor the skin manifestations of pellagra in particular appear to be unfavorably affected by the deficiency of atmospheric pressure at an altitude of 7,000 feet. With regard to pellagra, no evident relation has been shown between this disease and the altitude. It is common in the Tyrolean Alps and also in lower Egypt. The latter country is, in part, below the level of the sea and rises only at the rate of 13 inches to the mile. The character of the disease and its manifestations are the same at the two levels. While authorities differ as to the *modus operandi*, they are all agreed that the colder climate of a high altitude is favorable for the pellagrin. Pellagra is not a winter disease. A pellagrin going to the Rockies should be specially cautioned against the risk of sunburn.

2. Loss of hair over limited areas, especially symmetrical areas, is known in pellagra. If the skin lesions have not proceeded to the ulceration stage, the hair will usually grow again.

3. There is no rule as to which disappear first in pellagra, the psychic disturbances or the skin lesions; but when the former are advanced to the degree which is seen in asylums for the insane, it is almost invariably the case that during cure or partial cure the skin lesions clear up first. On the other hand, slight recurrences of the erythema only are far from uncommon.

4. There is no reason to suppose that the effect of altitude on the viscosity of the blood would be such as to affect the pellagrin one way or the other.

5. Pellagra skin manifestations seem to be quite *sui generis*; therefore there is no reason to suppose that a neurotic who is a pellagrin will be especially liable to neurotic skin diseases. It should be remembered that every pellagrin is subject to nervous disease symptoms.

6. A pellagrin, as such, would not be liable to circulatory diseases on account of the altitude. With regard to the more general question, persons with arteriosclerosis and with uncompensated heart disease should not go to high altitudes; those with fully compensated cardiac diseases may visit the mountains, but should be cautioned against taking much exercise, especially at first. When the cardiac trouble is due to general poor health, a visit to the mountains, unless contraindicated for other reasons, would be generally beneficial.

IS DOUBLE VASECTOMY JUSTIFIABLE?

To the Editor:—1. Will you kindly state the effect of double vasectomy on the sexual life of man? 2. Would it be considered "good form" to sterilize a poor man who has a large family and who realizes that he has more children now than he can educate? 3. Would a man be protected from the law if he secured the request of such a person in writing before performing this operation?

R. B. GASTON, M.D., Lebanon, Tenn.

ANSWER.—1. Double vasectomy, it is generally believed, has no effect on sexual desire or power. It only renders the individual sterile.

2. A surgeon doing a double vasectomy with poverty as the only indication would lay himself open to severe criticism, to say the least.

3. There is no specific law that would make a licensed surgeon liable for performing this operation with the full consent of the patient, if the operator considered it justifiable; but the mere written consent on the part of the patient would not prevent suit being brought against the surgeon. See Queries and Minor Notes as follows:

Effect of Cutting the Vas Deferens: THE JOURNAL, Dec. 3, 1913, p. 2179.

Vasectomy: Technic and Effect on Sexual Intercourse, March 8, 1913, p. 769.

HEXAMETHYLENAMIN IN ANTERIOR POLIOMYELITIS

To the Editor:—During an outbreak of poliomyelitis some years ago, Flexner of the Rockefeller Institute recommended hexamethylenamin as preventive, as he found that monkeys, inoculated with poliomyelitis, on being treated with this drug did not suffer to the same extent as if they had had no hexamethylenamin, and sometimes escaped an attack entirely. Will you be good enough to let me know what the present status of the use of this drug as a preventive may be?

H. W. HILL, M.D., London, Canada.

ANSWER.—It has been shown that hexamethylenamin has no germicidal activities, except in an acid medium. Therefore, it is of special value only in infections of the pelvis of the kidney, ureters, bladder and urethra when the urine is acid. It cannot be expected to exert germicidal activity in the spinal fluid, which is alkaline.

NINE USEFUL DRUGS

To the Editor:—In my grip which I carry with me I have a case of nine medicine bottles. Would you make a suggestion as to the most useful drugs to carry with me?

MORRELL SIMPSON, M.D., —, Ind.

ANSWER.—We submit this communication to our readers. If the replies are adequate in quality and quantity, an analysis will be published later.

Medical Education and State Boards of Registration

Hawaii Report

Mr. Kirk B. Porter, secretary of the Hawaiian Territorial Board of Health, reports that eight candidates were licensed recently in Hawaii. The following colleges were represented:

College	PASSED	Year Grad.	Total No. Licensed
University of Maryland.....		(1899)	1
Washington University		(1915)	1
Afferson Medical College.....		(1910)	1
University of Pennsylvania.....		(1897) (1909) (1915)	3
Woman's Medical College of Pennsylvania.....		(1909)	1
Hohoku Imperial University.....		(1901)	1

Nevada May Report

Dr. Simeon L. Lee, secretary of the Nevada State Board of Medical Examiners, reports the written examination held in Carson City, May 1-3, 1916. The total number of subjects examined in was 13; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 5, of whom 4 passed and 1 failed. Eight candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Harvard University		(1901)	88.9
Cornell University		(1910)	95.9
New York University Medical College.....		(1898)	91.6
Kyoto Charity Hospital, Special Medical School.....		(1911)	81.9

College	FAILED	Year Grad.	Per Cent.
College of Physicians and Surgeons, Little Rock.....		(1909)	41.6

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Georgetown University		(1891)	Penna.
College of Physicians and Surgeons, Chicago.....		(1897)	Wisconsin
Werner Medical College.....		(1901)	Illinois;
Wash. Medical College.....		(1896)	Indiana
Trois College of Medicine.....		(1901)	Nebraska
San A. Creighton Medical College.....		(1896)	Illinois
Montreal School of Medicine and Surgery.....		(1895)	Nebraska

Medicolegal

Insufficient Evidence of Malpractice — Requirements

(*Adolay vs. Miller et al. (Ind.), 111 N. E. R. 313*)

The Appellate Court of Indiana, Division No. 2, affirms a judgment in favor of the defendants, who were charged with malpractice in the treatment of a compound fracture of the bones of the plaintiff's right forearm. The court says that, to its mind, the evidence showed nothing more than the acts of the defendants while engaged in setting the injured bones as these were observed by the plaintiff and his wife, the nature of the treatment by Dr. Miller thereafter as they observed it, the statement of the defendants as to their belief that the arm would be restored to its usefulness, and the fact that the arm was not straight when the splints were removed. There was no evidence from any physician who had given the jury any standard-by which the fact in dispute could be properly determined, and, since the jury was not permitted to draw the conclusion of unskilfulness from the result of the operation of treatment, it seems to the court that to permit the jury to determine the case without some competent evidence as a standard from which it might be determined whether the services rendered by the defendants were done with reasonable care and skilfulness would be to permit a determination of that question from mere speculation and conjecture. When a physician and surgeon assumes to treat and care for a patient, in the absence of a special agreement, he is held in law to have impliedly contracted that he possesses the reasonable and ordinary qualifications of his profession, and that he will exercise at least reasonable skill, diligence and care in his treatment of him. This implied contract on the part of the physician does not include a promise to effect a cure, and negligence cannot be imputed because a cure is not effected; but he does impliedly promise that he will use due diligence and ordinary skill in his treatment of the patient so that a cure may follow such care and skill, and this degree of care and skill is required of him, not only in performing an operation, or administering first treatments, but he is held to the like degree of care and skill in the necessary subsequent treatments, unless he is excused from further service by the patient himself, or the physician or surgeon on due notice refuses to further treat the case. In determining whether the physician or surgeon has exercised the degree of care and skill which the law requires, regard must be had to the advanced state of the profession at the time of treatment and in the locality in which the physician or surgeon practices. But where a physician or surgeon is employed as a specialist on account of his peculiar learning and skill, he is bound to bring to the discharge of his duty to patients employing him, as such specialist, that degree of skill and knowledge which is ordinarily possessed by physicians who devote special attention and study to the disease, its diagnosis and treatment, having regard to the present state of scientific knowledge. In either case the legal duty of the general practitioner of medicine and surgery and the legal duty of the specialist must be measured by some legal standard. It must be tested by some competent evidence so that the jury may have before it a proper standard by which it may determine whether the acts or the omissions of the physician or surgeon constitute a neglect or omission of duty.

Sufficient Information; Title to Act; Evidence of Practicing Medicine

(*State vs. Erickson (Utah), 154 Pac. R. 948*)

The Supreme Court of Utah affirms a judgment of conviction of the defendant, a chiropractor, of practicing medicine without a license. The court says that the information was that he did "wilfully and unlawfully," on a day and at a place specified, "practice medicine without holding a lawful certificate or license issued by the state board of medical examiners of the state of Utah, by then and there diagnosing, treating, operating upon, and adjusting for the physical ailments of one Thomas E. Browning for a fee of

\$2, then and there paid by the said Thomas E. Browning to, and received by," the defendant. It was contended that the information was insufficient because it did not contain a sufficient statement of the acts constituting the offense, or the particular circumstances necessary to a complete offense. But the offense was stated in the language of the statute defining the practice of medicine, and where the statute defines the offense by the use of words which have a well recognized meaning, and designates the particular acts or means whereby the offense may be committed, to charge the offense substantially in the language of the statute is sufficient. Had the statute but declared that any person "practicing medicine" without a license or certificate was guilty of an offense, then it might well be argued that an information stating the offense must, to be good, be expanded beyond the language of the statute.

The court does not agree with the contention that the statute itself is unconstitutional because the subject is not clearly expressed in its title. The title is "An act for the regulation of the practice of medicine and surgery in the state of Utah, and for the appointment of a board of medical examiners in the matter of such regulation and providing for the repeal of" certain named sections of the Revised Statutes of 1898, and as stated in Chapter 93, laws of 1911, "An act amending" a number of specified sections "C. L. 1907, for the regulation of the practice of medicine and surgery." Under that, the court thinks enactments defining the practice of medicine, prescribing the qualifications to practice, requiring a license to practice and making it unlawful to practice without one, and creating a board of medical examiners and prescribing its duties and powers are all within, and germane to, the title.

Did the defendant practice medicine within the meaning of the statute? He, as a chiropractor, maintained an office. Browning, the person named in the information, having sprained his foot or ankle, called on him at his office. He examined the ankle and foot, which were in "a swollen and black and blue condition." He had Browning strip to the waist and lie on a table, and then began to manipulate his spine. When "he came to a particular spot, he gave it a hard press, and then a little farther down gave another." He continued that operation for a considerable time and then operated a vibrator up and down the back. He explained to the patient that the trouble was in the nerve centers of the third lumbar vertebra, and that the forces had been shut off, and that there was not sufficient nerve energy to heal the leg, and that he would have to readjust that particular lumbar and get it in its proper place, and that then there would be a sufficient flow of nerve energy to heal up the leg. He also advised Browning on retiring to wrap a towel saturated with strong salt brine around the foot. He gave him but one treatment or adjustment, for which Browning paid him \$2. The court thinks the evidence justified a finding that the defendant practiced medicine within the meaning of the statute: that he, for a fee, diagnosed, treated and operated on a physical or abnormal ailment or condition of another.

Gross Unprofessional Conduct Justifying Revocation of License

(*Senior vs. State Board of Health (R. I.), 90 Atl. R. 340*)

The Supreme Court of Rhode Island affirms a finding of the state board of health that defendant Senior had been guilty of gross unprofessional conduct in violation of Section 5 of Chapter 193 of the General Laws of Rhode Island of 1909, and that in consequence the certificate issued by the board authorizing him to practice medicine and surgery in the state should be revoked. From the action of the board he appealed to this court. The charges preferred by the secretary of the board were that the defendant had been guilty of gross unprofessional conduct; that he had violated the laws of the state, and that he had been guilty of acts which rendered him an unsuitable person to practice medicine. On the hearing before the court, testimony was presented showing that he had been frequently guilty of drunkenness and of improper and indecent acts in public places;

that in the year 1913 he had been twice convicted and sentenced as a common drunkard; that in October, 1915, he had been consulted by several persons to obtain the performance by him of illegal acts, and had named to them the price for which he would perform such acts. The court says that the charges were sustained by the evidence, wherefore the finding of the board is affirmed and the license of the defendant to practice medicine and surgery in Rhode Island is revoked.

Society Proceedings

COMING MEETINGS

Colorado State Medical Society, Glenwood Springs, Sept. 5-7.
Michigan State Medical Society, Houghton, Aug. 15-17.
Oregon State Medical Association, Portland, Sept. 9-10.
Utah State Medical Association, Salt Lake City, Sept. 12-13.

NEW YORK ACADEMY OF MEDICINE

Special Meeting, held July 13, 1916

The President, DR. WALTER B. JAMES, in the Chair

SYMPOSIUM ON INFANTILE PARALYSIS

What We Know About the Transmission of the Disease

DR. SIMON FLEXNER read a paper entitled "The Nature, Manner of Conveyance and Means of Prevention of Infantile Paralysis," which appears in THE JOURNAL, this issue, p. 279.

The Clinical Types of the Disease

DR. HENRY KOPLIK: Poliomyelitis is primarily an epidemic disease, and as a sporadic condition it has attracted very little notice. All the epidemics which have thus far been recorded resemble each other very closely. An attempt to connect this disease with the occurrence of cerebrospinal meningitis has developed into a belief that poliomyelitis is an entity, clinically occurring in epidemics in the late spring to late autumn and following the regular sporadic occurrence of the disease in limited numbers in the months following the winter and reaching into the late spring up to the time of the epidemic outbreaks. Epidemics of this disease have been known to skip a year and always to crop up in the place of its original occurrence, which should give the thoughtful a hint as to its possible cause and epidemiology. In all the epidemics thus far recorded, the symptomatology and clinical types have been much the same. Though most of the scientific knowledge of the clinical types of poliomyelitis is borrowed from Swedish and Norwegian observers, Medin and Wickman, the first inkling of the epidemic nature of the disease was voiced by Colmer, an American physician, who in 1841 observed some form of paralysis in a child and obtained the history that in the locality in which the patient lived several similar cases had occurred and most of the patients had recovered. Following him, Caverly in 1894 described an epidemic in Vermont; Taylor and Chapin later on observed the epidemic nature of the disease. Aside from these observers, much of the clinical knowledge at present was due to Medin, who described the clinical types of acute epidemic poliomyelitis in 1884 before the International Congress, much to the astonishment of most pediatricians who still retained the simple picture as retained in older textbooks, of poliomyelitis anterior as a simple, infantile paralysis. In all, forty-two epidemics have been observed in America and on the continent, and this alone should establish the tendency of poliomyelitis to occur in epidemic form at certain seasons and remain sporadic until the time arrive for a new outbreak. The disease selects the young as its victims. Out of 886 cases in the epidemic of 1907, 57 patients were below 3 years of age, 771 below 5 years and three were under 6 months of age. In the present epidemic the youngest patient I have seen was 4½ months old and absolutely breast fed. The most susceptible period was from 1 to 3 years of age.

It is through the abortive type of the disease that these cases are spread to others. In this type the disease does not

go on to paralysis, the patient recovers, and the disease does not leave the host injured as to the muscular motor apparatus. This type can be recognized so as to leave no doubt as to its distinct identity. A child of 5 years is attacked with a headache, slight malaise and an attack of vomiting lasting five days, intense pain in both lower extremities radiating to the soles of the feet and worse at night, slight pain in the nape of the neck, lassitude, cerebellar gait on walking, increased reflexes in the lower extremities, and rectal temperature above 100.5 F. In ten days the pains have disappeared, the child is well and wants to go out and play. The abortive cases present prodromes such as headache, weakness, diminished reflexes and pain in the nape of the neck, with or without vomiting and fever, still do not present paralysis, and the patient recovers.

The spinal or bulbospinal type is the most common, and gives the disease its name. The patient has an attack of vomiting and slight fever, and within twenty-four hours the mother observes that the child cannot move one or the other extremity. In these forms there may be no fever, but it is possible that in giving the history the mother may have overlooked the symptoms of fever, malaise and such indisposition as peevishness, which may have preceded by a few days the paralysis. In other cases, the paralysis appears gradually. Pain may continue to be quite severe, especially when the extremities are moved. The paralysis may spread and involve not only the remaining lower extremity, but also the upper extremities, the muscles of the back and respiratory muscles of the thorax, and possibly the muscles of the abdomen. As a rule, in the purely spinal cases, the paralysis appears and does not spread in the great number of cases. In others, it may spread from the extremities and involve the whole trunk, even to causing bulbar paralysis of the respiratory centers. But after the tenth day, paralysis is not apt to spread to the bulbar medulla, though patients have been known to die after the fifteenth day. Both the meningitis and cerebral types should be combined because of the cerebral symptoms, which give rise to a picture closely simulating meningitis. The meningitic form of poliomyelitis runs its course with cerebral symptoms. A child of 3 is taken with vomiting for forty-eight hours, followed by rigidity of the neck with pain on flexion of the head, Brudzinski's sign and reflex, Kernig's sign, sopor and Macewen's sign, which may be slightly marked, and also diminished knee reflexes. Some patients may improve after a day or two, the fever may abate, and they may even be about and then have a recrudescence of fever, sopor, rigidity, delirium, irritability, extreme hyperesthesia and pain in the nape of the neck. In some cases the only palsy may be ocular; in others a slight facial palsy may be present which may be combined with a weakness in one or other extremity. After a week, the patient becomes brighter. There is still, however, marked ataxia and Romberg's sign. As convalescence is established, the ataxia is the last symptom to disappear. The hydrocephalus and abnormal mental state may remain for some time after the temperature is normal. On recovery, there are a slight strabismus, ataxia, and optic neuritis. In one group of cases I saw unilateral ophthalmoplegia with hemorrhages into the retina. In lumbar puncture lies the differentiation in the form of poliomyelitis from cerebrospinal meningitis. The bulbar or pontine form of the disease deserves notice as a distinct form. An infant, breast fed, 13 months of age, is attacked with fever and vomiting. The fever continues into the afternoon of the following day. The temperature continues at 102.4, the infant is bright, laughs and plays in the crib, but there is a tired look about the face and eyes. The knee reflexes are increased; otherwise there is no paralysis that can be demonstrated. In one case, ten days before the patient, aged 21 months, was seen, he was taken with high fever and vomiting, and there were some green movements. The fever continued, in a less degree, to the ninth day, when the mother noticed that the right side of the face was flat, there were tremulous movements of the head and arms, and the patient was restless. There was constant jactitation of the head, insomnia, and rigidity of the neck, but no palsies of the extremities; on the contrary, the patient exhibited

great strength in both upper and lower extremities. In other cases, the outcome was not so favorable; there was an involvement of the nuclei which control deglutition and respiration. In these cases the patient may be lost by paralysis of the respiratory centers. The neuritic type included those cases in which pains in the extremities became a leading feature of the clinical picture. Some of these patients developed paralysis; others did not. They were referred to under the head of abortive cases. The symptoms given justify a lumbar puncture in order to establish the character of the fluid, which in poliomyelitis shows a lymphocytic cytology and an increase of globulin. The examination of the blood was very uncertain. As to prognosis, the low mortality of 10 per cent. applied to children below 11 years of age, and 27 per cent. among older children and adults. Twenty per cent. of all patients completely recover, and the younger the child the better the prognosis.

Abortive and Nonparalytic Cases, Their Importance and Their Recognition

DR. GEORGE DRAPER: Cases are designated as abortive when attention is centered on the paralysis as the chief symptom of poliomyelitis; but as our knowledge has grown it has become increasingly evident that in dealing with acute anterior poliomyelitis we are dealing with a general infection that presents a great variety of manifestations. The cases that escape paralysis are just as important from the standpoint of the spread of the infection as the paralyzed cases, and infinitely more dangerous. The cases that have hitherto been called abortive should be called atypical if we consider those that develop paralysis as typical. Unfortunately there is no possible way at the present time of determining the number of cases that are not paralyzed. The figures vary greatly and undoubtedly the number of cases that are not paralyzed varies greatly in different epidemics. There are certain indications, however, that lead us to believe that the number of cases of this group is considerable. It has been said that it is extremely rare to see more than one case of poliomyelitis in a family, but a very careful investigation where there has been one case in a family frequently shows that another child has had mild symptoms, as fever, general malaise and vomiting. Furthermore, pathologic studies show not only that there may be lesions in the spinal cord, but also that the viscera and the entire lymphatic apparatus may be involved and we may find palpably enlarged lymph nodes. This is evidence that we are dealing with a general infectious disease.

In general all cases fall into the following groups: 1. Gastro-intestinal. 2. Respiratory. In these we may have the symptoms of influenza, cough, lung signs and pains in the bones and joints. 3. Febrile. 4. A type characterized by symptoms of meningismus. 5. The type in which paralysis occurs. In the first three types we may have slight transient paralysis. In the type showing paralysis we may have as prodromal symptoms any or all of the prodromal symptoms of the other types. The intensity of the symptoms is no guide to the prognosis. In this connection it is of interest to note that in fatal cases more extensive lesions of the cord have sometimes been found than were indicated by the symptoms. That there should have been this general degeneration of cord without manifestations suggests that we may have lesions that do not give clinical evidence of their existence. In times of epidemic every one is alive to these symptoms, but it is not enough that the physician should say this is or is not a case of poliomyelitis. In suspicious cases lumbar puncture should be made and the spinal fluid examined.

The diagnosis is based, therefore, on gastro-intestinal, respiratory and febrile symptoms. Where we find the latter, a search should be made for transient weakness and mild degrees of paralysis and for local muscle tenderness. One point of value in diagnosis is the anterior spinal flexion sign. It is a very striking thing that before paralysis sets in the spinal flexion sign is definitely present, and this is probably responsible for the stiff neck and Kernig's sign. The sign is elicited by having the child place his hands under his thighs and then flexing his trunk forward, doubling him up.

The Present Epidemic—The Types Which it Represents

DR. LOUIS C. AGER: From June 20 to July 12, we cared for 320 patients with poliomyelitis in the Kingston Avenue Hospital. The resident staff was thus brought face to face with a large number of serious problems and a large amount of work to be accomplished. July 3, eighty-nine patients were admitted to the hospital. The most striking feature in connection with this work was the change observed in many of these children as the result of the facilities offered for making them comfortable in the hospital. Something has been done in the study of the infectivity of the disease, but the degree of infectivity has not yet been decided. There must be a large number of cases of the abortive type that are not recognized. In the Kingston Avenue Hospital we have at least eight series of cases in which there have been two or more cases in the same family. A great many more instances of this kind would have been found if we had had more complete statistics in 1907. That there are practically no cases among the colored race is borne out by our experience; there has been no colored child admitted with poliomyelitis. Some investigators have tried to find a relationship in the incidence of the disease in complected people, but no such relationship has been traced. The incidence of the disease is likewise practically the same in all nationalities. Another point that has been brought up is in reference to the affections of the liver and spleen. We have not found anything in this respect so far as the clinical signs are concerned; there is no material enlargement of these organs, except in some fulminating cases. This is a systemic infection, and, like tuberculosis in small infants, may involve the entire system. We found only two cases of enlarged liver in sixty-seven cases. The age incidence in the present epidemic is practically the same as in the epidemic of 1907. It is a peculiar fact that in epidemics in this country the age incidence is lower than in those on the other side. Among eighty-seven cases observed rather closely, forty-six occurred between the ages of 2 and 5 years; twenty-two between the ages of 1 and 2 years; eight between the ages of 6 and 12, and three between 1 and 6 months. They had two adult cases in this group, one in a woman 28 years of age and one in a pregnant woman of 21 years. As to the type of the disease in our clinical work, we have distinguished three types, the encephalitic, the poliomyelitic and the meningitic. Perhaps this classification is not scientific, but we have found it valuable for bedside work. We found as usual that the lower extremities were most frequently paralyzed. In a group of sixty-four cases examined, the lower extremities were involved in thirty-nine instances; in seven instances the upper extremities; in five there was facial paralysis; in thirteen cases the only definite symptoms were marked paralysis of the muscles of the back. There were two typical ataxic cases. The only place to take care of children with poliomyelitis is in a hospital, unless the conditions of the hospital can be exactly reproduced in the home.

Laboratory Aids in the Diagnosis of Poliomyelitis

DR. JOSEPHINE B. NEAL: It is well known that sporadic cases of poliomyelitis are frequently seen when no epidemic exists. Because of this fact, during the past six years, it has been the lot of the Meningitis Division of the Department of Health to study both clinically, and by means of laboratory methods, many of the cases before the present epidemic occurred. Most of the cases seen by us, both before and during this epidemic, have been atypical, and we have, therefore, been compelled, when endeavoring to make a diagnosis, to consider our laboratory findings with more than ordinary care. Perhaps one of the most interesting experiments employed in the study of poliomyelitis has been the inoculation of monkeys by means of washings from the respiratory mucous membrane. This was first successfully performed by Kling, Petterson and Wernstedt in 1911. Working with Dr. Du Bois and Dr. Zingher we obtained washings from the nose and throat in an abortive case two weeks after the incidence of the sickness. With these we produced typical poliomyelitis in monkeys. In sections of the brain, from one of these monkeys, a few globoid bodies similar to those

described by Flexner and Noguchi were found. A report of this work appeared in *THE JOURNAL*, Jan. 3, 1914. Another laboratory method of some diagnostic value is the so-called neutralization test. In this, serum from the suspected individual in the stage of recovery is mixed with an old fatal dose of an active virus. These are incubated and later injected intracerebrally into monkeys. Failure of the disease to develop indicates that the virus has been neutralized. This test, however, does not furnish conclusive evidence of poliomyelitis, for serums from noses known to have been free from a recent attack of the disease have sometimes successfully neutralized the virus. It is, however, quite obvious that laboratory methods requiring the use of monkeys are both too complicated and too expensive for ordinary diagnostic use. A study of the blood picture was exhaustively made by Peabody, Draper and Dochez of the Rockefeller Institute. It was shown that there existed a varying increase in leukocytes and a polymorphonucleosis. This is characteristic of so many other diseases that it is of little help in diagnosis.

The procedure which we find to be our most reliable and valuable aid in the recognition of poliomyelitis is the examination of the spinal fluid. In the first twenty-four to forty-eight hours after its onset, poliomyelitis must be differentiated from the early stages of epidemic meningitis or mild purulent meningitis and also from a meningism accompanying pneumonia or other infection. The clinical pictures presented by the above mentioned diseases are quite similar, and it is in the distinguishing between them that the examination of the spinal fluid affords us the most reliable information. In the early stages of poliomyelitis, the spinal fluid is clear, or rarely, it may be slightly cloudy. It often shows a good fibrin web formation. There is a slight or moderate increase of albumin and globulin and also of the cellular elements. The reduction of Fehling's solution is prompt. Those poliomyelitic fluids which are cloudy present a polymorphonucleosis which may run as high as 90 per cent. but which we usually find to be about 60 per cent. As a rule, however, 80 per cent. or more of the cells are mononuclears. In examining such fluids we have frequently observed the presence of large mononuclear cells which we believe to be in a measure characteristic of poliomyelitis. We are now studying these by means of the various differential stains in the hope that our research in this direction may develop something of positive diagnostic significance.

Two rare types of spinal fluids sometimes occur in poliomyelitis when the hemorrhagic process has been more than usually extensive. The first of these is of the true hemorrhagic character, the red blood cells being evenly diffused throughout the fluid. When collected in successive tubes, the specimens are all hemorrhagic, showing no change in the intensity of the hemorrhage. This serves to differentiate it from bloody fluids obtained by the accidental puncture of a vein. The second of these rare fluids illustrates the so-called syndrome of Froin. It has a characteristic yellow color and coagulates spontaneously. The spinal fluid in early cases of purulent meningitis shows a varying degree of cloudiness, except in very rare instances when it may be clear. A greater increase in albumin and globulin is usually found here than occurs in poliomyelitis with a poorer reduction of Fehling's solution. The cells in these fluids of purulent meningitis are 90 per cent. or more polymorphonuclears, and the etiologic organism is found except in the mildest cases. In certain mild cases of meningitis probably of epidemic variety the meningococci may never be positively demonstrated in the fluid. In purulent meningitis due to other organisms, these practically always appear later. In one instance I have seen a clear fluid from an early case of epidemic meningitis. This was of about eighteen hours' standing. Although the cellular reaction was so slight, the meningococcus is demonstrated to be present in the fluid by smear and culture. The fluid in meningism is increased in amount but practically normal in character. When seen a week or more after the onset, cases of poliomyelitis, especially if presenting cerebral symptoms, must be differentiated from tuberculous meningitis. The spinal fluid in both these conditions is clear and

increased in amount. The albumin and globulin content of both is also increased, but usually in poliomyelitis the increase of both these last named elements is not so great as occurs in tuberculous meningitis. The reduction of Fehling's solution is usually better. The cellular element is also usually less in poliomyelitis. In both conditions at this stage there is ordinarily a mononucleosis, although in some acute cases of tuberculous meningitis there is a polymorphonucleosis. If, however, as may happen occasionally, the increase of albumin and globulin is greater than usual and the reduction of Fehling's solution is not so prompt, then the termination of the disease must wait on the results of animal inoculation if it has been impossible to demonstrate tubercle bacilli in fluids. (A detailed study of the spinal fluids of poliomyelitis examined at the research laboratory was made by Dr. H. L. Abrahamson of the meningitis division, and published in the *American Journal of Diseases of Children*, November, 1915.) In brief, then, a spinal fluid increased in amount and showing a slight to moderate increase in albumin and globulin, a good reduction of Fehling's solution and a varying cellular increase, mostly mononuclear, makes the diagnosis reasonably certain in fairly early cases of suspected poliomyelitis. A slightly cloudy fluid occurring very early in the disease must be differentiated, as noted above, from a similar fluid in an early purulent meningitis. Fluids from the cerebral or encephalitic type of poliomyelitis sometimes may be differentiated from fluids of tuberculous meningitis only by animal inoculation.

The Importance of the Present Epidemic

DR. HAVEN EMERSON: During the month of May only five cases were reported. Fifteen more that had their onset in May were not reported until in July. In June there was a rapidly rising incidence of the disease, beginning about June 20, and increasing, until the highest point was reached about July 11. Since that time there has appeared to be a recession, but we cannot as yet say that it is permanent. A study of the death rates of diphtheria, scarlet fever, measles and diarrheal diseases in this city during the past six years and during the first six months of this year show that the incidence and mortality from poliomyelitis is small by comparison. During the first six months of 1916 there were 884 deaths from diarrheal disease, and fifty-seven from poliomyelitis. One of the chief points of interest in connection with the epidemic is the psychologic state of the lay public. The reason for the present panic on the part of the public is probably because this is the first epidemic of poliomyelitis in this city in which the disease has been made reportable, and also the first in which there has been an effort at hospitalization. We must acknowledge that our present method of dealing with the disease is an experiment. At the onset of the epidemic the health department was confronted by two alternatives. The one was to avoid publicity and to see what could be done by the medical control of cases. The other was a campaign of publicity which offered the better prospect for the real control of the disease. The latter method also offered the opportunity of giving the public a practical lesson in cleanliness and the control of infectious disease. Consequently we decided on our present campaign of publicity and hospitalization. In 1907, it was not until November, when the epidemic was drawing to a close, that any organized attempt was made to study it. This is the first epidemic in this city in which a study has been made at the time the patients were coming down with the disease. It is estimated that in the epidemic of 1907 there were 2,500 cases, and that the mortality was about 5 per cent. In a group of 700 cases accurately studied, the mortality was found to be 27 per cent. The average mortality as estimated in foreign epidemics has been from 7 to 10 per cent. During the present epidemic the mortality thus far has been 18.7 per cent. The most important factors in dealing with infantile paralysis are early diagnosis and the placing of all patients under neurologic and orthopedic observation. This may save the individual and the public from the future burden that permanent crippling of the victims of infantile paralysis implies. The early recognition of the condition is the most impor-

tant factor in preventing the spread of the virus among the healthy. Poliomyelitis is essentially a disease of early childhood. At least 99 per cent. of the children affected in this epidemic have been born since the last epidemic.

Of about 1,600 patients with poliomyelitis who have come under the observation of the Health Department during the present epidemic, 917 have been under 5 years of age and 14 per cent. have been between 5 and 10 years. It may be said that about 99 per cent. of the patients have been under 10 years of age. Four hundred and three cases have shown paralysis. In about 50 per cent. of these the paralysis made its appearance in the course of a few days after the onset of the disease. The longest period after the onset of the disease at which paralysis made its appearance was sixteen days. In between 5 and 8 per cent. of the cases there have been secondary or subsequent cases in the same family. When we get a second or third case in the course of three or four days after the onset of the first case it is safe to classify it as a secondary case.

These facts are important since the public has not been impressed previously by the infectious nature of the disease. Our position in dealing with suspected carriers is rather difficult, since we are unable to detect carriers as can be done in diphtheria and typhoid fever. It has thus been a question whether one had a right to interfere with a supposed carrier. This epidemic has given us the opportunity to make use of the concerted action of the hospitals of the city. The present action will probably result in some plan for cooperation that can be used in times of emergency in the future, which will be a great benefit to the public and will favor the scientific study of disease. Our experience with infantile paralysis has taught us the necessity of having a staff suited to the needs of these patients. Such a staff should include a laboratory diagnostician, a neurologist, an orthopedist and a pediatrician. I would urge hospitals that are likely to be called on to care for these cases to organize a staff of this type. The after-care of patients with poliomyelitis offers a great opportunity for the use of social service organization. There is need of concentrated follow-up home work in all of the cases. This is a need which will continue for years after the patients have left the hospital. A large number of hospitals in the city are taking cases of poliomyelitis and many have signified their willingness to do so. The quarantine service has been cooperating with the department of health, and Ellis Island has offered accommodations for patients if they shall be needed. This cooperation among hospitals is a notable contribution to our progress.

In our work it has been most discouraging to meet with the unrecognized and neglected cases of infantile paralysis. We meet instances in which slight illness followed by slight limp have been disregarded by the mother. These patients may suffer permanent injury because of neglect, and are a fruitful source of infection. I wish to call your attention to the degree to which the medical profession will sacrifice itself for the public welfare. Many instances have come to my attention in which physicians have for the time being lost their practice because they have been taking care of cases of infantile paralysis, their patients being afraid to come to their offices. I hope that wherever you see this attitude on the part of patients you will do all you can to discourage it and to see that other physicians do not suffer because of their willingness to sacrifice themselves for the public good. No health department can control an epidemic and secure proper police enforcement of its regulations without the cooperation of the medical profession, so we appeal to you to give us your support through the early diagnosis and prompt report of all cases of this disease coming under your observation.

Discussion on Infantile Paralysis

DR. WILLIAM H. PARK: The sick person and the carrier are the chief sources of infection. There is no evidence that a fly or insect transmits the disease, though they may carry the disease. We must then guard against the spread of the disease by the sick person, the carrier and filth that has

been contaminated with the virus. If we find that an insect is a carrier it will probably be in a subordinate degree. It will be very difficult to prove that an animal that has been inoculated is a carrier of the infection. Even if we could detect the carrier of poliomyelitis as we do those of diphtheria, pneumonia or scarlet fever, I doubt if we would act very differently than we are now doing. We have the knowledge by which we may detect the carriers of diphtheria and pneumonia, and yet we have done little in this direction to prevent these diseases. It is not in lack of knowledge that the difficulty of controlling the carrier lies. In the light of what has been done in other diseases by the use of vaccines or serums it is possible that we may learn to do more in poliomyelitis; but at present we have no practical knowledge that we can offer.

DR. WALTER B. JAMES: Two questions have been asked. Some one asks whether it is a safe plan to admit cases of poliomyelitis to a general hospital. A physician from the midst of the infected district asks what the modern treatment of poliomyelitis is.

DR. HAVEN EMERSON: We regard it as perfectly safe to admit patients with poliomyelitis into general hospitals. The disease is rarely communicated in general hospitals to other persons.

DR. HENRY KOPLIK: The treatment of the disease at this time can be only symptomatic. The patient should be isolated and kept absolutely quiet. Any one in attendance on a case of poliomyelitis should wear a gown and should cleanse his hands on leaving the patient. A German physician in Munich has recommended that the patient be placed in a Bradford frame so that he may be kept absolutely quiet. In addition to perfect quiet, the patient should have plenty of fresh air and an easily assimilable diet. The bowels should be kept open. There is no particular remedy except those supposed to have an effect on the general nervous system. Liberal doses of hexamethylenamin have been employed, but its utility has not been definitely established. Lumbar puncture seems to offer certain advantages. In the first place the removal of a certain amount of spinal fluid which is toxic may be of some benefit. Lumbar puncture gives an opportunity to make a diagnosis; it removes pressure, which is an advantage. It is because of this pressure that we get Macewen's sign. When paralysis begins, it is a relief to the patient to keep his limbs absolutely quiet. In some cases a cast may be applied to prevent contractures. We can sometimes see when the cast is removed that it has overcome contracture. The contracture may recur later, and then the patient should be referred to an orthopedist. For the symptoms referable to the nervous system, anodynes, as chloral and the bromids, may be administered. Opium should not be used unless it is absolutely necessary. Charcot has advocated the intramuscular injection of strychnin as soon as the pain and fever have ceased. One-fortieth grain daily may be given over a period of thirty days, selecting different groups of muscles for the injections. Many patients regain their power without these injections, and many do not, so that it is very difficult to give an accurate judgment as to their utility. Warm baths may sometimes prove a great blessing, if they can be given without moving the patient too much. Massage in some instances seems to aggravate the condition; in others it seems to relieve the pain. In some little patients potassium iodid in large doses seems to have an anodyne effect. In a few instances its action has been almost miraculous. The great variety of nostrums that have been exploited as suitable for use in infantile paralysis should be avoided. There should not be too much activity in the treatment of these patients. No attempt should be made to increase the tonicity of the muscles until the active stage of the disease has passed.

DR. LEON LOURIA: An epidemic can be stopped only by an early recognition of those cases that do not show any paralysis. We must revise our medical nomenclature so that we include and treat under the term "poliomyelitis" cases that do not show paralysis. In a few cases I have noticed a very interesting occurrence. A child would be taken ill with an indefinite febrile manifestation and sore throat. He would be treated with the ordinary remedies employed in slight

illnesses of this kind and would apparently recover. In three or four days there would be a recurrence when the definite symptoms of poliomyelitis would appear and a definite paralysis would show itself. If these cases are recognized early and the nervous system given the rest it requires, the additional trauma consequent on continued activity will be prevented and the virus may not exert so great an effect. The same treatment should apply to the abortive type of the disease as is given to the paralytic form.

DR. SAMUEL J. MELTZER: The papers presented have failed to cover one essential phase, and that is the treatment of the disease. The reason for it is to be found, perhaps, in the discouraging fact that there is at present practically no treatment for poliomyelitis. I wish to bring forward three promising therapeutic measures based essentially on personal work:

Any inflammatory focus is surrounded at the periphery by zones of hyperemia, exudation and edema. Thirteen years ago, in experimenting on rabbits' ears, we found that an injection of epinephrin reduces an entire inflammatory swelling to a very small focus in the center. The peripheral zones of edema and active hyperemia disappear completely for some time. Several years ago Dr. Auer and I found further that an intraspinal injection of epinephrin into monkeys produces a long lasting effect on the blood pressure, longer than by any other method of administration; more than one hour may pass before the blood pressure returns to normal. On the basis of these observations and on the further plausible assumption that the early stages of the paralytic effects in poliomyelitis are not caused by the chief inflammatory focus but by the peripheral zones of active hyperemia, exudation and edema, I induced Dr. Clark, then working under Dr. Flexner at the Rockefeller Institute, to make the following experiments: Monkeys dying from experimental poliomyelitis received intraspinal injections of epinephrin. The beneficial effect was most striking. Animals which were paralyzed and moribund at the time of the injection were seen several hours later eating bananas which they held themselves. The paralytic conditions were strikingly improved and the life of the animals was prolonged in some cases for several days. The animals finally died; but in this series of Dr. Clark's experiments, all animals received *reliably fatal* doses of the virus. It is important to bear in mind that the mortality in human infantile paralysis is generally not more than 25 per cent. No death is usually due to respiratory paralysis. It is highly probable that in many instances the respiratory paralysis is not produced by the chief inflammatory focus, but by the extensive peripheral zones of exudation and edema, which are surely capable of interfering with the vitality of the nerve centers controlling the respiratory mechanism. If the exudation and edema could be removed for some time, the lives of a few or of many patients may be saved, namely, if in these cases it just happens that the ascending progress of the actual inflammation came to a standstill. On the basis of these facts and considerations I recommend to inject epinephrin intraspinally in every case of infantile paralysis, the injection to be repeated from four to six hours. The procedure may save life, and in surviving cases it may reduce the extent of the final lesion. There is no danger to this procedure. Monkeys stood well as large a dose as 2 c.c. in a single injection. However, in human infantile paralysis the injections should be begun with a dose of 0.5 c.c. of one to one thousand solution of epinephrin until more is learned about the effects. This dose may be repeated every four to five hours increasing to 1 cubic centimeter in a single dose. When pulmonary edema is present the treatment should be used most cautiously.

The second suggestion is to administer artificial respiration by means of our apparatus for pharyngeal insufflation as soon as the patient shows a degree of unconsciousness and respiratory insufficiency. It is an easy and reliable procedure.

The third suggestion is to administer oxygen under pressure in a respiratory rhythm by an apparatus which I have recently devised and used on human beings in several instances. It abolishes rapid cyanosis and may save life. It may even act specifically on the virus of poliomyelitis.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

July, CLII, No. 1, pp. 1-156

- 1 What Therapy Means. O. T. Osborne, New Haven, Conn.
- 2 *Treatment by Splenectomy of Splenomegaly with Anemia Associated with Syphilis. H. Z. Giffin, Rochester, Minn.
- 3 *Comparative Toxicity of Morphin and Morphin-Narcotin (Narcophin). D. I. Macht, Baltimore.
- 4 *Multiple Primary Intravascular Hemangio-Endotheliomata of Bone Associated with Symptoms of Multiple Myeloma. D. Symmers and M. Vance, New York.
- 5 *Distribution of Tetanus Toxin in Body. H. E. Robertson, Minneapolis.
- 6 Case of Idiopathic Purpura Hemorrhagica. G. R. Minot, Boston.
- 7 Spinal Fluid Syndromes of Nonne and Froin and Their Diagnostic Significance. F. M. Hanes, Richmond, Va.
- 8 *Chylothorax; Report of Case. P. Lewin, Chicago.
- 9 Energy Index of Circulatory System. J. H. Barach, Pittsburgh.
- 10 *Blood Pressure in Pneumonia. F. Tice, Chicago.
- 11 Regeneration of Bone. F. D. Smith, Chicago.

2. **Splenectomy in Syphilitic Splenomegaly.**—Three cases of splenomegaly definitely associated with syphilis are reported by Giffin. Briefly, the history of these cases is as follows: I. Marked splenomegaly; severe anemia; no hematemesis; history of syphilitic infection not obtained; Wassermann, total inhibition; antisyphilitic treatment without definite improvement; splenectomy; treponemas in walls of splenic vessels; excellent health one year later. II. Moderate splenomegaly; marked anemia of the secondary type without leukocytosis; liver contained palpable gummas; no hematemesis; negative history of syphilis in both patient and husband; Wassermann test, total inhibition, no improvement of anemia on antisyphilitic treatment; splenectomy; prompt improvement in general health and blood. III. History of syphilitic infection at 21. Three positive Wassermann tests elsewhere during the last two years; Wassermann test negative at the time of examination; moderate splenomegaly; light anemia; recurrent hematemesis; long continued antisyphilitic treatment attended with only partial relief; splenectomy; one gumma and a few treponemas in spleen; excellent condition three months later.

3. **Toxicity of Morphin and Morphin-Narcotin.**—The comparative toxicity of morphin and narcophin was studied on various animals by Macht: Pigs, fish, terrapins, mice, rats, guinea-pigs, rabbits, pigeons, cats and dogs. It was found that in general the toxicity of narcophin is about the same as the same weight of morphin. Narcophin consists of one-third its weight of morphin meconate and two-thirds its weight of narcotin meconate. Inasmuch as the toxicity of narcotin is very low, the author has here a distinct potentiation of the toxicity of morphin. Macht cautions that it is, therefore, not advisable to administer narcophin clinically in doses larger than those of morphin.

4. **Hemangio-Endotheliomata of Bone.**—Symmers and Vance describe a lesion of the osseous system attended by symptoms indistinguishable from those of the multiple myelomas and associated with histologic features which combine with the clinical characteristics to form an apparently unknown disease. The patient, male, aged 43 years, complained of severe pain in the left gluteal region, extending upward to the tenth dorsal vertebra, but not involving the lower extremities. The pain had grown progressively worse during the thirteen months previous; it was burning in character, continuous in point of time and severest at night. Physical examination disclosed a small, indurated, exceedingly painful mass lying just to the left of the anus, and attached to the tuberosity of the ischium. Roentgenographic examination showed irregularities in the periosteal outlines of the left ischium and signs of infiltration of the adjacent tissues. The corresponding hip joint was intact. In the course of the next two months the patient began to complain of tenderness and pains in the right lumbar region and buttock, in the upper part of the right thigh and in the scapular region of the right side. The manubrium sterni, the upper end of the right humerus, and the upper segment

of the occipital bone were similarly affected. In the course of the succeeding five months two tender masses became palpable in the occiput and the movements of the left thigh and right arm grew to be exquisitely painful. Roentgenograms revealed complete absorption of the first rib on the right side and of the left ischium from the symphysis to the acetabulum and infiltration of the soft tissues of the vicinity, together with involvement of the upper end of the right humerus and fracture of the surgical neck. In the course of a few weeks there were signs of widespread destruction of the vertebrae. The urine was twice examined for Bence-Jones protein, with negative results.

The tumor was curetted on several occasions. The unit of the tumor is a thin-walled blood vessel, lined by a single layer of flattened endothelial cells, the lumen distended by red blood corpuscles, the whole embedded in a stroma of poorly cellular fibrillar connective tissue arranged around spicules of bone. Here and there, the lining endothelium may be seen as a uniformly growing circumferential layer from five to twenty cells in depth, and from this point the process of proliferation may be followed through various stages leading to occlusion of the lumen by spindle-shaped tumor cells. In other cases the overgrowth of endothelium commences at the periphery of the vessel as one or more arm-like projections and the lumen is eventually occluded. An extraordinary histologic feature consists in proliferation of the endothelium in such a way as to subdivide the vascular lumen into one or more compartments filled by red cells, obviously representing an attempt to form new vascular channels.

5. **Distribution of Tetanus Toxin in Body.**—In tetanus the path of attack of the toxin in the central nervous system is the axis cylinders of the cerebrospinal nerves. Antitoxin travels in the lymph channels, and hence the passage of toxin cannot be interrupted. Therefore, Robertson says, plans for prevention and treatment should take cognizance of these paths of travel.

8. **Chylothorax.**—Lewin's patient developed lymphosarcoma of the mesentery. Metastasis occurred in the inguinal, axillary and abdominal wall lymph glands and in the thoracic duct. The tumor growing in the duct, or metastases in the mediastinal lymph glands caused obstruction, partial or total, of the duct with consequent transudation of chyle into the pleural cavities.

10. **Blood Pressure in Pneumonia.**—The Gibson rule is as follows: When the arterial pressure, expressed in millimeters of mercury does not fall below the pulse rate, expressed in beats per minute, the fact may be taken as of excellent augury, while the converse is equally true. Of fourteen cases reported by Tice in which the blood pressure was constantly, or in greater part below the pulse rate, 8 complied with the rule, or 57.1 per cent. Seventeen cases in which the blood pressure was constantly, or in greater part, above the pulse rate, 12, or 70.5 per cent., complied with the rule. Of the total of the two groups, 31 cases, 20, or 64.5 per cent., verified the observations of Gibson. A reasonable explanation for four of the five discrepancies in the first group is to be found in the presence of a nephritis in three and a myocarditis and obesity in the fourth. In the second group, of the 6 deviations from the rule, 3 were comparatively young, with soft elastic vessels, in which presumably a relatively lower pressure existed before the onset of the pneumonia, or, at least, were able to withstand a greater depression of the circulation. Excluding the 7 cases in which a reasonable exception existed, of the remaining 24 only 4 failed to comply with the rule. Aside from the prognostic significance, the blood pressure and pulse ratio have been of the greatest assistance and satisfaction as a guide to the administration of cardiac stimulants. In some no stimulation was used, while in others one or two intravenous injections of digitalis were sufficient to reduce the pulse rate, increase the blood pressure, and produce a crossing of the curves.

American Journal of Public Health, Boston

June, VI, No. 6, pp. 533-654

- 12 Sanitary Districts in Analysis of Municipal Mortality and Morbidity Data. R. E. Chaddock, New York.

- 13 Social Aspects of Industrial Hygiene. D. B. Armstrong, New York.
- 14 Rural Sanitation; Definition, Field, Principles, Methods and Costs. W. S. Rankin, Raleigh, N. C.
- 15 Venereal Disease Control in Oranges. F. J. Osborne, Orange, N. J.
- 16 Some Observations on Causes of High Bacterial Counts in Market Milk. H. D. Pease, New York.
- 17 Bacterial Testing vs. Dairy Inspection. C. E. North, New York.
- 18 Studies on Classification of Colon Typhoid Group. J. B. Thomas and E. A. Sandman, Baltimore.
- 19 Confirmatory Tests for B. Coli in Routine Water Examinations. W. H. Frost, Cincinnati.
- 20 Report of Committee on Medical Inspection of Schools. W. H. Peters, Cincinnati.
- 21 Report of Committee on Venereal Diseases. W. F. Snow, New York.
- 22 Report of Committee on Refuse Collection and Disposal. S. A. Greeley, R. Hering, W. F. Morse, E. R. Conant and W. T. Knowlton.
- 23 Present Status of Score Card of Milk Quality. H. A. Harding, Urbana, Ill.

American Journal of Physiology, Baltimore

July, XLI, No. 1, pp. 1-141

- 24 Comparative Vasomotor Reactions in Branches of Arterial Tree. R. E. L. Gunning, Chicago.
- 25 *Bone Marrow as Source of Prothrombin. C. K. Drinker and K. R. Drinker, Baltimore.
- 26 *Experiments with Oil of Chenopodium and Cardiac Stimulants on Isolated Frog Heart. W. Salant and A. E. Livingston, Washington, D. C.
- 27 *Conditions of Activity in Endocrine Glands. Electric Response as Index of Glandular Action. W. B. Cannon and M. Cattell, Boston.
- 28 *Id. Secretory Innervation of Thyroid. W. B. Cannon and M. Cattell, Boston.
- 29 Id. Influence of Suprarenal Secretion on Thyroid. W. B. Cannon and M. Cattell, Boston.
- 30 *Pancreas Deficiency and Vasomotor Irritability. R. G. Hoskins and R. E. L. Gunning, Chicago.
- 31 Vasomotor Reactions from Stimulation of Floor of Fourth Ventricle. S. W. Ranson and P. R. Billingsley, Chicago.
- 32 Nature of Splanchnic Rise in Blood Pressure. R. Burton-Opitz and D. J. Edwards, New York.
- 33 Depressor Action of Thoracic Sympathetic Nerve and Its Branches. R. Burton-Opitz, New York.
- 34 Localization of Primary Pacemaker in Turtle's Heart. B. H. Schlomovitz and C. S. Chase, Iowa City, Iowa.
- 35 Conditions of Physiologic Conduction in Irritable Tissues. Electrolytic Local Action as Basis of Propagation of Excitation Wave. R. S. Little, Worcester, Mass.
- 36 Cryoscopic Measurement of Osmotic Difference Between Resting and Fatigued Muscle. A. R. Moore, Bryn Mawr, Pa.

25. **Bone Marrow as Source of Prothrombin.**—Evidence is presented by the Drinkers that fibrinogen is not formed in the bone marrow, but that prothrombin is formed there in large amounts. This prothrombin does not arise either from leukocytes, lymphocytes, myelocytes, nucleated red cells, or from wandering endothelial cells. The megacaryocytes are the probable source of the marrow prothrombin.

26. **Effect of Oil of Chenopodium on Frog Heart.**—Oil of chenopodium according to Salant and Livingston produces marked depression of the isolated frog heart, the effect increasing with the concentration and successive perfusions. The fresh heart is less sensitive to oil of chenopodium than one which has been perfused for some time. Olive oil added to Ringer's solution causes cardiac stimulation which may become more marked later in the experiment. Oil of chenopodium is less active in the presence of olive oil. Epinephrin and digitalis were found to be antagonistic to oil of chenopodium. Caffein produced slight stimulation when perfused with oil of chenopodium, but in some experiments it aided cardiac depression. It is suggested that the action of oil of chenopodium may be due to disturbance of the lipoids of the heart, and that the antagonistic action of olive oil, digitalis and epinephrin may also be correlated with disturbance of lipid metabolism in the heart. Oil of chenopodium probably affects the muscular substance in the frog heart.

27. **Electric Response as Index to Glandular Action.**—Because (1) an electric change accompanies secretion of saliva, even though the blood supply is shut off from the gland, or the flow through the duct is stopped; and because (2) the change is absent when secretion is absent although each of the conditions attendant on secretion—as contraction of blood vessels, relaxation of blood vessels, faster flow of blood, slower flow of blood—may severally be induced, the

conclusion is drawn by Cannon and Cattell that the electric change is a manifestation solely of the secretory process. When the action current indicates a maximal activity of the submaxillary gland, excited by sympathetic impulses the electric response can be augmented by chorda impulses and vice versa; sympathetic impulses are ineffective during the height of an adrenin effect and chorda impulses cause no increase while pilocarpin is strongly operative. The direction of the action current from the submaxillary gland may be reversed although the physiologic response to stimulation remains as usual. Reversal is therefore not a sign of a reversed process in the gland.

28. **Secretory Innervation of Thyroid.**—Evidence is offered by Cannon and Cattell to show that the nonmedullated nerves distributed to thyroid cells belong to the sympathetic and not to the cranial division of the autonomic system, that their effects are not indirect through alterations of blood supply, that they are indeed true secretory nerves.

30. **Pancreas Deficiency and Vasomotor Irritability.**—The observations made by Hoskins and Gunning do not support the theory that the pancreas normally exerts a depressing influence on the sympathetic nervous system.

Archives of Pediatrics, New York

June, XXXIII, No. 6, pp. 401-480

- 37 Accidents and Diseases of Early Weeks of Life. L. E. LaFetra, New York.
- 38 Care and Feeding During First Month of Life. G. R. Pisek, New York.
- 39 *Chloroma; Report of Two Cases. E. W. Gould and L. T. LeWald, New York.
- 40 Obscure Manifestations of Otitis Media in Infancy and Childhood. J. A. Colliver, Los Angeles.
- 41 Necessity for Early Diagnosis and Continuous Treatment in Congenital Syphilis. J. S. Read, Brooklyn.

39. **Chloroma.**—These two cases are said to be the first in which a Roentgen examination was made. There was marked enlargement of the mediastinal lymph nodes with slight displacement of the trachea to the right; a distinct separation of the coronal suture, producing a wedge-shaped gap measuring 1 cm. at the vault. Distinct enlargement of the liver and of the spleen. The medullary portion of the long bones showed a peculiar mottling due to rarefied areas. The periosteum was distinctly raised from the surface of the bone over the greater portion of the shaft. The epiphyseal region showed comparatively little departure from normal, except for changes above noted.

Boston Medical and Surgical Journal

July 6, CLXXV, No. 1, pp. 1-34

- 42 Leonardo Da Vinci's Scientific Research of Vascular System (To be continued.) A. C. Klebs, Washington, D. C.
- 43 *Menace of Syphilis of Today to Family of Tomorrow. J. H. Blaisdell, Boston.
- 44 Vaginal Hysterectomy for Procidentia; Report of Fifty Cases. P. E. Truesdale, Fall River.
- 45 General Practitioner's Apologia Pro Vita Sua. A. F. Downing, Cambridge.
- 46 Anesthesia. E. L. Young, Jr., Boston.
- 47 Treatment of Paresis by Intraventricular Injections of Diarsenolized Serum, with Presentation of Cases. P. C. Knapp, Boston.

43. **Menace of Syphilis of Today to Family of Tomorrow.**—In thirty families studied by Blaisdell, 59 out of 62 parents were probably infected. Of 132 possible children, only 23 most of whom were born before their parents' infection, were healthy. Of the remaining 109, syphilis claims through miscarriage, later death, or congenital disease at least 83 pregnancies. Blaisdell says that syphilis will appear in the home of tomorrow in proportion to the inadequacy of treatment among the "men and women of the street" of today.

Bulletin of Johns Hopkins Hospital, Baltimore

July, XXVII, No. 305, pp. 193-220

- 48 *Chemical Studies on Case of Bichlorid Poisoning. D. S. Lewis and T. M. Rivers, Baltimore.
- 49 Methods Employed on Second Surgical Division of New York Hospital. F. W. Bancroft, New York.
- 50 William Budd, Pioneer Epidemiologist. W. C. Rucker, Washington, D. C.

48. **Studies of Bichlorid Poisoning.**—The necessity of prolonged and vigorous treatment of every case of bichlorid poisoning is strongly emphasized by Lewis and Rivers. Many apparently moribund individuals have been saved by properly directed and vigorously pushed therapeutic measures. Death should be the only indication for a discontinuance of treatment prior to the complete recovery of the patient. Retention of waste nitrogen is undoubtedly a factor in the early fatal issue of these cases. There are rarely any signs of uremia. The protein sparing powers of the carbohydrates are of the greatest value in delaying the appearance of the extreme grades of nitrogen retention which usually precede death. If carbohydrate cannot be retained by mouth, glucose may be given intravenously in a 10 to 50 per cent. solution. In addition to its protein sparing action, the glucose itself acts as a mild diuretic. Alkalies have a decidedly beneficial action. Large doses of sodium bicarbonate given intravenously soon after the taking of the poison exert a protective action in bichlorid poisoning. The diuretic action of the alkalies is well known.

Bulletin of Lying-In Hospital of City of New York

July, X, No. 4, pp. 209-262

- 51 Conservative Obstetrics; Some Lessons Learned in Twenty-Five Years' Service at Philadelphia Lying-In Charity. G. M. Boyd, Philadelphia.
- 52 *Postmortem Cesarean Section; Report of Ten Cases. J. A. Harrar, New York.
- 53 Report on Four Cases of Ruptured Pelves. W. A. Morgan, New York.
- 54 Case of Congenital Atresia of Duodenum. J. R. Losee, New York.
- 55 Posterior Dislocation of Lower Humeral Epiphysis as Birth Injury. E. D. Truesdell, New York.
- 56 Syphilis in Mother and Infant. J. R. Losee, New York.

52. **Postmortem Cesarean Section.**—In the cases presented by Harrar the longest interval between the death of the mother and the delivery of a living infant was seven minutes. One delivered after eight minutes gave a few feeble gasps and died shortly after birth. One delivered after an interval of twenty minutes had a feebly beating heart but never made any attempts at respiration. The obvious observation is that the success of the operation depends very much on the promptness with which it is done. Unless there is positive proof that the baby is dead, when the mother succumbs it is justifiable to proceed at once to postmortem cesarean section. Except in operating on the dying woman, asepsis and the time necessary to assure it may be ignored. With any cutting instrument at hand the abdomen and uterus are quickly and freely incised and the child extracted. The uterus has occasionally been observed to contract after the extraction of the child. The second point emphasized is the importance of persisting in prolonged efforts at artificial respiration as long as any intermittent contraction can be appreciated in the baby's heart by pressing the fingers up under the left costal margin. The children are almost invariably born in severe asphyxia and great patience is required in their resuscitation.

Florida Medical Association Journal, Jacksonville

June, II, No. 12, pp. 353-387

- 57 Medical Profession and Health Conservation. R. H. McGinnis, Jacksonville.
- 58 Physician as Aid to Industrial Progress. E. W. Warren, Palatka.
- 59 Indigestion. M. H. Smith, Jacksonville.
- 60 Creeping Eruption. G. H. Edwards, Orlando.
- 61 Treatment of Malarial Hemoglobinuria. K. Cross, Crystal River.

Indiana State Medical Association Journal, Fort Wayne

June, IX, No. 6, pp. 223-276

- 62 Small Cysts of Ovary. J. A. Work, Jr., Elkhart.
- 63 *Tonsil. M. Ravdin, Evansville.
- 64 *Chronic Suppurative Ethmoiditis. W. S. Tomlin, Indianapolis.
- 65 *Blood Clot Dressing in Simple Mastoid Abscess. K. K. Wheelock, Fort Wayne.
- 66 Vascular Hypertension in Eye, Ear, Nose and Throat Diseases. W. J. Leach, New Albany.

63 and 64. Abstracted in THE JOURNAL, Oct. 30, 1915, pp. 1576 and 1577.

65. Abstracted in THE JOURNAL, Oct. 30, 1915, p. 1578.

Journal of Experimental Medicine, Baltimore

July, XXIV, No. 1, pp. 1-104

- 67 Effect of Adult Chicken Organ Grafts on Chick Embryo. J. B. Murphy, New York.
- 68 *Immunity Factors in Pneumococcus Infection in Dog. C. G. Bull, New York.
- 69 *Agglutination of Bacteria in Vivo. C. J. Bull, New York.
- 70 *Agglutinability of Blood and Agar Strains of Typhoid Bacilli. C. G. Bull and I. W. Pritchett, New York.
- 71 Cultivation of Tubercle Bacillus from Sputum by Method of Petroff. R. A. Keilty, Philadelphia.
- 72 *Variations in Pneumococcus Induced by Growth in Immune Serum. L. M. Stryker, New York.
- 73 *Conditions and Characters of Immunity Produced in Guinea-Pig by Instillation of Horse Serum into Nose. H. Sewall and C. Powell, Boulder, Colo.
- 74 Differentiation of Cells as Criterion for Cell Identification, Considered in Relation to Small Cortical Cells of Thymus. V. Danchakoff, New York.

68. **Immunity Factors in Pneumococcus Infection.**—It is suggested by Bull that the incubation period of infectious diseases is due to the fact that the infecting agents must become adapted to the adverse conditions encountered in the newly infected host before they can multiply sufficiently to produce the symptoms of disease. It is further suggested that epidemics may arise because the infectious agent is passed from person to person in the ascending stage of the disease and thus enters new hosts in a state of maximum resistance to the natural antibodies of such individuals. When early contacts are avoided, epidemics tend to subside because the infectious agent is weakened by the action of acquired antibodies during the period of convalescence.

69. **Agglutination of Bacteria in Vivo.**—The degree of agglutination and opsonization of bacteria within the animal body Bull found is inversely parallel to the infectiousness of the bacteria for the host.

70. **Agglutinability of Typhoid Bacilli.**—Cultivation on 10 per cent. rabbit blood agar did not affect the agglutinability of fifty-seven strains of typhoid bacilli. Bull and Pritchett were unable to confirm the observations of Gay and Claypole on the variation in agglutinability caused by cultivating the typhoid bacillus on blood agar. A typhoid bacillus showing irregularity in fermentation, agglutination and indol production is described.

72. **Cultural Variations in Pneumococcus.**—Stryker's work shows that the growth of virulent pneumococci in homologous immune serum produces (a) variations in agglutinability, (b) decrease in virulence, (c) inhibition of capsule formation, (d) increase in phagocytability with normal serum, and (e) change in absorption power and antigenic properties. Reversion to the original type in these changed forms takes place on animal passage.

73. **Immunity Produced by Instillation of Horse Serum.**—Sewall and Powell deduce from their observations that the peculiar value of rest in the treatment of infection depends on the fact that absorption of minimal amounts of toxic matter produces a positive protective reaction in the organism, while the absorption of larger amounts renders the cells hypersensitive. The biologic response to the intoxication is probably chiefly determined within the first forty-eight hours of absorption, and, therefore, rest at the beginning of an infective process has preponderant prophylactic value.

Journal-Lancet, Minneapolis

July 1, XXXVI, No. 13, pp. 371-401

- 75 Classification and Treatment of Nephritides. M. H. Fischer, Cincinnati.
- 76 Medicine and State. C. Williams, St. Paul.
- 77 Visit to Mayo Clinic. J. E. Moore, Minneapolis.
- 78 Rupture of Bladder; Report of Two Cases. E. P. Quain, Bismarck, N. D.
- 79 Prevention and Treatment of Tetanus. H. E. Robertson, Minneapolis.

Laryngoscope, St. Louis

June, XXVI, No. 6, pp. 937-1000

- 80 *Treatment of Hay-Fever. H. Wilson, Detroit.
- 81 Streptococcus Mucosus Capsulatus Infection of Mastoid Bone; Report of Case. R. L. Loughran, New York.
- 82 Catarrhal Deafness, with Suggestions as to Treatment. W. E. Dixon, Oklahoma City.
- 83 Perforating Wound of Frontal Sinus Resulting in Meningitis and Death; Report of Case. W. W. Carter, New York.

- 84 Correction of Depressed Nasal Deformity by Transplantation of Conjoined Bone and Cartilage. W. W. Carter, New York.
- 85 Case of Pemphigus Involving Nose and Throat Due to Streptococcus Hemolyticus. Treatment with Autogenous Vaccine. W. H. Haskin, New York.
- 86 Case of Eighth Nerve Neuritis with Interesting Galvanic Findings. G. W. MacKenzie, Philadelphia.
- 87 Case of Curious Nasal Reflex. Sneezing and Vomiting Due to Presence of Nasal Spur. F. Hazlehurst, Jr., Baltimore.

80. **Treatment of Hay-Fever.**—Twenty-six cases were treated by Wilson with pollen solutions and twenty-two with calcium chlorid. He says that the desensitization of hay-fever patients by means of specific pollen solutions will materially relieve a small percentage of them if treatment is begun early enough. Pollen solutions for therapeutic use should be prepared and used with great care and understanding. When improperly prepared or used, there is danger of serious, if not fatal, reactions. Multiple sensitization is a frequent phenomenon in hay-fever subjects, and its existence may account for many failures in the treatment by means of pollen solutions. The treatment of hay-fever by means of calcium salts rests largely on empirical observations, but from the limited data at hand, if the doses are sufficiently large, and prolonged through a more or less extended time, a large percentage of patients will receive material benefit. It is possible that vernal cases yield more readily than autumnal cases. The administration of calcium salts is without danger to the patient and may be undertaken by any intelligent physician. It requires neither a careful laboratory technic, nor any special knowledge for its employment.

Medical Record, New York

July 8, XC, No. 2, pp. 47-88

- 88 Radium Efficiency in Nonmalignant Surgical Conditions. R. Abbe, New York.
- 89 Radium in Field of Laryngology. D. B. Delavan, New York.
- 90 *Fractures in Children. J. Grossman, New York.
- 91 Woman's Duty in Antituberculosis Crusade. S. A. Knopf, New York.
- 92 Requirements of Gonococcus for Its Natural and Artificial Growth. L. D. Bristol, University, N. D.
- 93 Case of Esophageal Stricture. H. F. Goodwin and C. H. Keogh, Chicago.
- 94 Case of Adiposis Dolorosa. C. M. Nice, Birmingham, Ala.

90. **Fractures in Children.**—Grossman's paper is based on the study of 200 cases of fractures, divided as follows: Fracture of the clavicle, 50. Fracture of the humerus, 48: (a) surgical neck, 3; (b) shaft, 5; (c) lower end, 40. Fractures of the forearm, 92; (a) shaft of the radius, 20; (b) shaft of the ulna, 5; (c) olecranon, 3; (d) both bones, 24; (e) lower end of the radius, 40. Fractures of the leg, 10: (a) tibia, 5; (b) fibula, 5. There were 130 in males and 70 in females. The ages were between 14 days to 11 years. The cause in the majority of the cases was a direct injury.

Missouri State Medical Association Journal, St. Louis

July, XIII, No. 7, pp. 305-368

- 95 Plea for Merit System and Civil Service in Eleemosynary Institutions. C. R. Woodson, St. Joseph.
- 96 Diabetes Insipidus. G. Richter, St. Louis.
- 97 Sleep and Its Disorders. G. W. Robinson, Kansas City.
- 98 Experiences in Canal Zone with Special Reference to Malaria and Leprosy. A. M. Napier, St. Louis.
- 99 Syphilis of Circulatory System. O. O. Smith, St. Louis.
- 100 Two Cases of Influenzal Meningitis. E. E. Moody, Joplin.
- 101 Case History of Beginning Tabes. E. G. Mark and H. E. McCarthy, Kansas City.

New Jersey Medical Society Journal, Orange

June, XIII, No. 6, pp. 259-338

- 102 *Abderhalden Reaction in Mental Diseases. H. A. Cotton, E. P. C. White and W. W. Stevenson, Trenton.
- 103 Anthrax. A. S. Ross, Camden.
- 104 Reminiscences of Some of Older Physicians. D. St. John, Hackensack.
- 105 Reminiscences of Atlantic County Physicians. P. Marvel, Atlantic City.
- 106 Reminiscences of Cumberland County Physicians. T. J. Smith, Bridgeton.
- 107 Reminiscences of Members of Passaic County Medical Society. W. B. Johnson, Paterson.
- 108 Sketch of Hudson County's Medical Past. F. D. Gray, Jersey City.
- 109 Brief History of State Hospital at Trenton. H. A. Cotton, Trenton.

- 110 Brief History of State Hospital at Morris Plains. E. M. Fisher, Morris Plains.
- 111 Brief History of New Jersey Sanatorium for Tuberculous Diseases. S. B. English, Glen Garden.

102. **Abderhalden Reaction in Mental Diseases.**—The Abderhalden test was studied by the authors in 289 cases, including the various psychoses and some normal individuals. The results were practically negative except in dementia praecox and epilepsy. In dementia praecox 81 per cent. of the cases showed a positive reaction to sex gland and in three cases out of fifty-five gave a positive reaction to the thyroid and sex; two of these were the catatonic type. Differential count of the blood shows rather characteristic conditions in dementia praecox; namely, high red blood cells, very low white cells and high lymphocyte count and low polymorphonuclear. In epilepsy practically all cases, sixty-nine, gave a positive reaction to suprarenal gland.

New Mexico Medical Journal, Las Cruces

June, XVI, No. 3, pp. 69-101

- 112 Obstetric Anesthesia and Analgesia. E. F. Frisbie, Albuquerque.
- 113 Interpretation of Cardiac Irregularity. C. E. Edson, Denver.
- 114 Effect of Trauma on Development of Cranial Bones; Report of Case. E. P. Palmer, Phoenix.

Pennsylvania Medical Journal, Athens

June, XIX, No. 9, pp. 647-724

- 115 *Pyelitis. F. E. Ross, Erie.
- 116 Thyroid Therapy. W. H. Good, Philadelphia.
- 117 Treatment of Exophthalmic Goiter by Means of Roentgen Rays. G. E. Pfahler and J. D. Zulick, Philadelphia.
- 118 Hyperphoria and Its Management. W. W. Blair, Pittsburgh.
- 119 Role of Rhinologist in Hypophysial Surgery. L. H. Landon, Philadelphia.
- 120 Luzerne County Medical Society and Its New Building. L. H. Taylor, Wilkes-Barre.
- 121 Our Medical Home. C. W. Bachman, Reading.
- 122 Constitutional Effects of Surgical Focal Infections. E. LaPlace, Philadelphia.
- 123 Methods and Results of First Aid as Established by Pittsburgh and Lake Erie Railroad Company. J. D. Milligan, Pittsburgh.

115. Abstracted in THE JOURNAL, Oct. 30, 1915, p. 1578.

South Carolina Medical Association Journal, Greenville

June, XII, No. 6, pp. 159-191

- 124 Refractive Errors. M. Crook, Spartanburg.
- 125 Anatomy, Physiology and Pathology of Large Intestine, with Some Observations on Radical Operation for Colonic Tumors. W. J. Mayo, Rochester, Minn.
- 126 Preventive Medicine as Applied to Chronic Pyogenic Infections. J. H. Gibbes, Columbia.
- 127 Treatment of Diabetes Mellitus. W. H. Powe, Greenville.
- 128 Heat in Inoperable Uterine Cancer. A. E. Baker, Charleston.
- 129 Practical Suggestions in Infant Feeding for General Practitioner. W. P. Cornell, Charleston.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

June 17, I, No. 2894, pp. 841-872

- 1 *Fasting Treatment of Diabetes. E. I. Spriggs.
- 2 *Simple System of Skeleton Splinting. C. M. Page.
- 3 Cage Splint for Fractures of Humerus. E. M. Cowell.
- 4 *Inhibitory Action of Saliva on Growth of Meningococcus. M. H. Gordon.
- 5 Behavior of Hypochlorites on Intravenous Injection and Their Action on Blood Serum. H. D. Dakin.

1. **Diabetes Treated by Fasting.**—Eight cases are cited by Spriggs. Fasting, up to several days, was well borne by cases of mild and severe diabetes of ages ranging from 24 to 79. The urine was made free from sugar, the blood sugar was reduced and acidosis greatly diminished. All the patients felt better for the fast. In most cases the food could be increased gradually, without glycosuria, until a more liberal diet was being taken than before treatment. The rapid abolition of sugar had an excellent mental effect. It shortened tedious treatment, and enabled more time to be given to finding out what food should be taken and in what quantity. Spriggs emphasizes the fact that the gradual

crease of food after the fast calls for skilled dietetic arrangements and careful daily attention. It is not so easy as an ordinary strict diabetic diet. It is useless, however, except in the mildest cases, to increase the food quickly after the fast, as sugar returns at once. During the gradual increase of food the patient is undernourished. In severe cases courage and endurance are called for on his part, as it may be necessary to keep him so short of food that he is inefficient. Regular estimation of the blood sugar should be made. In some cases of diabetes as good an effect may be obtained, though much more slowly, without fasting and malnutrition, with its risk of depression and weakness, provided the patient is willing to keep permanently to the diet which has been found by careful testing to be suitable to his case.

2. Simple System of Splinting Skeleton.—The stock material used by Page consists of 5-foot lengths of annealed mild steel one-half inch by one-eighth inch of standard type. The strips are drilled throughout their length at 1 inch intervals with holes of one-eighth inch diameter. Split steel rivets five-eighths inch by one-eighth inch are required to couple the various lengths after they have been bent to form the splint required.

4. Antimeningococcal Action of Saliva.—The experiments reported by Gordon show that normal saliva inhibits growth of the meningococcus on solid artificial culture medium and that saliva from carriers has a similar action. Nasal mucus from normal persons has no such inhibitory effect on the growth of meningococcus. A quantitative experiment showed that fresh saliva does not entirely lose this inhibitory influence when diluted a hundred fold. So pronounced is the antagonism of saliva to growth of the meningococcus in culture, that in a given experiment a volume of broth suspension containing living meningococci at the rate approximately of 1,000 million per c.cm. was prevented from growing in admixture with an equal volume of fresh saliva. This antimeningococcal action of saliva is due to its living bacteria. The inhibitory action of saliva appears to be chiefly due to mixed salivary streptococci. Pure cultures of the predominant streptococci, when tested individually, were found to exert comparatively slight inhibitory influence on the growth of meningococcus. These observations demonstrate the practical importance of avoiding contamination with saliva when swabbing the nasopharynx of suspected carriers of the meningococcus.

Journal of Tropical Medicine and Hygiene, London

June 15, XIX, No. 12, pp. 141-152

*Hunger Swelling in Poland. B. Budzynski and K. Chelchowski.
Culex-Pipiens Breeding Sixty-Six Feet Below Ground. M. E. MacGregor.

*New Human Intestinal Flagellate in Anglo-Egyptian Sudan. A. J. Chalmers and W. Pekkola.

5. Hunger Swelling in Poland.—This is an abstract of a paper read at the Medical Society at Sosnowiec, in Poland, July, 1915. It describes a series of 110 cases of a peculiar affection occurring among the inhabitants of certain towns in Poland as a result of the insufficiency and inadequacy of food following German occupation. The name "hunger swelling" has been applied to it. The most characteristic symptoms of this disease of malnutrition were edema, debility and muscular weakness, intestinal disorders, mental depression, loss of vision, disappearance of sexual impulses, and alterations in the blood and urine. The edema resembled that met with in kidney disease, although, as a rule, it began in the lower extremities. It might be confined to the lower limbs, but more often spread over the whole body, involving the face, and especially the eyelids, in cases in which it might be so great as to interfere with vision. It sometimes led to bursting of the skin with serous exudation, and so cracked the skin that pink scars like striae gravidarum resulted from it. The swollen extremities usually felt cold to the patient, and were cold to the touch, and the swollen area was definitely painful when pinched up between the fingers. After one or two weeks in the hospital the edema might disappear; on the other hand, it might persist for months, and even recur after it had subsided. It usually

disappeared from above downward, the last place for it to go being the feet. With the disappearance of the edema marked wasting was evident, the patients sometimes being reduced to mere "skin and bone." The wasting was usually associated with incontinence of both urine and feces.

The skin was, as a rule, dry and painful. The mental faculties were, as a rule, distinctly lowered. An almost constant symptom was hemeralopia, or day blindness. The most marked alteration in the blood consisted in a reduction in the percentage of hemoglobin (about 50 per cent.), and a corresponding reduction in the color index. There was a diminution in the number of red blood corpuscles, and a definite increase in the number of white blood corpuscles. The urine was pale, like water, usually alkaline, and contained neither albumin nor sugar. The amount of urine passed per diem varied greatly, but on the whole was increased, sometimes reaching 60 ounces and over even when the swelling was disappearing. In mild cases, under the influence of a more generous dietary, recovery took place; in severe cases the disease was liable to go on to a fatal issue, and eight out of 110 patients died.

8. Human Intestinal Flagellate.—The authors name this organism *Octomitus hominis* Chalmers and Pekkola, 1916, and define it as follows: "Flagellate nonameboid organism measuring about 6 by 3 microns and possessing six anteriorly directed flagella of variable size and sometimes of considerable length springing from a single or double well-marked blepharoplast situated close to the anterior margin. Nucleus, single, roundish, often homogeneous with well marked membrane and sometimes with a karyosome, and situated at some distance from the anterior extremity. Two axostyles are present arising from the blepharoplast and ending near the posterior margin in two small chromatic particles (axoplasts) from which arise the posterior flagella. Periplast thin without markings, cytostome absent, cytoplasm with vacuoles but not swollen out with gelatinous material and not possessing chromatophores. Known habitat: Intestine of man in Anglo-Egyptian Sudan."

Lancet, London

June 17, I, No. 4842, pp. 1203-1244

- 9 Treatment of Infected Wounds by Physiologic Methods. A. E. Wright.
- 10 Etiology of Shell Shock. H. Wiltshire.
- 11 Failure of Right Side of Heart as Result of Extensive Pulmonary Disease. F. J. Poynton.
- 12 Effect of Ferrivine and Intramine on Syphilis. L. W. Harrison and C. H. Mills.
- 13 Case of Erb Duchenne Paralysis Due to Bullet Wound of Fifth Cervical Nerve. G. L. Preston.
- 14 Diagnosis of Dextrosuria and Pseudolevulosuria. P. J. Cammidge.
- 15 Gunshot Wound of Right Orbit and Maxilla. W. J. Collins.
- 16 Two Cases of Strangulated Umbilical Hernia. F. L. H. Brown and E. W. G. Masterman.
- 17 Case of Tendon Transplantation for Wrist Drop. A. K. Henry.

Annales de Médecine, Paris

May-June, III, No. 3, pp. 193-322

- 18 Psammoma Developing on Meninges Below the Thalamus in Woman of Fifty-Seven. (Sur les tumeurs de la région hypothalamique du cerveau intermédiaire.) S. Livierato and G. F. Cosmettatos.
- 19 Agglutination in Typhoid and Paratyphoid Fevers. (Les réactions agglutinantes dans les infections typhoïdiques et paratyphoïdiques. Etude comparée des indications fournies par l'hémoculture et le sérodiagnostic.) A. Cade and E. Vaucher.
- 20 Primary Tumors of the Pleura; Three Cases. E. Pallasse and C. Roubier.
- 21 Reflex Paralysis and Reflex Trophic Disturbances Consecutive to Wounds of the Limbs. (Paralysies réflexes et troubles trophiques réflexes consécutifs aux blessures des extrémités. Contribution à l'étude des "névralgies et névrites ascendantes.") H. Gougrot and A. Charpentier.
- 22 *Rôle of Infection in War Nephritis. P. Ameuille.

22. Infectious Factor in Nephritis in Troops on Active Service.—Ameuille describes ten cases of acute nephritis in men on active service in which an infectious factor seemed probable but could not be definitely determined. The findings post mortem in the kidneys and certain features of the clinical course testified to an infectious process. In one case the nephritis developed during a latent phase of meningococcus infection. Only in one of the other cases were the blood findings and seroreaction positive. Paratyphoid B

bacilli were found in this case. These negative findings suggest the possibility that the nephritis may be the work of some new infectious germs for which the trench digging and trench life may be responsible. Germs that have never before been brought in contact with human organisms may have been unearthed by the trench excavations. This suggestion is reinforced, he remarks, by the fact that the sappers of the engineering corps formed 7.5 per cent. of the nephritis cases, a relatively enormous proportion. Certain other new infectious diseases have developed in trench life, as for example that curious trench fever which affected the British troops in Flanders and which seems to be the work of a virus living in the blood. The men affected came from different corps, so there was nothing to suggest an epidemic character. During one fortnight three cases of acute nephritis developed in one regiment but the men were in different battalions and the methods of relieving service in that sector made it almost impossible that there could have been any contact between these men. The next question is whether it is a unique and specific infection with an affinity for the kidneys, or whether there are various infections which may any or all of them strike at the kidneys as the point of least resistance on account of the local predisposition entailed by the stress of the campaign.

Archives des Maladies du Cœur, etc., Paris

June, IX, No. 6, pp. 237-284

- 23 *Case of Mitral Stenosis with Patent Foramen of Botallo. (De la sténose mitrale avec communication interauriculaire.) R. Lutembacher.

23. **Communication Between the Auricles with Mitral Stenosis.**—The persistence of the foramen of Botallo nullified to a certain extent the injurious influence of the mitral stenosis in a case reported, as also in a number on record. Notwithstanding the extreme stenosis of the mitral valve, the woman lived to be 61, passing through seven pregnancies. Not until the last few years were there any signs of heart trouble. Firket has reported a similar case, the woman living to 74 and passing through eleven pregnancies. This tolerance cannot be counted on, however; Moureyre's patient died at 25 and Dufour and Huber's at 26. Most writers regard the coexistence of the two anomalies as a fortunate coincidence, but Lutembacher thinks there is a certain relation between the two congenital lesions; the mitral stenosis causes so much pressure in the left auricle that the opening in the septum gets no chance to close up.

Bulletin de l'Académie de Médecine, Paris

June 6, LXXV, No. 23, pp. 671-696

- 24 *Syphilis as a Factor in Appendicitis. (L'origine syphilitique de l'appendicite.) Gaucher.
25 Medico-surgical Control of Soldiers and the Soldier's Rights as an Individual. (Chloroformisation obligatoire dans le service militaire pour le diagnostic ou la thérapeutique sans opération sanglante.) M. Reynier. See Paris Letter, p. 217.
26 *Whooping Cough in Adults. (Sur l'épidémie actuelle de coqueluche et sur la fréquence anormale de cette maladie chez l'adulte.) P. Tissier.
27 *Juvenile Delinquency and Prophylaxis. (L'enfance délinquante. Etude médico-légale.) A. Collin.

24. **Syphilis as a Factor in Appendicitis.**—Gaucher replies to his critics (see abstract 40, p. 155), that in a recent series of thirty-three operative cases of appendicitis, the Wassermann reaction was positive in 43 per cent. Syphilis, inherited or acquired, is often responsible for a subinflammatory lesion in the appendix on which acute appendicitis is particularly liable to develop. In one family one child has had enterocolitis, the other appendicitis. The father has never contracted syphilis, but the Wassermann reaction is positive in him and also in the two children, but negative in the mother. The syphilis traces back to the paternal grandfather, who is known to have had the disease. In conclusion he remarks that physicians in particular shrink from accepting his statements, as "too many physicians and physicians' children have been operated on for appendicitis, because medicine is one of the professions which furnishes the largest contingent to syphilis."

26. **Prevalence of Whooping Cough at Paris.**—Tissier calls attention to the 18, 19 and 25 deaths from whooping cough

at Paris during three weeks in April, and to the increasing prevalence of the disease since then. Among the 37 cases he encountered in the early spring, 25 were in adults, and of the 76 cases during April and May, 47 were in adults. In every instance the adults had the disease first, and the children contracted it later from them. The disease was diagnosed in the adults at first as grippe, nervous cough, tonsil cough, etc., and the persons affected kept at their work, thus spreading contagion. The true nature soon became evident by the developing of typical pertussis in the children of the family, by the inefficacy of treatment as for grippe, etc., and by the benefit from treatment for pertussis. For this he uses iodoform, chloroform and bromoform. Applied early, the pertussis rapidly yields to treatment and bronchopulmonary complications are warded off, he states.

27. **Juvenile Delinquents.**—Collin has examined large numbers of delinquent minors. He found that about 10 per cent. were grossly abnormal, epileptics, perverts, etc., while about 30 per cent. were normal and owed their delinquency to their environment. About 60 per cent. were abnormal from the physician's standpoint. Some of them showed signs of an inherited toxic-infectious taint which had interfered with their normal development in early infancy. Those in this group require treatment. These same influences affected the children in another group but did not entail anomalies in physical development. There is not much chance for improvement by therapeutic measures in this group. In another group there were mental and physical signs of injury from some infectious disease in early childhood. The fourth and last group was composed of minors with evidence of gastro-intestinal trouble or tuberculous infiltration. Their psychic excitation is closely connected with their organic condition. He says in conclusion that it is only thus by studying the past that we can appreciate the present status of the child and estimate the outlook for his future. Inversely, every anomaly of development in a child from 1 to 3 years old and every persisting change in the character, at that age, should call and hold the attention of the physician so that rational treatment may be applied while there is still time.

Journal de Médecine de Bordeaux

June, LXXXVII, No. 8, pp. 145-164

- 28 The Neuron in Relation to the Physiology and Pathology of the Peripheral Nerves. I. A. Pitres.
29 *Advantages of Systematic Graduated Muscular Work in Treatment of Pulmonary Tuberculosis. (Du travail musculaire systématique comme traitement de la tuberculose pulmonaire.) H. Hamant and C. Colbert.
30 Anticholera Vaccination at Saloniki. (Sur la vaccination anticholérique.) L. Verdet.

29. **Work in Systematic Treatment of Pulmonary Tuberculosis.**—Hamant and Colberg describe the results obtained at the Hauteville sanatorium during 1914 with the systematic application of the principle of intermittent auto-inoculation by means of graduated muscular exercise. The patients were all men, and the complete course took six weeks at least. The first grade of the course, after a two-weeks' rest, was a daily walk. The last grade included road-making with shovel or pickaxe, supplemented by a gentler exercise with outdoor bowling. The work is graduated according to the answer to the question, "Is the exacerbation approaching its close or is it terminated?" Any developing poussée is a contraindication to exercise. The thermometer is the principal criterion, but this alone is not enough. The physiologic condition as a whole must be regarded, and the debilitated, with unstable heart action, should be excluded from this method of treatment. Patterson is guided by the temperature, the quantity and quality of the expectoration, the weight, fluctuations in the appetite, subjective sensations of the worker, and the opsonic index. Dumarest is guided more by the auscultation findings. Headache, anorexia or fever must be regarded as evidence of excessive auto-inoculation and call for a halt at once. Actual hemoptysis was never observed and Patterson states that it has never occurred at his sanatorium during this "work cure." The subjective benefit from being allowed to exercise is an important factor in the results. Appetite and sleep return. Expe-

riences at Hauteville indicate that a rise of one degree Centigrade is the limit for a salutary reaction. Another law that has been worked out from the experiences reported is that the temperature reaction is not necessarily proportional to the severity of the pulmonary lesions. This negative law illustrates the difficulties of the problems that have to be met in carrying out a systematic work cure. The physician undertaking it must give his whole time to it; he must live with his patients. Without this constant surveillance of the minutest details and at every minute, the method is liable to do harm.

Paris Médical

June 7, VI, No. 25, pp. 565-580

- 31 Contusion of the Hip Joint. (La contusion de la hanche.) R. Grégoire.
- 32 Colloidal Gold as Adjuvant in Treatment of Typhoidal States. Barachon.
- 33 *The Medical Group in Parliament and Its Influence. (Le groupe médical interparlementaire et nos organismes professionnels.) Granjux.
- 34 Operating Room on the Firing Line. (De la chirurgie dans les postes chirurgicaux avancés.) H. Costantini.
- 35 Dentistry Service for the Troops. (Organisation d'un service dentaire dans un régiment d'infanterie.) Grenier.

33. **The Interparliamentary Medical Group.**—This is the name assumed by the little company formed of the medical members of the two houses of parliament in France. They form a regular organization with president and four secretaries, and meet to discuss matters affecting the profession and the public health in general. Granjux here relates instances showing that while various medical associations receive but scant attention and courtesy from the powers that be, as a rule, when they depute the "interparliamentary medical group" to be their spokesman, it is quite another story. This is a new force which may enhance materially the welfare and prestige of the profession.

Presse Médicale, Paris

June 15, XXIV, No. 34, pp. 265-272

- 36 Typhoid with Superposed Paratyphoid. (Les fièvres typhoïdes intriquées.) A. Chantemesse and A. Grimberg.
- 37 Complications in Lungs and Pleura with Extensive Wounds of the Nerves. (Sur la fréquence des complications pleuro-pulmonaires et leur rôle comme facteur de gravité chez les grands blessés nerveux.) G. Roussy.

Berliner klinische Wochenschrift

March 20, LIII, No. 12, pp. 297-328

- 38 Improved Technic for Roentgen Work. (Die Röntgenstrahlen-erzeugung in der neuen gasfreien Röhre und Spezialapparate zu ihrem Betriebe für Diagnostik und Therapie.) K. Lasser. Concluded in No. 13.
- 39 *Isolated Sclerosis of the Pulmonary Artery. C. Hart.
- 40 *Cystoscopic Control of Radiotherapy of Uterine Cancer. (Cystoskopie und Bestrahlungserfolge beim inoperablen Uteruscarcinom.) F. Heimann.
- 41 Medicomechanical Treatment After Operations for Fracture, etc. (Die Bewegungstherapie in der Extremitäten-Chirurgie; die Form ihrer Anwendung; ihre Grenzen, mit bes. Berücksichtigung kriegschirurgischer Tätigkeit.) K. Müller. Concluded.
- 42 Red Rays in Therapy. (Die Neon-Lampe für medizinische Zwecke.) F. Skaupy.

39. **Isolated Sclerosis of the Pulmonary Artery.**—Hart adds two new cases to the few on record in which the pulmonary artery alone seemed to be the site of sclerosis. These patients are usually young and without pathologic antecedents. When older persons present sclerosis of the pulmonary artery there are usually signs of more or less lung trouble or trauma of the chest. The two cases he reports were like the five published by Romberg and others in which young men or women developed symptoms suggesting mitral insufficiency, but necropsy revealed that the valves were intact and that the hypertrophy of the right ventricle was secondary to sclerosis of the pulmonary artery. In one of the cases on record there was a history of excessive beer drinking. In the two new cases, the left ventricle was small and atrophied as if it had not been receiving enough blood to keep it in tone. The only plausible assumption to explain the trouble is a congenital faulty constitution of the pulmonary artery, accompanied possibly by unusual narrowness of the pulmonary veins. The latter was pronounced likewise in some of the cases on record. This starts a vicious circle which explains the symptoms and the course.

40. **Cystoscopic Control of Uterine Cancer.**—Heimann's experience has confirmed the importance of the information to be derived from the aspect of the bladder and tests of kidney functioning as to whether a cancer in the uterus is still operable, and likewise as to conditions after an operation. The cystoscope also tells whether it is necessary to sacrifice a fragment from the bladder in eradicating the malignant disease. He has been making a special study of the cystoscopic findings with inoperable uterine cancer, following them through their course, and gives the details of six cases of inoperable cancer given systematic Roentgen treatment, thus enabling conclusions to be drawn as to the effect of the radiotherapy. Retrogression of edema of the bladder wall and of bullous edema was frequently observed, and this indicated profound modification in the circulation throughout the region under the influence of the exposures. The palpation findings and the cystoscope findings showed parallel ups and downs at times, but not invariably. On the whole, Heimann advocates cystoscopic control of uterine cancer as extremely instructive and reliable.

Correspondenz-Blatt für Schweizer Aerzte, Basel

June 17, XLVI, No. 25, pp. 769-800

- 43 Importance of Partial Antigens in Treatment of Tuberculosis. (Partialantigene und Tuberkuloseforschung.) W. Müller.
- 44 Arrhythmia. (Klinisches über die unregelmässige Herzthätigkeit.) H. Ryser. Continued.

Gazzetta degli Ospedali e delle Cliniche, Milan

June 8, XXXVII, No. 46, pp. 721-736

- 45 Antitetanus Serum Plus Intravenous Phenol Solution in Treatment of Tetanus; Three Cases. (Alcuni casi di tetano trattati con la cura mista.) G. Orrano.

Policlinico, Rome

June 11, XXIII, No. 24, pp. 741-772

- 46 *Casein Test for Pancreas Functioning. (Sulla misura della digestione triptica della caseina col metodo di Sorensen.) G. Izar.
- 47 Aneurysm of Femoral Artery and Vein. (Intorno a 2 casi di aneurisma arterio-venoso della femorale.) C. Bacci and G. Cavina.

46. **Casein Test for Pancreas Functioning.**—Izar refers to Sørensen's casein technic by which the proportion of trypsin present is determined by the degree of acidity developing when the casein has been subjected to the action of the ferment and has then been treated with formaldehyd and phenolphthalein. He regards this technic as accurate and reliable but describes a slight modification which avoids certain sources of error. Three tables are given of the findings with parallel tests.

Brazil-Medico, Rio de Janeiro

May 6, XXX, No. 19, pp. 145-152

- 48 *Operative Cure of Syphiloma of the Rectum. (Um caso de syphiloma do recto curado pela rectotomia.) C. Werneck.

May 13, No. 20, pp. 153-160

- 49 *Abdominal Pain in Women. II. (Semiologia da dor abdominal direita na mulher.) R. Vaz.

May 20, No. 21, pp. 161-168

- 50 The Work of the Medical School Inspector. (Inspeção medica das escolas.) O. Clark.

48. **Operative Treatment of Syphiloma of the Rectum.**—Werneck has seen many cases of syphilitic affections in bones and organs absolutely rebellious to medical measures, but in which resection was followed by a complete cure and healing was soon complete. He pleads therefore to resort to the knife as a routine measure, without wasting too much time on drugs alone. Among the typical cases cited is that of an ulcerating gumma in the trochanter region, one of the sternum and others in bone or testicles. These experiences convinced him of the necessity for combining operative and medicinal measures. Each case of course has its individual indications, but the old teaching that syphilitic lesions should not be given surgical treatment is entirely too sweeping. In a recent case an ulcerating syphilitic tumor on the rear wall of the rectum showed no benefit from medical measures, and the cachexia suggested cancer while the pains required morphin four or five times a day. The Wassermann was negative and the microscopic findings showed merely an inflammatory process. An iliac anus was provided and the

lesion resected, with the result of a speedy and complete cure, the natural anus functioning perfectly.

49. Abdominal Pain in Women.—The first part of Vaz' article was reviewed in Abstract 85, p. 82. He here gives illustrations of the attitudes typical with abdominal pain from different causes. He warns that in examining for tender points the pressure should be applied gently at first and gradually increased. Disease of the bile apparatus usually induces pain in the upper portion of the right abdominal zone. It is more or less continuous when the liver is involved, aggravated by pressure and by breathing movements. He cites the special points where pain may be expected with gallstones. With perihepatitis without effusion the pain in the hypochondrium is usually intense and lancinating, accompanied by fremitus like that of pericarditis. With suppurating perihepatitis, the radiation of the pain upward and downward may aid in locating the pus collection, whether it is on the front or upper part of the liver or on its lower aspect. Certain forms of liver disease may develop without appreciable pain, especially biliary cirrhosis, cancer and actinomyces.

Siglo Medico, Madrid

June 10, LXIII, No. 3,261, pp. 369-384

- 51 Electric Treatment of Obesity. (El metodo Bergonié como tratamiento de la obesidad.) B. N. Canovas.
- 52 *Suppuration in Permeable Urachus. (Un caso de permeabilidad del uraco.) P. Cifuentes.
- 53 The War and Insanity. (Influencia de la guerra sobre la locura.) A. Sanchez-Herrero.

52. Permeability of the Urachus.—Cifuentes' patient was a man of 58 who for the last three years had had disturbances in micturition, attacks of excessively frequent desires to urinate coming on every two or three months and lasting for six or eight days. Finally the umbilicus region protruded and became inflamed, and pus and urine escaped at this point. The fistula persisted unmodified by treatment, and an induration could be felt extending from the umbilicus to the bladder. This was the urachus, which was evidently the site of a phlegmonous process. The urachus was resected entirely, through the peritoneum, as soon as the general health had improved after the clearing out of the phlegmonous cavity. Peritonitis soon developed, rapidly fatal.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

June 3, I, No. 23, pp. 2013-2108

- 54 *Mortality from Tuberculosis at Rotterdam. (Sterfte aan tuberculose te Rotterdam over de jaren 1902 tot 1914.) J. Sanders.
- 55 Psychic Factors in the Practice of Medicine. (Het psychische in de geneeskunde.) J. van der Torren.
- 56 *Essential Edema. (Elephantiasis nostras.) C. D. Cramer and C. J. C. Van Hoogenhuyze.

June 10, No. 24, pp. 2157-2236

- 57 *Autogenous Vaccines. (Over de behandeling van verschillende ziekten met auto-vaccins.) J. Hekman.
- 58 *Heart Block in Children. (Hartblok bij kinderen.) E. S. Frank and J. B. Polak.
- 59 Dual Perception of Sensation. (Een dubbele vertegenwoordiging van het gevoel op de schors der menscheilijke groote hersenen.) C. T. van Valkenburg.
- 60 *Suggestions for Improved Technic for Prophylaxis of Transmissible Diseases. (Is het noodig, dat er, vooral met oog op de febris typhoidea, andere bepalingen worden gemaakt in de wet op de besmettelijke ziekten?) J. G. A. Honig.
- 61 *Simple and Effectual Surgical Treatment of Dysmenorrhea. (Splitting van den baarmoederhals bij dysmenorrhoe.) P. C. T. Lens.

54. Mortality from Tuberculosis in Holland.—The figures cited are from Rotterdam and Amsterdam during the twelve years ending with 1914. They show a reduction of 19 per cent. in the death rate for women, but this is slight in comparison to the reduction of 48 per cent. in the death rate for men of the corresponding age, between 20 and 50. This great reduction is the expression in figures mainly of the consequences of improved hygiene in work shops, etc., introduced of late years by private initiative or legislation. Improved and extended facilities for systematic treatment have cooperated in the general reduction in the death rate from tuberculosis, but hygiene in the trades has undoubtedly been the main factor. The decline has been for males of

all ages from 210.1 per 100,000 living to 143.3 and for females of all ages, from 176.9 to 137.2.

56. Essential Edema.—A woman of 27 developed fleeting recurrent edema of the face for which no explanation could be found, the heart, kidneys and blood picture being apparently normal, the Wassermann test negative. The edema gradually extended to involve nearly the entire body, and became chronic. Diuresis was scanty, but there was no albuminuria. The woman had never left Holland and nothing to suggest filaria was found. After a period of rigors and fever, death ensued about six months after the first symptoms. By exclusion, the retrospective diagnosis was some affection of the lymph glands with a change in the composition of the lymph itself. As all other measures had proved ineffectual, thyroid and ovary treatment was given a trial toward the last, but no benefit was apparent. The assumption of a primary lymph gland affection, with the lymph becoming less fluid, seems to explain all the symptoms, including the appearance of the edema first at the points where the tissues are less compact. Comparatively little fluid escaped when incisions were made to relieve the extreme tension of the swollen legs, and the fluid coagulated in a few minutes. Conditions thus were evidently quite different from those with ordinary edema. Menstruation kept normal throughout.

57. Autovaccine Therapy.—Hekman applied autogenous vaccines in treatment of various affections, at the general hospital in his charge, as he relates in detail. Colon bacillus infection of the bladder and kidney pelvis showed scarcely any influence from the vaccine therapy, but a favorable influence was manifest in the cases of more or less localized staphylococcus and streptococcus infection. The results in these cases of bacteremia also justify further trials of the method. Not the slightest influence was apparent in the cases of secondary infection with pulmonary tuberculosis.

58. Heart Block in Children.—Frank and Polak compare a case of heart block in a girl of 2½ with analogous cases in the literature. They do not regard the prognosis in this case as necessarily unfavorable. It is already evident that the organism is adapting itself admirably to the new conditions. Earlier in life the child had been examined by physicians and nothing abnormal noted in heart or lungs, thus excluding congenital heart block. The symptoms of heart block were noticed while the child was under medical care on account of fever of unknown cause for a few days. There was no cyanosis, but a tendency to dyspnea and small weak pulse of 48. The heart was enlarged and the heart sounds were synchronous with the pulse. The auricle beat was 107 a minute, the ventricle beat 42.8. The tracings show this interfering rhythm. Digitalis retarded slightly the auricle rhythm, but displayed no action on the disturbance in conduction. They know of another case of heart block of several years' standing which does not prevent the young man from being a creditable football player and good student.

60. Prophylaxis of Epidemic Typhoid.—Honig relates some instances of the spread of typhoid infection which might have been prevented if the members of the family and others who had been in contact with the sick had been kept under medical surveillance during a possible incubation period and examined for carriers. He declares that this should not be left to the complaisance of the public; the physician should be empowered by law to enforce this control.

61. Dysmenorrhea.—Lens has noticed that in many cases of severe dysmenorrhea the uterus is in slight anteversion. With the menstrual congestion, some of the vessels become kinked, and the resulting disturbances are the cause of the pains. He has remedied this completely in a few cases by cutting a slit with sharp scissors in the rear wall of the uterine cervix on the median line. The slit is drawn open to form a V by traction from forceps on each side, and a roll of medicated gauze is left in the slit for four days. No possible harm can be done by this trifling operation, while it has cured at one stroke agonizing dysmenorrhea rebellious to all other measures. There need be no fear, he adds, of disturbance from the small cicatrix at a future pregnancy.

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THE CARE OF CHILDREN'S TEETH

THE MOST NEGLECTED FEATURE OF PEDI-
ATRIC MEDICINE *

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Modern medicine concerns itself very largely with the prevention of disease and deformity, and nowhere is there wider or more effective application of the principles of preventive practice than in childhood. Only in this period of life can developmental defects be successfully dealt with, and during this time occurs the greatest incidence of those diseases and infectious conditions which so largely determine the disabilities and deformities of later life.

Tuberculosis, it is now generally recognized, is essentially, at least in its inception, a disease of early life. Measles, scarlet fever, diphtheria and poliomyelitis, and adenoid, tonsil and dental infections, to which may be ascribed so many of the cardiovascular, renal, articular, nervous and other disorders of later years, all occur chiefly in childhood, and methods of control, if they are to avail anything, must be applied then.

Preventive medicine, then, it may fairly be said, is of prime importance to the pediatrician. Prophylactic measures not instituted in childhood are, in the majority of cases, too late.

In many respects the problems of preventive medicine in childhood are well formulated and intelligently appreciated, though in most localities the machinery to cope with them is still inadequate.

The problem of the care of the teeth, however, remains very generally neglected. Several of our larger cities have splendid systems of dental clinics, and more or less dental inspection is carried on in the schools of even many of the smaller communities; but in most places nothing is being done. Indifference to the subject pervades both the medical and dental professions. Many members of the latter, indeed, seem woefully ignorant of the importance of the conservation of children's teeth, and so commonly do dentists refuse to accept children as patients that there is often great difficulty in having necessary work done. It has been my frequent experience, in trying to save the deciduous premolars or even the first permanent molar, to have dentists decline to undertake the work on the ground that it was not worth while. Doubtless most children are difficult and trying dental patients, and perhaps few dentists possess the tact, patience, sympathy and insight into child nature essential to him

who would successfully deal with them; but I believe that ignorance is the chief obstacle. "The deciduous teeth are only intended to last a few years anyway and then be replaced, and what matters it if through early decay they are prematurely lost? Fillings to preserve them would fall out in a short time and have to be done over, so why bother with them? The permanent teeth will be crooked, of course, but then, they might be so anyway, and they can be straightened later if desired." Thus the voice of ignorance, and it doubtless salves many a conscience that should feel guilty.

For the purpose of our discussion we may consider the teeth in relation to developmental, nutritional and infectious disorders associated with them.

The most important developmental defects involve the bones of the jaws and face primarily, and are manifested by disturbances of dental structure, alinement and occlusal relations commonly leading to more or less interference with the functions of mastication, respiration and speech, and alterations in the esthetic appearance of the dental arches and facial expression. This syndrome is included, by the dental profession, in the term "malocclusion." The causes of malocclusion may originate in fetal life, dating back to the period of the differentiation of the dental lamina and tooth germs, or even beyond, and the bony deformities may, in some cases, be recognized before the eruption of the teeth and may vary from complete absence of certain bones, and defects such as cleft palate, to merely insignificant changes in relationships.

In other instances, a normal deciduous dentition may be ruined by neglect or misuse. Neglect of oral hygiene leads to early caries and loss of teeth, with consequent shrinkage and abnormalities of growth of the jaws, which force the oncoming permanent teeth out of their natural positions. Similar effects may follow misuse, which implies the failure to utilize the masticatory function of the teeth, and may be caused by an improper dietary, or by bad habits, such as bolting the food, or chewing on one side, or with the front teeth only, which may cause relatively disproportionate growth of different parts of the jaws; or caries or other painful conditions of the mouth and teeth may prevent proper mastication. Nasal deformities, adenoids and hypertrophied tonsils may induce changes in the normal palatal arch and dental alinement; and certain systemic disorders, as syphilis, rickets and malnutrition may profoundly affect the development of the jaws and teeth, as may also disorders of the endocrine organs, as dyspituitarism.

A correlation between dental malformations and certain other developmental defects has also been commonly observed. Deformities of the palate and dental arches are almost invariably found in the mentally defective, while cretins quite constantly exhibit irregu-

* Chairman's address, read before the Section on Diseases of Children at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

larities and abnormalities in the position, structure, eruption and shedding of the teeth. The deciduous teeth, for instance, may be retained to adult life, coexisting with the permanent teeth.

The development relationships between the jaws and other bones of the face are strikingly shown by the marvelous development of this region which occurs in the first two years of life, more marked than in any other part of the body. It is a favorite saying that "Beauty is skin deep"; but how false this is. Beauty, as applied to human beings, ordinarily refers to the aspect of the face, and here beauty is "bone deep." No matter how fine the complexion or texture of the skin, there is no beauty in overshot jaws, receding chins and crooked teeth, or in the vacuous expression of the habitual mouth breather. As we give so much thought to our personal appearance, and as we are so much judged by our appearance, and the impressions we create are to such an extent dependent on it, how important it is, then, that parents should very early be properly advised as to the care of their children's mouths; in relation to the development of their faces.

That malocclusion of the teeth may seriously interfere with one's esthetic appearance and with mastication, and even with speech, is evident even to the laity.

Respiratory disturbances result chiefly from encroachment of the narrowed high-arched palatal structures on the nasal cavity. The nasal passages are contracted, bowing of the septum still further reduces the air-space, and adenoid and tonsillar hypertrophy are usually associated. There occur then the manifestations of mental and physical impairment related to obstruction of nasal breathing, which, because of their notoriety, need not be discussed in detail here.

Nutritional disturbances associated with abnormal buccal conditions are common. The mouth is one of the important organs of digestion. Mastication of the food is an essential prelude to the processes which are to follow, and in respect to starchy foods, a considerable proportion of the digestive process should normally occur in the mouth. That a diseased organ cannot functionate normally is axiomatic. Moreover, digestive processes not properly instituted cannot be completed without entailing on other organs demands beyond their normal capacity. Thus children with bad teeth have commonly disturbances of other digestive organs, and impaired nutrition, which is of course accentuated by the associated toxemia due to absorption of bacterial products from the mouth. The swallowing of these, also, no doubt, plays a part in the derangement of gastric and intestinal digestion.

A proper selection of the dietary in young children is of much significance in the development of sound and normal teeth; but another member of the section is to discuss this phase of the subject, and I will not trespass on his topic.

Infections of the teeth and alveolar processes afford two of the commonest diseases to which man is subject, dental caries and pyorrhea. Interest in caries dates back to early times and it has been ascribed to a great variety of etiologic factors. In Hippocrates' time, disturbance of the humors of the body was assigned as a cause. In the middle ages, the worm theory prevailed. At one time, each tooth was supposed to act as the pole in a galvanic battery and electrical action was thought to account for the dissolution of the tooth. Later on, caries was supposed to be due to the presence in the mouth of abnormal chemical bodies, white decay being attributed to nitric acid, yel-

low decay to hydrochloric acid, and brown decay to sulphuric acid. With a knowledge of bacteriology came the septic theory, and then the chemicobacterial theory, which is now generally accepted. This theory assumes that certain of the mouth organisms, by the production of enzymes, induce fermentative processes in the carbohydrate food materials in the mouth, with resultant formation of acids, chiefly lactic, which cause dissolution of the inorganic substances in the teeth. Destruction of the harder portions of the tooth structure exposes the pulp to infection, in which may be also involved the peridental soft tissues or even the bone. Some authors have claimed that caries is endogenous rather than exogenous in origin, but this hypothesis finds little support.

Conditions constantly present in the mouth, free exposure to bacteria, and warmth and moisture to facilitate their growth, predispose to germ activity in this region, and liability to caries is enhanced, according to the theory, in the presence of lactic acid forming organisms, by undue retention of carbohydrate materials in proximity to the teeth. This may be due to the form or arrangement of the teeth, pits or crevices in the enamel, recession of the gums, or faulty positions of the teeth in relation to each other or to soft parts, tending to increase the liability to retention of food particles. An arrested or insufficient flow of saliva may also be a factor, but this is rare except during fevers. If prolonged, caries may be greatly aggravated by it. The most important factors, however, are probably the food itself and the dietetic habits of the individual. This cannot be gone into in detail, but in general it may be said that soft foods that require little mastication, which assists in the mechanical cleansing of the teeth, or sweet sticky syrupy foods that so often constitute the last part of a meal, seem to predispose to caries. That mushes, custards, puddings, soft bread-stuffs, bread and milk, potatoes, sweets, etc., form a large part of children's diets, is well known.

Dry, fibrous and acid foods, such as dry cereals, fresh vegetables and fruits, on the other hand, seem antagonistic to the development of caries. They are especially valuable, then, particularly if eaten at the close of a meal.

Dietetic habits, such as eating before retiring, or the eating of sweets at bedtime or between meals, or too frequent eating, which leaves a fresh and constantly replenished supply of carbohydrate material in the mouth, or bolting of food, may favor retention of carbohydrates and so predispose to caries.

The relative alkalinity and acidity of the saliva in relation to caries is at present a subject of great interest in the dental profession, largely induced by Pickersill's work, in which he seemed to prove that by varying the stimuli applied to the salivary glands by foods or chemicals taken in the mouth, changes may be brought about in the reaction of the saliva, it being his theory that caries is dependent on acidity of the saliva. Critical review of his methods by other investigators, however, is said to have disclosed certain fallacies, and it would now appear that a tendency to caries depends perhaps not so much on the mere acidity or alkalinity of the saliva, as such, but rather on the difference in reaction between the so-called resting saliva and the saliva activated by the taking of food or chewing. This difference is called the salivary factor.

It is well known that the reaction of a culture medium may ordinarily be altered but little without affecting the growth of organisms in it, slight changes

perhaps inhibiting entirely the growth of certain bacteria. It would seem, according to observations on which this theory is founded, that wide variations in the reaction of the resting as compared to the activated saliva favors immunity to caries, by producing conditions unsuitable for the excessive proliferation of acid-forming organisms in the mouth. The influence of foods and chemicals on the process is still unsettled.

Pyorrhea, also, has of late attained a great prominence in medical literature because of the investigations into the causative relationship of the *Endamoeba gingivalis* to this condition, which have aroused considerable interest and some controversy.

We are chiefly concerned, however, with the more general aspects of these very common infectious diseases.

Almost invariably associated with suppurative conditions in the mouth we find infections of the tonsils and other pharyngeal and nasal structures. Sinus disease, middle ear inflammations, inflammatory eye disturbances from direct extension of infection, and toxic changes in the iris, choroid, retina or optic nerve have been frequently reported.

Tubercle bacilli have been isolated from the cavities of carious teeth unassociated with apparent tuberculous disease in the individual other than cervical lymphadenitis; but dental caries so profoundly affects the subject's general nutrition as to constitute a grave predisposing factor in tuberculosis, whether or not we regard the teeth as possible direct portals of infection with the bacillus. Simple and suppurative lymphadenitis resulting from caries is a common phenomenon.

During the last several years, the subject of focal infections has occupied perhaps the foremost place in medical thought. It is unnecessary here to rehearse the many conditions included in the category of infections of buccal origin, because they are familiar to all by reason of the vast literature on focal infection. If it is true, as Billings has said, that, barring skin and venereal disorders, the largest percentage of human diseases have their origin in the mouth and nasopharyngeal area; or if all nontraumatic joint inflammations are evidence of infection elsewhere, most commonly in this same region, it would seem that the importance of my subject can hardly be exaggerated.

What is to be done about it? The problem is appalling by reason of the vastness of the personnel involved and the time required for adequate dental treatment. Every dental patient demands hours of actual work, and by whom and when and where is this to be done? Wise men, leaders of the dental profession all over the country, see the need and are striving to devise means of relief. The medical profession, largely through the impetus of the "focal infection" propaganda, realizes a new significance in decaying teeth and septic mouths. The public is being aroused to the importance of oral hygiene. Philanthropy is interested. The age incidence of many dental defects makes the problem of peculiar concern to the pediatrician. I have therefore ventured to bring the subject to your attention today in the hope of stimulating your further interest in it, and enlisting your aid in helping to promote its consideration in your several communities.

Cooperation between the dental and medical professions must be fostered. Both they and the public must be educated to the need by those who already realize it. The rank and file of the dentists must learn that they are not merely artisans and mechanics, but that

they are workers in one of the great fields of medicine, in which they have to do with matters which may determine the whole future health and usefulness of the individual; and that children, instead of being avoided, are to be regarded as their most important patients, because much of their work can be effective only in children.

Parents must be made to appreciate the tremendous importance of conserving the deciduous teeth and of correcting orthodontic defects and deformities early; and those who are able to pay must be taught that the work is worth paying for, that it may be attractive to high-class scientific men and women.

Time does not permit a discussion of details of organization of the forces concerned in the problem. I want to say, however, that a children's clinic which lacks a dental department as an inherent part of its organization is defective.

Federal Realty Building.

THE PROGNOSIS IN INFANTILE PARALYSIS*

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CLEVELAND

Despite the great advances in recent years in our knowledge concerning the etiology and pathology of acute myelo-encephalitis, and notwithstanding the numerous excellent papers recently published on the early treatment of this disease and its effect on the outcome of the paralysis, few diseases of such serious nature are so little understood by the medical profession at large as this one. We have been powerless to prevent the spread of epidemics; unable to make the correct diagnosis until after the advent of a frank paralysis. Treatment both prophylactic and curative has been futile, and the correct outlook as to the future progress of a given case is rarely foretold. Is there any wonder, therefore, that so many patients fall into the hands of quacks and irregular practitioners?

This at least has been the writer's experience in the recent epidemic of infantile paralysis in Ohio. He has seen many patients, improperly managed as to treatment and functional use, grow worse and lose what little muscle strength was left in the afflicted muscle groups, because of the false prognosis as to the duration and the course of the treatment and the final outcome as to function. One has only to consult the recent publications of Lovett and Buchholz to realize the possibilities for partial recovery of function and the tremendous importance of properly graduated muscle treatment and the baneful effects of overstimulation, excessive use and overexertion.

It is of vital importance that the physician in charge in the acute stage of this disease should be conversant with the true course of the recovery of muscle function. In the inability to diagnose and specifically treat the beginning stages of infantile paralysis, very little additional harm is done in the present state of our knowledge; but with a promise of a perfect cure the seed is sown for a lack of appreciation for a good

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functional recovery, for the lack of necessary endurance and patience on the part of the parents, which results in desperate attempts to force the victim into the evils of overexertion and overstimulation, with its consequent deplorable effects of loss of muscle tone, overstretching and weakening of the afflicted parts. No one feature of the misunderstanding prevalent in the medical profession today concerning this disease is so conducive of harm as is this ignorance concerning the true prognosis.

Epidemic infantile paralysis is an acute, contagious, infectious disease attended with a high mortality, the rate varying from 9 to 20 per cent. in various epidemics, and in the vast majority of cases the disease occasions permanent muscle damage of greater or lesser extent and renders the victim a "cripple." The grave character of infantile paralysis can be more readily grasped if this disease is contrasted with others concerning whose epidemic seriousness there is no doubt. In typhoid fever the morbidity and mortality are about the same, and the length of the stay in bed is not unlike; but in typhoid the convalescent patient gains rapidly in strength and well being and is soon restored to normal function. In infantile paralysis, convalescence is only the preparation for a long and tedious struggle against crippledom.

The death rate is directly comparable to the severity of the infection. The seat of the lesion also plays a most important part. The upper cervical and cerebellar types, with their paralyses of the muscles of respiration and deglutition, are responsible for the majority of deaths.

Complete recovery from the paralysis is not as frequent as some writers would note. Mark Richardson and Sever state that 25 per cent. of all their patients made a complete recovery. They also note that in half of the recovered cases the onset was mild and the return of complete function occurred rapidly, i. e., in from four to six weeks; but they further state "no one can tell at first which case is going to make such a recovery."

On the other hand, many recent writers, among them O'Reily, Howard and Schouffler, note that "complete recovery occurs but rarely and that there is rarely a case so mild that it can be absolutely cured and allowed to pass out of observation." My own experience in the Ohio epidemic of 1915 gave me only two cases, out of the seventy-eight which I saw personally or which I know of from personal communication with the attending physician, which can be said to have undergone a complete cure. One was a case of left facial paralysis in a child of 3, and the other a marked weakness of the thigh muscles in a child of 6, the attack being so light as to have been entirely overlooked by the attending physician.

When complete recovery takes place spontaneously, it is said that the climax is reached not later than six weeks from the time of onset.

Partial recovery of muscle power with a more or less satisfactory recovery of function is the universal rule. No case is so bad that there is not some opportunity for improvement, and almost all patients with paralysis of the lower extremities can be put on their feet and taught to walk. It has long been taught that, as a rule, the intensity of the paralysis is in proportion to the severity of the attack and that the mildest cases recover easiest; but this rule is not universally true and the physician must be on his guard not to be misled by the seeming insignificance of the primary

paralysis, lest the afflicted muscles be allowed to overstretch and become weakened from misuse. I have in mind a case of peroneal palsy so mild that the attending physician, a pediatricist of note, suspected a coxitis on account of the limp. The consulting orthopedist ruled out coxitis, and as the child was evidently suffering from rickets, put the child on antirachitic treatment. Four months later (now in midwinter) when I saw the child again, it showed a tendency toward varus and an evident weakness of the peroneal muscles.

The prognosis for recovery in a given case depends on many factors, most of which represent unknowns, and only one being under the direct control of the physician. These are:

1. The amount of actual permanent destruction of the ganglion cells of the anterior horns, or of the brain.
2. The amount of nerve cell congestion and edema, and neuritis.
3. The regenerative and reconstructive powers of the nervous system.
4. The amount of muscle degeneration and overstretching (loss of tone).
5. The presence of bone and joint deformities.
6. The curative effect of proper treatment.

The amount of actual permanent destruction of the ganglion cells of the anterior horn depends on the severity of the attack, but there is no way of differentiating it, in the early stages, from the neighboring cell congestion and infiltration, and concomitant neuritis. Complete paralysis, loss of the reflexes and the presence of the reaction of degeneration only indicate the amount of damage, not its permanence. Quivastec and Krafft-Ebbing were always of the opinion that the severe pain complained of in so many cases was due to a neuritis (root symptoms), and that the greater the pain the more the symptoms aforementioned might be held to be due to this neuritis. It is no longer the fashion, however, to speak of neuritis in describing the pathology of this disease. Flexner has recently called attention to the universal involvement of neighboring nerve cells in the congestion and edema accompanying the ganglion cell destruction. Any paralysis due to this congestion, to edema or to neuritis is sure to be recovered from.

The early spontaneous improvement in function, the recovery of the reflexes and loss of the reaction of degeneration, are a good indication of the regeneration and reconstruction of the nervous system. A voluntary motion is a complicated process and is set into action by the activity of a large number of anterior horn cells situated in different horizontal planes; and even if a large part of these centers have been destroyed by the inflammatory process, given the proper stimulation, the nerve impulses will sooner or later seek to find a way by which they may pass around this break in the "connecting circuit," so to speak, and again innervate the damaged muscles. There is, however, no time limit beyond which this spontaneous improvement cannot take place. Six months has been arbitrarily placed as the limit for spontaneous recovery. It is told that the greater part of such recovery does take place within this time limit; but Hoppe of Cincinnati has reported a case in which improvement occurred after twelve years. If six months were really the limit for spontaneous recovery, it is equally true that a great deal of further improvement can be secured, provided the patient is placed under proper treatment.

Too much time and effort need not be wasted in securing the electrical reactions. The ordinary practitioner and ordinary hospital are absolutely unequipped to make accurate electric observations. At their best, they only indicate the nature of the change (neural) and are not an evidence of the curability or incurability of the process. An early recovery from the reaction of degeneration means, of course, an early improvement in the underlying cause of the muscle paralysis or weakness; but its continuance and the persistence of the loss of the reflexes does not mean that recovery of function cannot take place. The method of Lovett and Brown, in determining the amount of real paralysis or weakness in measures of pounds of pull, is a real advance in our methods of determining the amount of the muscle damage. But here, too, we are confronted with the problem that we are dealing in great measure with young children who are prone to struggle and cry, and in whom repeated measurements must be made before trustworthy ones can be secured, and, as in the case of the electrical reactions, it is not a method to be advised for the general practitioner or the ordinary type of general hospital.

Of serious import in the prognosis is the loss of muscle tone, overstretching of muscle and tendons, and the presence of bone or joint deformity. Robert Jones has clearly shown that overstretching can be as serious as actual persisting paralysis, and that, in many cases, ganglion cell recovery has been completely masked by the loss of muscle tone. It is therefore of vital importance that the limb be placed at once in a position of muscle balance or, where necessary, muscle unbalance in overcorrection, to favor a contracture of the paralyzed or weakened muscle groups. One of the most amazing improvements is that seen in a case of drop wrist, kept up by an overstretching of the extensors, after it is put in a Jones splint, or, at times of a flail shoulder when the arm is hyperabducted in the manner advised by Silver of Pittsburgh. Deformities, especially equinus, with contracture of the Achilles tendon, must be avoided; and it is not out of place to remind the practitioner that the removal of the bed-clothes from off the toes—something which must always be practiced—will not alone accomplish this. Volkman trough splints, with horizontal bars to prevent rotation, must be used and the feet accurately bandaged therein.

Of vital importance in the prognosis is the carrying out of the proper treatment to strengthen the weakened muscles. The first factor in this treatment is rest, complete rest to the muscles in the physiologic position of the joint (Lorenz). There has been a quiet controversy concerning the length of this absolute rest in bed. Judson at one extreme advised eighteen months, Townsend one year, while Lovett in a recent publication advocated that the children be put on their feet as soon as possible. Against the latter stand I must protest most earnestly. There is a great deal to lose and nothing to be gained by a too early resumption of walking. It is the antithesis of rest. The day walking is to be resumed by the convalescent is the beginning of a new era. It is the resumption of the pleasures and activities of life; and with its dawn the restraints of medical discipline, the precepts of the physician and the ideals of treatment are alike thrown away. The boy longs for his bat and ball, and the girl for her jumping rope and dancing, and as soon as possible the normal activities of daily life are attempted. It behooves us, therefore, before allowing such free-

dom, to weigh carefully the dangers of overexertion against the good of early resumption of walking. The graded massage and muscle training of the ideal method of treatment can stimulate the weakened muscles only a few minutes or possibly a few hours a day. But active exercise and walking stimulate the unparalyzed and stronger muscles for ten times as long. What wonder is it, then, if the patient soon returns with a deformity brought on by the contracture of the antagonists?

With rest in bed combined with the use of massage and the interrupted galvanic electricity to keep up the tone and the vitality of the muscle body, resistance exercises and muscle training seeking to open new avenues of nerve communication for the reestablishment of nerve control and recovery of neuromuscular strength, we accomplish most. With these methods we find the chances for the recovery of function multiplied manyfold, and cases seemingly hopeless are often restored to activity. The use of braces or other mechanical appliances and orthopedic operations should never be undertaken before a muscle survey is made in the manner advised by Lovett, for the purpose of determining what particular group of muscles and what particular muscle function must be assisted or guarded.

Whenever possible, parents must be warned lest a badly paralyzed and inactive child overeat and become helpless on account of excessive weight. At the Gates Hospital for Crippled Children, we have had in our short career of one year, two cases in which excessive adipositas was the deciding factor between the wheel chair and walking.

SUMMARY

The death rate of epidemic infantile paralysis is as high as that of any of the most serious diseases of childhood.

While a few perfect complete cures are authentically reported, the vast majority of patients make only a partial recovery of muscle power with a more or less imperfect functional result.

Spontaneous cure unassisted by treatment is at its maximum in from three to six months.

Careful treatment—physiologic rest, graded massage, stimulating electric applications, resistance exercises, muscle training, etc.—improves greatly the chances for partial recovery and lengthens indefinitely the period in which such recovery can take place.

Misuse, overwork, overstimulation, overexertion, contractures and deformities are particularly harmful and detract from the power of recovery and often destroy what little muscle power has been gained.

The prognosis should always be guarded, conservative and truthful, lest the parents, expecting too much, should in their disappointment throw away all rightful gain in strength, power and function, while seeking the chimera of a "perfect cure." With proper treatment, followed by braces, orthopedic operations and the like, almost every patient with infantile paralysis should, so to speak, "be put on his feet" and acquire independent and useful function of the afflicted member.

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ABSTRACT OF DISCUSSION

DR. HENRY W. FRAUENTHAL, New York: It is my personal experience that what these cases lack is intelligent observation. We are trying to lay down rules for general practitioners, and should teach that if a child is under intelligent observation, it will not have deformity and contracted

muscles. Regarding the matter of keeping the patient on the back for six months or a year to a year and a half, I think that if the heart is so damaged, it will do more harm, almost, than the paralysis, taking months to recover from the effect, based on the experiences of the Mayo Clinic. I start to treat my patients right after the temperature drops to normal, and sometimes before, and have seen no damage ensue. The damage, I think, all comes from neglect, from putting on a brace and saying, "Goodbye; come back again in three months." Braces are not the treatment; plaster of Paris is not the treatment; the thing to do is to try to establish the function of the muscles. If you keep the patients under observation, you do not have these terrible results, as have been described here today. It is sending them home and having some one else attend them that causes the trouble. If they have intelligent massage and electricity, under the guidance and supervision of a doctor, and later, muscle education, preferably by reflecting the image in a mirror, you get higher muscle perfection than in any other way. We are responsible for the ill results of our neglect. The treatment of these cases should not be turned over to the family physician or the parents, unless they have constant supervision by us. No brace device will keep a foot from becoming deformed, unless the brace does more damage than the disease itself.

DR. WALTER G. STERN, Cleveland: It is all very well for us to tell each other that we have our patients under continuous observation, perfect control and all of that, but do we in reality enjoy such an ideal state of affairs? This point cannot be determined by what we think our patients are doing, but only by a survey of the state of the cripple. We in Cleveland are now making such a survey. These patients go from one doctor and from one hospital or dispensary to another. Your records show that they are coming regularly to your dispensary in the afternoon, but on investigation you will find that they have been to some other dispensary in the morning and perhaps will consult the osteopath or chiropractor at night. There are very few patients with infantile paralysis who have not consulted and have not been treated by a half-dozen different physicians or agencies. If this be true, then having them under "perfect control" is impossible. The day the child wants to get up is the day that the mother gives a party and from that day on the limb is used as much as possible. We have heard much that massage should be graded and careful. This is what good treatment ought to give every case. But how careful and how graded are the attempts of the child to dance or jump the rope? By these violent exercises the patient can undo in a half hour of activity all the good effects of weeks of careful muscle training. This is why those with more experience than I, have advised that when the acute stage is over the child should be kept at rest for a comparatively long time, and while in bed given the exercises, massage and muscle training as indicated by the condition present.

Suicide and the Aged.—The statistics of suicide might throw some light on the question whether or not old people cling to life in spite of their misfortunes. According to the French statistics for 1910 (*La Semaine Médicale*, 1912, No. 41), the "frequency of suicide runs parallel with age, and the maximum is attained in the most advanced period of life." Suicide at all ages is two and a half times more common in France than it is in England, but our English figures do not support the statement that it tends to become more common as age advances. Not only do the numbers fall rapidly after 65, but they do so in greater proportion than the decrease in the number of persons living at those ages. In France the most common cause of suicide is said to be "physical suffering," which would afford a reasonable excuse for suicide in old age, but the difference between the figures in the two countries is probably dependent on temperament, the more patient Anglo-Saxon bearing the burden of age more stoically than his Celto-Iberian neighbor.—Saundby.

THE NECESSITY OF REVISING THE NOMENCLATURE OF THE ANATOMY OF THE BRAIN*

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GRAND RAPIDS, MICH.

About fifty-five years ago I commenced the study of anatomy by examining the bones by sight, then, by the sense of touch alone, endeavoring to determine to which side of the body each belonged, afterward dissecting the cadaver and learning the names of the parts without reading the text. Later drawings were made from plates found in books, as well as from the subject. In this manner a familiarity with the structure was easily acquired. The names, unusual and frequently those of persons and things without reference to the functions of the parts, required much effort to learn and were difficult to retain in the memory. This difficulty was more apparent when the study of the anatomy of the nervous system was reached, on account of the fact that little was known of the relation of the nerve centers and their connecting tracts, and consequently of their functions.

At this time the dissection of the brain consisted of slicing its substances along certain lines, learning its lobes and fissures, and its ventricles, their boundaries and contents. As for useful information, the soil was barren of practical ideas and was used mostly as a place for the registration of the names of the ancients and of those unfamiliar objects long out of use.

Later the field of knowledge was extended by the use of the microscope, experiments on animals, the tracing of tracts of degeneration, cerebral localization and the observations of the parts involved in hemorrhages, tumors and other pathologic findings. Other names were added to the list, until at the present time the nomenclature is oppressive and a great hindrance to progress. As it is, the medical student turns in disgust from his futile efforts to conquer a subject which appears to him to be impractical, striving only to learn (not understand) sufficient to pass an examination and to shun the study forever after.

In the study of anatomy, as in all other branches of science, simplicity should be our aim. The use of generalization is a great help to the student. Structure and its supposed function should be considered together in giving a name to any part of the body, so that one reading the history of medicine might be able to compare the progress of one age with that of another. When found necessary, names could be changed to conform with the understanding without much confusion by writing the old names in parenthesis, similar to the change now taking place by the introduction of the decimal system of weight and measures. A gradual change effected in this manner would mark an advance in knowledge at any particular date, and the slight embarrassment suffered would be compensated for by the elimination of a senseless terminology which now oppresses the memory to the exclusion of practical ideas.

I will mention, in illustration, two of the many absurdities of the present nomenclature. The cingulum (girdle), properly named, should be called the superior internal longitudinal commissure, one of

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the four great longitudinal commissures associating the regions of the memories with the frontal lobe of the brain. This large tract arises in front from the olfactory and marginal convolutions, passes backward over the corpus callosum, then downward and forward and terminates in the hippocampal lobe. A different name is applied to each of three different parts of its course. As nearly all parts of the brain encircle the bundles of the internal capsule in the same manner, why select this particular girdle as the cingulum, when they could all be represented together in a single generalization?

Again, there are the "forceps major" and "forceps minor"; I have dissected many brains and have failed to discover them.

Multiplicity of names could be avoided and simplicity attained by the adoption of a systematic generalization of the parts of the central nervous system in connection with that of the whole body. To illustrate, roughly speaking, histologically the body is composed of several segments, modified to conform to the symmetry of the whole. Each segment is composed of all the elements contained in the others, though developments of these elements are unequal. Thus each somatic segment consists of a vertebra, a ventral, or nutritive, arch in front and a dorsal, or neural, arch behind. Superimposed, these segments form cavities, the former enclosing the viscera of nutrition, and the latter the brain and spinal cord. Displacements occur both in the parts of the body and in the viscera of any segment, and both are enervated by the nerve center corresponding to each individual segment, the knowledge of which explains many related reflexes and otherwise obscure symptoms of disease. For example, in pneumogastric irritation the somatic reflexes are manifested on the face. This is true of the central nervous system, except that displacements are limited. Each segment of the nervous system contains the same structural elements, though differently disposed, and often the dissection of one of these throws light on the anatomy of the others.

A comparison of the structure of the cerebrum and cerebellum shows that a hemisphere of each is composed of a hemisphere ganglion, corona radiata, internal capsule, basal ganglia, corpus callosum, commissures of association, ventricles and other parts, all of which are distinct and homologous. Why then should the several parts not be designated by the same names and distinguished by an affix, "cerebri" or "cerebelli," as the case might be? A dissection of the ganglia of the segments of the spinal cord displays the same elements in each. A marked difference in the arrangement is that the hemispherical ganglia of the spinal cord are enclosed by the white substance of its several tracts, which becomes everted at the lower part of the medulla oblongata, so that the relation of the gray and white matter is reversed above this locality, in order to accommodate the increase of function required of the cerebellum and cerebrum.

In the description of the anatomy of the spinal cord we are also confronted and confused by the names of the columns of Turck, Rolando, Gowers, Spitzka-Lissaur, Burdach, Goll and Clark. A much more simple and convenient method would be to divide each half of the cord into three columns, and these again into the tracts of which they are composed. Thus, the anterior column, between the anterior median fissure and the motor nerve roots, consists of anterior median and lateral tracts; the lateral column contains the direct cerebral, the direct cerebellar, the crossed

pyramidal and the reticulated tracts; the posterior column is made up of the posterior median and the lateral tracts (Goll and Burdach). Clark's "vesicular column" probably represents the cerebellar element of the spinal segments of the cord, and might be thus designated until a better theory of its function is advanced.

When the American Medical Association met in this city about twenty years ago, I showed in this section castings made from the dissections of the brain. I was asked by several members present of the possibility of repeating them for the purpose of teaching. After having reproduced them, it was found that they were not practical in instructing a large class of students; doubts were also expressed that the nervous tracts could be isolated and demonstrated in continuity by dissection, as exhibited in the models.

Photography, however, has dispelled all such doubts, since by the use of the stereoptic camera dissections can be exhibited as seen on the natural subject, specimens of which I am pleased to show you at this time. Lantern slides also can be made to project these pictures on a screen, not flat, but as solid objects. Other methods of instruction are available, even of greater and more permanent advantage to the student.

It affords me great pleasure to do this work, not altogether because of my personal interest in its pursuit, but as well to gratify a desire to do all that I can to assist the student, and also because of the wide scope of its utility in promoting the sciences of psychology, psychiatry, education and eventually justice. Even when we attempt to associate the knowledge acquired of the anatomy and functions of the nervous system with any one of these sciences, we are again in the presence of technical words and phrases of uncertain signification. It appears to me that the science of the mind might be reduced to a few basic principles, easily understood, and from which all the phenomena relating to mind are evolved as the result of reflex action, and that the terminology could be greatly simplified.

ABSTRACT OF DISCUSSION

DR. I. LEON MEYERS, Chicago: The nomenclature of the anatomy of the brain is in a number of instances in great need of revision, as in its present state it is now and then misleading.

The terminology of the cerebellum is obsolete and at variance with the great advances made in the embryology, morphology and physiology of the organ. In dividing the cerebellum into its various lobes, prominence is given to the monticulus—which comprises the culmen and the declive—as a division of the superior vermis. The impression is thus conveyed that the culmen is a part of a unit distinct and separate from the lobulus centralis which is situated anteriorly to it. As a matter of fact, however, the culmen belongs embryologically, morphologically and physiologically to the lobulus centralis and these two, together with the lingula, form the lobus anticus (Elliot Smith). The same is true as regards the lobus quadrangularis on the superior surface of the hemisphere. This name would imply that its two parts (the anterior crescentic and posterior crescentic lobules) constitute one unit, whereas in reality the anterior lobule belongs to the lobus anticus, and the posterior lobule to the lobus medius. The prominence given in descriptive anatomy to the sulcus horizontalis magnus—a morphologically unimportant sulcus—has been long ago deprecated by Stroud, and attention is called to this also by Cunningham in his "Text-Book of Anatomy." The name tonsil applied to an important lobule on the inferior surface of the cerebellum in man, originally given to it because it was thought to be an appendage of

the uvula, so that both were described under the term of lobus uvulae (Cunningham)—is without justification, as the tonsil is morphologically the anterior part of the alae lobuli medii, or the hemispheres. Elliot Smith has also pointed out the fallacy of dividing the suprapyramidal part of the vermis into a clivus, folium cacuminis and tuber valvulae, all these constituting one common structure. The extent to which the present terminology is misleading is shown by the confusion which resulted when experimental physiologists endeavored to apply the results of their studies on lower animals to the cerebellum of man. We thus find, for example, a man of such eminence as Dr. Rothmann of Berlin identifying the lobulus paramedianus (the tonsil or amygdalus in man) with the gyrus semilunaris inferior; the crus secundum (the lobulus biventer) with the gyrus semilunaris superior; the formatio vermicularis (the lobulus flocculi) with the lobulus biventer; and the crus primum (the lobulus semilunaris superior) with the lobus quadrangularis.

DR. WILLIAM ALEXANDER JONES, Minneapolis: Dr. Fuller's efforts to simplify the nomenclature and terminology on the fiber system of the brain should meet with general approval. For many years I taught from some of Dr. Fuller's models and I still study his architecture of the brain with confidence. The illustrations are very clear and they make the brain structure easier to remember.

DR. WALTER B. SWIFT, Boston: I have taught anatomy of the brain and psychoneuropathology for four years. When I went into this course there were charts and vague models and vague representations of tissue. I soon dispensed with all that, and supplied real brain and tissue sections for study. This has made the teaching much more simple and gives the student a chance to have in mind the visual pictures of the *real tissue* just as it is, not merely visual pictures of charts and models. Dr. Fuller has taken this matter one step farther; and shown not only the tissue and sections, but the relations of correlated tracts, and made that subject much easier to learn than from mere flat cross section. I shall use this method more than ever next year.

DR. D. BOOTH, St. Louis: The use of proper names in connection with parts of the anatomy is very poor policy, because in that case the student has that abstract fact to remember instead of having the data formulated in his mind. I have always thought it easier to say *iter a tertio ad quartum ventriculum*, than to say aqueduct of Sylvius, because we are dealing with the things which we are trying to demonstrate. Association is a great aid to memory.

PERFORATED ULCERS OF THE STOMACH AND DUODENUM*

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Perforation of a gastric or duodenal ulcer is a most serious condition. The prognosis is extremely grave unless recognized early and quickly followed by direct and heroic treatment. Of all the acute maladies to which humanity is heir, none is more grave and none more spectacular when attended by successful treatment. The treatment is purely surgical. However, Moynihan¹ reports two cases successfully treated by medical means during the acute stage; but in each instance the cases came to operation at a later date. We occasionally hear of deaths from "acute indigestion," but proper investigation would prove, in the majority of instances, that there was a perforation of either a gastric or duodenal ulcer. This should not occur at the present time. The burden of diagnosis will rest with the general practitioner and, even though an accurate diagnosis may not be made, at least there

are always sufficiently grave signs to demand a surgical consultation and intervention.

The etiology of perforation is that of ulcer in general plus its acute termination. It results from a local necrosis and may be due to trophic disturbances or bacterial invasions, or it may follow trauma. However, a previous chronic ulcer is usually present. The immediate cause of the perforation may result from one of many factors. In all series reported, muscular exertion, trauma, food or alcohol ingestion are given as the immediate factors conducive to perforation. The series here presented will confirm this. That an infective process predominates seems to be shown by the fact that so frequently there is a two-cycle phenomena of pain. A premonitory pain of greater or lesser degree was present in fourteen instances in this series. I believe this is due to a rapid necrosis, causing peritoneal irritation and spasm and hence the pain. Just how long the peritoneum will hold against this process cannot be determined exactly. The "big pain" has followed on an average of eight hours in each instance.

The chief symptoms which lead to a correct diagnosis in these cases are: (1) pain, (2) tenderness, (3) vomiting, (4) rigidity, (5) history of previous ulcer symptoms, (6) anxiety and restlessness, and (7) increasing pulse and rise of temperature. This enumeration is considered in the order of frequency observed in the series here reported.

Pain is sudden and violent. Its character is variously described by patients as "sharp," "cutting," "burning," or "bursting and stabbing." The prominent characteristic is the fact that it is unyielding. Its localization is mostly epigastric and supra-umbilical. Its quick radiation at times to the right iliac fossa has frequently led physicians and surgeons to consider an acute appendicitis; but careful inquiry of its early appearance most frequently localized it in the epigastric and right hypochondriac regions. Its radiation may be in any direction. The prominent factor is that the pain is excruciating and increasing in severity to such a degree that the patient is unwilling to submit to much examination.

Tenderness is unmistakable. It is acute and easily elicited. When the case is seen early, a careful and gentle palpation will lead to a marked tenderness over the site of the perforation. The site of maximum tenderness in this series varied mostly in the gastric perforations. There were fifteen duodenal perforations, and in twelve of them the most tender area was in the right hypochondriac region. In three, the right iliac fossa was made out as the most tender area; hence the improper clue to a correct diagnosis. Of the five gastric cases the maximum tenderness was all epigastric, and in one of these it was to the left of the median line.

Vomiting occurs very early, either reflex or induced, and is a valuable symptom. Frequently it gives slight relief to the agony at first, but later only increases the pain. However, I cannot say that vomiting will lead to any positive sign; for it may be present in almost any abdominal condition. Eliot² reports two cases in which there was no vomiting at all. In this series of cases, both gastric and duodenal, vomiting occurred very early and in every case. The character of the vomitus varied with the amount of food previously taken and also with the site of the ulcer. In duodenal

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Moynihan: Abdominal Operations, i, 165.

2. Eliot: Ann. Surg., iv, 594.

cases the vomitus was greater in amount than in the gastric cases.

The second symptom of greatest value is that of rigidity of the abdominal muscles. Its appearance is early and its increase always in proportion to the length of time following the onset of symptoms. Deaver³ very aptly says, "There is no condition in which the upper abdominal rigidity is so early and so marked as in perforated ulcer." In our experience with these cases we have relied chiefly on the character of the pain and the amount of rigidity as the principal indications of perforation. The "boardlike" type is the most significant guide, and the fact that it is continuous points to a progressive peritonitis and hence is of great value as a diagnostic sign.

When a patient is seen suffering from so acute abdominal pain and has this characteristic rigidity, the history of previous indigestion of ulcer type is usually obtainable. In this series of cases only one instance is noted in which previous ulcer symptoms failed to be elicited.

In this case there was a history of trauma eight days before perforation and the patient was confined to bed, being treated for "contusion of the abdomen," following an injury. On the morning of the eighth day after the injury, he was informed by his physician that he could go about, but was warned against any exertion or violent exercise. The patient said he felt so good that he determined to return to work and did so. During the afternoon, while lifting a "heavy case onto a wagon" he was taken with the terrible pain in the pit of the stomach, which increased every minute and necessitated calling an ambulance. He was taken to the hospital and we operated three hours later, finding a perforated gastric ulcer on the anterior wall about 4½ inches from the pylorus (Case 12).

In all other cases the previous ulcer symptoms were present. In eleven a diagnosis of chronic ulcer had been made and all had been treated by medical means with the uniform result of temporary relief for a variable length of time. This would seem to indicate that surgical treatment should be instituted for chronic ulcer, if for nothing more than a prophylaxis against perforation.

In cases of so grave a nature one might expect that shock and its associated signs would be manifest. However, this was not found in this series. The patients, on the contrary, seemed to be in fairly good general physical condition. In only one instance, and that one was seen late, was there any evidence of shock. Yet these patients all presented an appearance of anxiety and restlessness which signified that some great calamity had taken place within them. Their attitude was one of intense suffering. But the average pulse rate in this series was 90. The average temperature was 99.8 F. The average respiration was 34. I consider the increased rate of respiration an objective sign of value, because of the attempt on the part of Nature to restrain the movements of the diaphragm, and thus lessen the pain. However, if shock is present, it is not a contraindication to immediate operation. If the patient presents signs of perforation, immediate surgical intervention is indicated, and every hour of delay decreases the chances of recovery to a marked degree. In Case 10 of this series the man arrived at the hospital fourteen hours after the onset of the intense pain. He was in profound shock, and exploration revealed a large perforated gastric ulcer with a general perito-

nitis. He received very little anesthetic and the perforation was closed. His reaction was good. He lived five days. A reperforation superimposed on his general peritonitis was the cause of his death.

It is a noteworthy fact that in this series not once is "absence of liver dulness" recorded. It is therefore considered that this sign is not as valuable as we might expect. However, in a series of cases recently reported,⁴ "modification of liver dulness" was noted in 127 out of 175 cases of perforated gastric ulcer. The amount of distention which might cause the modification of liver dulness has frequently been attributed to the escape of gas into the peritoneal cavity. This will be true if the amount of gas is sufficient. However, it is my opinion that when there is an absence or modification of liver dulness the cause is chiefly that of a progressed peritonitis. Hence, if this condition can be made out, its value is simply that of an unfavorable prognostic sign. Numerous symptoms and evidences other than those mentioned may be found, but the time spent in eliciting them will only delay operation and hence increase the chances for a fatal outcome.

Given a patient who is taken suddenly ill with an acute cutting or piercing epigastric pain which is continuously agonizing and accompanied by a unique or marked rigidity of the abdominal muscles, particularly of the upper half, and from whom a previous history of indigestion is obtained, the most imperative indication is operation. Differential diagnosis may have scientific value, but the moral value is dependent on early operation. There is no excuse for delay in the presence of such symptoms. It is true that acute appendicitis, perforation of the gallbladder, acute pancreatitis and acute intestinal obstruction may give an almost identical picture. However, the treatment in each of these conditions will be early operation. It is, therefore, necessary that a surgeon should see these cases as soon as possible.

Between September, 1910, and March, 1916, it was my opportunity to operate in twenty cases of perforated ulcer. In this series there were fifteen duodenal and five gastric perforations. Death resulted in one case of perforated gastric ulcer. There were six females and fourteen males. The average age was 34 years. The average duration of acute symptoms before operation was about six hours. The treatment in each case was surgical.

In the gastric cases the site of the perforation was found to be in one instance (Case 2) on the lesser curvature and the treatment used was excision and suture closure.

In another case the perforation was on the posterior wall (Case 11) about 1½ inches from the pylorus. The attempt to close this, both by an approach through the lesser sac and by a transgastric method, failed and finally we did a pylorotomy and posterior gastro-enterostomy. This patient had been under observation and a diagnosis of chronic gastric ulcer was made. He was ordered to be prepared for operation, Nov. 29, 1913. At 8 p. m., November 28, he received a gastric lavage. At 4 a. m., on the 29th, he was taken with severe epigastric pain soon followed by vomiting which contained a good deal of blood-streaked mucus. At 6:30 a. m., a second and more intense epigastric pain came on suddenly and continued with increasing severity. I saw him at 7:30 a. m., and the boardlike rigidity of the abdomen was present with extreme tenderness in the epigastric region. He was quickly submitted to immediate operation. When the peritoneum was opened, a thin serous fluid escaped, but no blood clot or mucus. The lesser sac was distended and immedi-

3. Deaver, J. B.: Posterior Gastrojejunostomy in Acute Perforative Ulcer of the Stomach and Duodenum, *THE JOURNAL A. M. A.*, July 12, 1913, p. 75.

4. *Edinburgh Med. Jour.*, December, 1914, p. 461.

ately opened. A large blood clot was removed, followed by mucus, blood and bile. The perforation was found to be about $\frac{1}{16}$ inch wide and plugged with a clot of blood. Our attempt to close it was unsuccessful, and in view of his good general condition and also from the fact that the general peritoneal cavity was not soiled by food particles, we proceeded with the pylorotomy and suture posterior no loop gastro-enterostomy. Drainage was instituted and the wound closed from below upward to the drain. His convalescence was stormy for two days, but soon returned to normal. His condition today is excellent. He has gained 26 pounds and enjoys his food without any distress.

In three cases (7, 10 and 12) the perforations were on the anterior wall. In Case 7, the site of the perforation was in the pars media and close to the greater curve or about 3 inches from the pylorus. In this case the history of acute pain was five hours in duration, and the vomitus contained a good deal of blood. When the peritoneum was opened there was an escape of gas and many blood clots, with a large amount of mucoid material and a few food particles. The perforation was small and closed by a purse string suture of chromic catgut with reinforcement by three Lembert sutures of fine linen. This was followed by a thorough cleansing of the abdominal cavity by means of the Pool-

a patient across the ward. He was arrested in his attempt by the nurse. This displeased him very much and brought forth a vigorous complaint when seen on morning rounds. But he was not to go hungry. Somehow he managed to get word to his wife and she smuggled a piece of beefsteak to him that afternoon. Fearing detection, he must have masticated his meat very poorly and had finished about two thirds of it before he was discovered by the nurse. We did nothing when this was reported. However, about an hour and a half later he was seized with intense pain and vomiting. When his abdominal wound was examined by Dr. Coakley, the house surgeon, it was found to have been ruptured and that there was an escape of gastric contents. We reopened the entire wound and found that a reperforation had occurred. Some meat was found in the stomach and also particles in the abdomen. A rubber tube was inserted into the perforation and a gauze pack placed around its base, hoping for a gastric fistula. The patient died fourteen hours later of a general peritonitis.

In Case 12, the perforation was situated on the anterior wall about the junction of the pars cardia and the pars media. This case resulted from trauma and the perforation occurred eight hours after the injury. The immediate cause of the perforation was attributed to muscular exertion.

PERFORATION OF GASTRIC AND DUODENAL ULCERS

Case No.	Sex	Age	Hours of Symptoms	Preoperative Diagnosis	Operative Findings	Operation	Drainage	Soft Diet After Op.	Dis. from Hospital	Result
1	M.	35	6	Pf. d. d. ul.....	Pf. d. d. ul.....	Perforation closed.....	Yes	9 days	22 days	Gained weight; no symptoms
2	F.	51	10	Pf. gast. ul.....	Pf. gast. ul.....	Excision and closure....	Yes	10 days	30 days	No disturb.; good health
3	M.	23	8	Acute append.....	Pf. d. d. ul.....	Closure and Gas.-Ent....	Yes	5 days	15 days	Condition perfect
4	M.	32	6	Pf. d. d. ul.....	Pf. d. d. ul.....	Perforation closed.....	Yes	8 days	21 days	
5	M.	22	4	Acute append.....	Pf. d. d. ul.....	Perforation closed.....	Yes	8 days	24 days	
6	F.	41	4	Pf. gast. ul.....	Pf. d. d. ul.....	Closure and Gas.-Ent....	Yes	6 days	26 days	
7	F.	19	5	Pf. d. d. ul.....	Pf. gast. ul.....	Perforation closed.....	Yes	10 days	22 days	Died
8	M.	30	6	Pf. gast. ul.....	Pf. d. d. ul.....	Closure and Gas.-Ent....	Yes	6 days	20 days	
9	F.	26	5	Acute append.....	Pf. d. d. ul.....	Closure and Gas.-Ent....	No	5 days	16 days	
10	M.	56	14	Pf. gast. ul.....	Pf. gast. ul.....	Perforation closed.....	Yes			
11	M.	59	8	Pf. gast. ul.....	Pf. gast. ul.....	Pylorotomy and Gas.-Ent.	Yes	10 days	28 days	Gained weight; good health and appetite
12	M.	25	4	Pf. d. d. ul.....	Pf. gast. ul.....	Perforation closed.....	No	7 days	14 days	Some distress
13	M.	38	6	Pf. d. d. ul.....	Pf. d. d. ul.....	Closure and Gas.-Ent....	Yes	6 days	24 days	Gained in weight; excellent health
14	M.	33	4	Pf. gast. ul.....	Pf. d. d. ul.....	Closure and Gas.-Ent....	No	5 days	21 days	Little gastric distress after eating
15	F.	38	7	Pf. d. d. ul.....	Pf. d. d. ul.....	Closure and Gas.-Ent....	Yes	5 days	23 days	Gained in weight; excellent health
16	M.	24	5½	Pf. d. d. ul.....	Pf. d. d. ul.....	Perforation closed.....	No	8 days	18 days	Some distress
17	M.	37	6	Pf. d. d. ul.....	Pf. d. d. ul.....	Closure and Gas.-Ent....	No	6 days	27 days	Excellent in every way
18	M.	29	9	Pf. d. d. ul.....	Pf. d. d. ul.....	Closure and Gas.-Ent....	Yes	5 days	25 days	Gained weight; good health and appetite
19	F.	41	5	Acute append.....	Pf. d. d. ul.....	Perforation closed.....	Yes	9 days	23 days	
20	M.	22	4½	Pf. d. d. ul.....	Pf. d. d. ul.....	Closure and Gas.-Ent....	No	5 days	15 days	

Kenyon sucking apparatus. A soft rubber tube drainage was inserted at the lower angle of the wound. The patient made an uneventful recovery. She has not been seen or heard from since Feb. 23, 1913.

In Case 10, the perforation was situated on the anterior gastric wall about 2 inches from the pylorus. The lumen of the perforation admitted two fingers. It was the largest that I have ever seen. The duration of symptoms was fourteen hours. The patient was in shock and presented all the evidences of a man rapidly dying from a general septic peritonitis. The abdomen contained an enormous amount of thick turbid fluid, with many food particles. Numerous gas bubbles were noted. A grayish white exudate covered the entire under surface and margin of the liver. Many loops of bowel were matted together by the same sort of exudate. The perforation was closed by two rows of sutures and covered by an omental graft. The abdominal cavity was thoroughly cleansed by the sucking apparatus, and drainage instituted. It was noted that the closure embarrassed the pyloric opening very much. However, because of the precarious condition of the man, gastro-enterostomy was not attempted. Drainage was placed at the lower angle of the wound and likewise in both flanks. The patient was in very good condition for three days. He retained all liquids, both by rectum and by mouth, and we were jubilant. However, he was a man accustomed to a full diet and on the fourth day got out of bed and attempted to take food from

On opening of the abdomen in the median line, the entire anterior wall of the stomach was ecchymotic. The perforation was very small in caliber. The adjacent stomach was quite adherent to the anterior wall of the abdomen. A purse string of chromic catgut was first used to close the perforation, and then three Lembert sutures of fine linen placed to reinforce the closure. After removal of the appendix, which was found to be chronically diseased, the abdomen was closed without drainage. This man had very little reaction, and left the hospital on the fourteenth day after the operation.

In the fifteen duodenal cases multiple ulcers were noted in only one instance (Case 18). The site of the perforation in twelve of these was on the anterior wall and in the first portion of the duodenum. In two instances (Cases 15 and 17) the perforation was on the upper border and close to the pylorus. In one instance (Case 13) the perforation was on the posterior wall and about 1 inch from the pylorus. The operative procedure in dealing with these cases was as follows: In ten cases (3, 7, 8, 9, 11, 13, 14, 15, 17 and 18) the perforation was closed by two layers of sutures. The abdominal cavity was then thoroughly cleansed, either by the sucking apparatus or by mopping out with gauze. This was followed by a posterior no loop

gastro-enterostomy. Recovery in each instance was most satisfactory and without any marked degree of reaction or discomfort. In five cases (1, 4, 5, 16 and 20) the operative procedure was a simple closure of the perforation by two rows of suture and covering with an omental graft. This was always followed by a thorough cleansing of the abdominal cavity by means of the sucking apparatus or mopping out with gauze pads. In two cases (16 and 20) no drainage was used. In the convalescence of these cases it was noted that the patients suffered a great deal more pain and discomfort than those in which gastro-enterostomy was done.

In the operative procedure used in the series under consideration, routine doses of $\frac{1}{4}$ grain of morphin and $\frac{1}{100}$ grain of atropin were given as early as possible after deciding to operate. The anesthetic in every case was ether by the open-drop method. The site of the incision was in most cases a midright rectus one in the upper zone. The method of Gibson⁵ to determine gas by the use of water in the wound before opening the peritoneum was practiced in one case (Case 19) and proved very satisfactory. Gas bubbles were seen immediately after the peritoneum was opened, and before discoloration or disappearance of the water. The incision should be generous and thus permit of easy exploration and thorough cleansing of the abdominal cavity. To accomplish this cleansing, the sucking apparatus devised by Pool and Kenyon was used in the majority of cases. Its operation is simple and its results very satisfactory. Its advantage over mopping out with gauze is that there is less injury to the peritoneum, and hence lessened opportunity for the formation of adhesions.

The principal feature open to discussion in the operative procedure, when dealing with a perforation of a gastric or duodenal ulcer, is whether or not a gastro-enterostomy should be added, after the closure of the perforation. There are many opinions for and against. The most recent that has come under my observation is that of Gibson,⁶ in which he says:

I reject gastro-enterostomy as a curative measure in this class of cases, notwithstanding that I have had very gratifying experience with it in the cure of chronic ulcers. I consider it unwise to do a gastro-enterostomy for a condition that is going to be cured anyhow. In a very small number of cases in which gastro-enterostomy may possibly become necessary, it can wisely be postponed until its indications are clearly recognizable. The small number of cases in which it may be necessary will probably be balanced by the number of cases in which gastro-enterostomy fails to prove satisfactory, either because it is improperly placed, too small (subsequent shrinkage), too large (a very disagreeable condition), or the rare but exceedingly grave gastrojejunal ulcer. Moreover, in dealing with acute perforations it seems wiser to do only what is absolutely necessary and not subject the patient, who may have to struggle with possible peritonitis, to an unnecessarily long operation or risk spreading the infection by the performance of a gastro-enterostomy under imperfect aseptic conditions. The after-story of this series of cases contains no instances in which we have had occasion to regret the omission of this step.

This is a clear, concise and positive statement. It has been made after a very practical and painstaking study of end-results. I regret that it was impossible for me to locate my cases in time to make Roentgen-ray studies. However, we have been able to interview most of them and we shall discuss the end-results at

another time. The position of Dr. Gibson deserves serious consideration and will undoubtedly furnish a safe guide to any one who considers gastro-enterostomy too grave an operation to be done in the presence of a perforation. However, this attitude has not met with general practice. Eliot⁷ presents a series of communications from numerous advocates. Among them are Bretano and Körte of Berlin; Krogius of Helsingfors; Petré of Lund, and W. J. Mayo, Peck and Woolsey of this country. These men do not favor it as a rule, but depend on the factors of (1) a good physical condition of the patient; (2) the narrowing of the lumen of the pylorus by the closure of the perforation, and (3) the site of the ulcer being at or near the pylorus. Deaver³ is more enthusiastic, and says that "the danger of infection of the lesser peritoneal cavity by gastro-enterostomy has been overrated." He goes further and considers the operation safe even after sixteen hours of duration of symptoms, claiming that at this time "it is simply a matter of dexterity."

In this series, gastro-enterostomy was added to the closure of the perforation in ten cases. In one it followed pylorotomy, making eleven instances. The factors that were taken into consideration as indication for the operation were: 1. The general condition of the patient would permit it. 2. The duration of symptoms was not over ten hours. 3. The site of the perforation was close to the pylorus, and closure of it seemed to narrow the lumen to a marked degree. 4. It was assumed that by its performance the period of convalescence would be materially shortened, a factor always worthy of consideration, especially among the class of patients we meet in the wards of our city hospitals. 5. We assumed that if there were multiple ulcers, gastro-enterostomy would diminish the possibility of a second perforation. We never started out with an idea of speed; in fact, our work in each case was deliberate and careful. The average length of time taken to do the gastro-enterostomy was between thirty-five and fifty minutes. In all cases in which this operation was done, we did not encounter any increase in infection. Neither did we have any reason to regret our procedure. The patients all made satisfactory recoveries and enjoyed their semisolid food with more relish than those on whom we did the simpler operation of suture closure. From this experience we feel that there is a place for gastro-enterostomy in the treatment of perforated ulcers of the stomach and duodenum. It is our opinion also, that in perforations at the cardiac end or on the lesser curve of the stomach, gastro-enterostomy should not be attempted. Either excision and suture closure, or simple closure should be the procedure in these cases.

In the consideration of the subject of drainage of these cases, we have come to do less of it. Especially is this true in patients operated on within four or five hours after perforation. Our method has been to drain the affected zone with soft rubber tubes. In only one instance have we used counter drainage. Our routine has been to drain through the original abdominal wound. At no time have we used the suprapubic drainage. By the aid of the sucking apparatus most of the abdominal fluid can easily be removed, and hence fewer and smaller drainage tubes need to be employed. However, in late cases, I would consider it unwise not to use sufficient drainage.

5. Gibson: Surg., Gynec. and Obst., April, 1916.

6. Gibson: Surg., Gynec. and Obst., xxii, 393.

7. Eliot: Ann. Surg., lv, 709.

The postoperative care of these patients is important. The Fowler position and saline by rectum should be instituted immediately. In this series when gastro-enterostomy was done, water was given by mouth in from ten to twelve hours after the operation. Four to six hours later, if the stomach remained quiet, they received milk or other fluids in increasing amounts. In the cases of simple closure of the perforation, nothing was given by mouth from thirty to thirty-six hours after operation. Then small quantities of water by mouth was allowed at frequent intervals for six to ten hours. If the stomach did not rebel, other fluids were administered in increasing amounts. All patients received an enema at the end of thirty hours and then daily for five days. At this point a cathartic, usually castor oil, was given. Soft solids were given the gastro-enterostomy patients on an average of the fifth or sixth day, and increased as rapidly as possible. The simple closures did not receive this diet until on an average of the eighth or ninth day. The question of diet in the postoperative care of these patients has been the subject of considerable discussion. Gibson⁶ very potently says, "It is about time that we get away from the fetish of underfeeding or of the particular value of certain kinds of diet," in the after-care of these cases. I agree with this in every way. Nothing can be more of a worry to a patient than to know that he must adhere to some certain kind of rigid diet for a long time. When the patient is discharged from the hospital he should be able to handle a regular diet. However, we have cautioned against the use of very coarse food and have endeavored to educate the patient to the fact that good digestion depends mainly on mastication.

In our attempt to compile the end-results in this series, we have not had the success desired. Most of these patients belong to a migrating class and hence it is next to impossible to locate them. However, we have secured information in twelve cases of the series (Cases 1, 2, 4, 10, 11, 12, 13, 14, 15, 16, 17 and 18). Of this number four (Cases 2, 10, 11 and 12) were gastric and the other eight were duodenal perforation. In the gastric cases there was one death, previously detailed. In the three remaining cases all report a gain in weight and freedom from pain. Patients 2 and 11 report that they enjoy good appetites and relish their food without any signs of stomach distress, either immediately after or later. In Case 12, which was traumatic in origin, the patient reports that he suffers with an occasional distress and considerable gas belching beginning twenty to thirty minutes after eating and lasting about ten minutes. In the eight duodenal cases, five (Cases 13, 14, 15, 16 and 18) had gastro-enterostomy done after the closure of the perforation. All report gain in weight and freedom from any distress or pain. They seem to enjoy perfect health in every way, and assure us that they are not worried about any recurrence of their trouble. We did not receive a similar encouraging report in the three remaining cases (Cases 1, 14 and 16) in which simple closure was done. Patient 1 says that he has intermittent spells of distress coming on three to four hours after eating and is always relieved by an alkali. However, he further says that these attacks are now less frequent and of shorter duration. Patient 4 has no complaint to make except that he is "bothered with gas after eating which lasts about one-half hour." Patient 16 was operated on, Dec. 6, 1915. We did a simple closure of the perforation, five and

one-half hours after the onset of symptoms. No drainage was used. He had a small skin stitch infection and left the hospital eighteen days after the operation in apparently good condition. He was seen and interviewed, May 6, 1916, just five months after the operation. His history was that he enjoyed perfect health up to May 3, 1916. At this time he began to have rather an agonizing pain in the pit of his stomach, coming on about two hours after meals and accompanied by considerable sour regurgitation. Vomiting occurred twice. He refused Roentgen-ray examination or gastric analysis. However, by palpation and percussion there was distinct evidence of a gastric dilatation, apparently caused by some degree of pyloric stenosis. His appendix had previously been removed and we advised gastro-enterostomy. However, he elected to try his alkali once more.

CONCLUSIONS

1. The diagnosis of perforation of a gastric or duodenal ulcer should be made in the majority of cases, and the imperative indication is early operation.
2. In the treatment of cases of duodenal or prepyloric perforations, gastro-enterostomy can safely be added if patients come to operation within ten hours after the onset of symptoms.
3. Simple closure of the perforation without gastro-enterostomy is a safe routine, but later stenosis is more apt to occur.
4. Drainage can be discarded in early cases, especially if operation is performed within six hours after the onset of symptoms.
5. Early use of a liberal diet should be practiced.
6. A complete study of end-results is a necessity before any definite routine can be laid down.

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ABSTRACT OF DISCUSSION

DR. CHARLES H. PECK, New York: Cases of perforation of gastric and duodenal ulcers fall into three classes: First, the acute perforation with considerable immediate leakage, the type of case which Dr. Sullivan reported; second, the chronic penetrative ulcers which are protected by inflammatory adhesions and never have any considerable leakage at one time; and third, the ulcers which leak from time to time, causing attacks of localized peritonitis, and soon becoming sealed and protected, falling again into the chronic group. A certain percentage of the cases classed as acute perforations belong in this third group. Perforations near the pylorus are apt to be accompanied by a considerable amount of inflammatory exudate and consequent narrowing of the pylorus. In this group the leakage is often moderate and the condition of the patient relatively good, hence gastro-enterostomy can often safely be added to the immediate closure of the perforation. The question as to whether gastro-enterostomy shall be done at the time of primary operation is an important one, and the indications laid down by Dr. Sullivan express my views very well. In the larger perforations of gastric ulcer with a good deal of immediate leakage I think it is usually unsafe to attempt to do a gastro-enterostomy, but in an ulcer near the pylorus or in duodenal ulcer with moderate leakage the operation tends to help toward the ultimate cure of the condition. I have seen closure follow without gastro-enterostomy in one case of secondary perforation of a duodenal ulcer. Dr. Gibson states that the perforation itself tends to excite a reaction in an ulcer which aids in its ultimate healing and for that reason he thinks gastro-enterostomy is never indicated. When the ulcer has perforated it is undoubtedly true that the acute reaction and inflammatory process around the ulcer tend to aid in its healing. At the Roosevelt Hospital we had between 1910 and 1915 about 30 perforated ulcers; two-thirds were duodenal ulcers, one third gastric. In the duodenal cases we had no deaths from extension of the peri-

tonitis; there were two deaths from complicating conditions. In the gastric group there were many large perforations in the center of a large indurated area, with excessive leakage and there were five deaths from extension of peritonitis which was present at the time of the original operation. In the early part of our series comparatively few gastro-enterostomies were done, but not so later. In studying the results we believe that the gastro-enterostomy did not add to the immediate mortality if the cases were properly selected. Early diagnosis and prompt operation are the keynotes of success. We are all agreed that the patients who come under observation and are treated within the first twelve or fifteen hours almost invariably recover, while in many of the later cases death occurs from extension of the peritonitis.

DR. JOHN T. BOTTOMLEY, Boston: I do not agree with Dr. Sullivan in the matter of doing away with drainage, even in early cases. I have seen the pelvis full of a nasty, turbid, dangerous fluid one and a half hours after perforation of a small gastric ulcer. With that fact in view it is in my opinion unsafe to do away with drainage in any case. The placing of a drainage tube in the pelvis greatly increases the margin of safety. We all vary in the degree of our resistance to infection and no man can measure that degree before operation, and as a matter of safety I believe drainage should always be provided. I disagree also as to giving a liberal diet shortly after operation. I believe in keeping these patients on a low diet for a considerable time. They are usually not awfully sick. They recover quickly and there is no particular indication for liberal diet soon after operation.

I think a search should be made in all cases of gastric ulcer for the source of infection. We are coming to regard a large proportion of duodenal and gastric ulcers as an end result of infection in another portion of the body. This should be sought for and, if found, should be eliminated.

DR. HARRY D. JOHNSON, New York: Dr. Sullivan's series of cases proves two things: first, that the doctor who makes the diagnosis and refers the patient for operation is alive to the gravity of these cases, and second, that he chooses his surgeon well. If we get these cases early when we are dealing with a peritonitis due to the irritative character of the stomach or duodenal contents, all we have to do is to stop the leak and the alkaline secretions of the abdomen will neutralize the acid stomach secretion, provided there has not been the supervention of a bacterial peritonitis. At the end of twelve hours the picture changes—the chemical irritation as superimposed a bacterial invasion. The important thing is the character of the rigidity. They are so rigid that if you talk on their belly you would not sink in. The question of liver dulness as a symptom is a delay in diagnosis. That little bubble of fluid in the gastric angle is a late occurrence and should never be mentioned as a symptom of perforation of the stomach or duodenum.

DR. RAYMOND PETER SULLIVAN, Brooklyn: The use of drainage in these cases is purely a matter of personal opinion. I cannot say just when the peritonitis will be septic. However, in dealing with early cases we assumed, from the general condition of the patient and the appearance of the abdominal contents, that the peritonitis present was chemical and hence limited our drainage as much as possible. The results justified our action. When these patients come to operation under ten hours after the onset of symptoms, the abdominal cavity should be cleansed thoroughly by a sucking apparatus in preference to mopping with gauze. Thus the adhesion band formation, so apt to cause secondary obstruction, will be lessened greatly. I have never used the suprapubic drainage. Our method has been to drain from the liver angle of the abdominal wound. Counter drainage was used in only one case.

It is just possible that in Boston the food may differ from what we eat in Brooklyn, and hence they see more constantly the sign of "absence of liver dulness." We have never recorded this condition. If it were present I consider it would be misleading, because so frequently a dilated colon will give a modification of liver dulness. Perforation may occur at any time. If it occurs when the colon is loaded, fermentation therein may lead to modification of liver dulness.

PSEUDO-APPENDICITIS *

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Fellow of the American College of Surgeons

OSHKOSH, WIS.

In a recent clinic (June, 1915) Murphy says, "We surgeons are not talking enough about early operation in appendicitis." That, I take it, depends on the audience. At such a gathering as this, one is justified in assuming that the question of acute appendicitis is settled, at least for the time being.

The method and time of treatment, and postoperative measures are practically uniform; delay in proper treatment is usually due to uncertainty in diagnosis, and the inexcusable estimated general hospital mortality of 10 per cent. is due to failure of some one to recognize well accepted principles of surgical diagnosis or treatment.

The question of chronic appendicitis calls for attention, not because of a high mortality rate, but because of a rather disconcerting morbidity rate, a postoperative persistence of symptoms. When a patient complains of the same symptoms after appendectomy as before the operation, there is sufficient reason for belief that the original symptoms were not caused by the appendix—that the treatment was based on an incorrect diagnosis. The large and apparently increasing number of these cases calls for close attention and an analysis of all available data, in the hope of arriving at some more definite justification for making a diagnosis of "chronic appendicitis."

In gathering material for such an analysis, I have reviewed my cases of unsatisfactory results following removal of the appendix, but have excluded:

A. Acute cases.

B. Cases in which the appendix was removed during the course of an operation for other conditions.

C. Cases in which ordinary sequelae of laparotomy have occurred, such as hernia, ventral or inguinal, ileus, fistula, phlebitis, etc.

After excluding the foregoing those remaining are unquestionably due to mistaken diagnosis and may be divided into:

D. Cases in which the true pathologic lesion, and proper diagnosis, has been demonstrated at a subsequent operation, or is reasonably evident, such as gastric and duodenal ulcer, cholecystitis, pancreatitis, lesions of the genito-urinary tract, and of the uterus and adnexa, tuberculosis, syphilis, malignancy, orthopedic conditions, and spinal cord lesions.

E. Cases to which I shall direct attention, namely, those in which the persistence of the symptoms has not been rationally explained, and which might well be termed pseudo-appendicitis.

After excluding Classes A, B, C and D, I found between January, 1909, and January, 1916, records of eighty-seven cases in which the removal of the appendix, for chronic appendicitis, or interval operation for appendicitis, had not been followed by relief of symptoms; forty-eight of the eighty-seven patients were operated on by myself; 212 patients were operated on during this interval with such a diagnosis.

Forty-eight in 212 cases seems a high percentage of unsatisfactory results, and it is because of this fact, coupled with the paucity of similar reports on remote results in the literature, that the present analysis has been made.

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

REVIEW OF CASES

A review of these cases reveals:

Ages: Between 10 and 15, four; 15 and 20, sixteen; 20 and 25, twenty-one; 25 and 30, twenty-two; 30 and 35, ten; 35 and 40, eight; 40 and 45, three; 45 and 50, two; 50 and 57, one.

Sex: Female, 73; male, 14.

Civil State: Married, 41; single, 46.

Fat, 21; thin, 41.

Duration of Symptoms Before Operation: "Some weeks," 4; half year, 7; one year, 9; two years, 5; three years, 6; four years, 5; five years, 6; six years, 4; seven years, 3; eight years, 5; ten years, 3; "for years," 23.

Number of Attacks: One, 6; two, 4; three, 2; four, 2; five, 1; six, 6; "many," 19; "repeated," 11; "yearly," 8.

Character of Pain: "Continuous," 16; "severe attacks," 23; "mild attacks," 26.

Tenderness, 25; rigidity, 9; hypersensitiveness, 39; side-ache, 20; burning sensation, 14; colic: biliary, 9; renal, 5; lead, 1; ileac tumor, 8; acute ileus, 4.

Location of Pain: Right hypogastric, 10; epigastric, 20; umbilical, 8; right ileac, 37; left side, 7; "general abdominal," 14; lumbar, 8; "tender scar," 2.

Gastric Symptoms: Nausea, 52; vomiting, 24; "indigestion gas," 58.

Temperature: Elevated, 12 (two of these subsequently developed pulmonary tuberculosis); not elevated, 73 (subnormal temperature, frequent).

Bowel Movements: Constipation, 54; diarrhea, 2; alternating diarrhea and constipation, 7; normal bowel movement, 24.

General abdominal ptosis, 80.

Skin: Acne, 8; jaundice, 15; pigmentation, 12; hairy skin, 4.

Urinary Symptoms: Frequency, 16; suppression, 1; retention, 3.

Uterine Symptoms: Dysmenorrhea, 28; amenorrhea, 2; pregnancy, 5.

Nervous Symptoms: "Neurotic," 22; hysteria, 3; "spasms," 3; "fainting spells," 5; epilepsy, 1; aerophagia, 7.

"Neuritis" of: Arm, right, 12; left, 7; head, 3; breast, 4; foot, 1; painful heel, 2.

Right sided pain on exertion, 42.

Family History: Similar trouble in: mother, 5; father, 1; sister, 6; brother, 1.

Lack of equilibrium between the vagus and the sympathetic divisions of the autonomic nervous systems is plainly evident in the majority of these cases.

Miscellaneous: Congenital dislocation of hip, 1; talipes equinovarus, 1; strabismus, 4; high palatine arch, 1; intestinal parasites, 4; inguinal hernia, 6; femoral hernia, 3; umbilical hernia, 12.

Blood Examination in Seventeen Cases: Hemoglobin from 60 to 70 per cent., 2; from 70 to 80 per cent., 3; from 80 to 90 per cent., 8; over 90 per cent., 4.

Lymphocytosis, 5.

Leukocytosis, none.

Wassermann Reaction: Negative, 12.

Spinal Puncture in Twelve Cases: Increased tension, 9; Wassermann negative, 12.

Gastric Analysis in Twenty-Eight Cases: Hydrochloric acid absent in 7 cases; increased in 10 cases; decreased in 5 cases; normal in 6 cases; stool, mucus in 9 cases.

Roentgenoscopy in Twenty-Two Cases: General abdominal ptosis, in all; double barreled ascending colon, 5; delay at terminal ileum with dilatation of cecum and ascending colon, 15; redundant sigmoid, 1.

Histology of appendix showed nothing characteristic.

Histology of glands showed simple inflammatory changes.

Culture from glands, negative.

Conditions Found at Primary Operation in Forty-Eight Cases: Appendix "normal," 6; appendix large, swollen, tense, erect, congested, 4; small appendix, 7; small fibroid appendix, 12; appendicitis obliterans, 2; small fibroid appendix "with adhesions," 9; mucocele of appendix, 1; retrocecal

appendix, 6; fecal concretions, 12; free abdominal fluid, 10; enlarged mesenteric glands, 9; Lane kink, 6; general abdominal ptosis, 12; cecum mobile, 17; pericolic membrane, 15; perisigmoiditis, 3; double barreled colon, 2; hepatic flexure absent, 2; omentum adherent to left round ligament, 1; megaduodenum, 1.

Duration of Time After Operation Before Return of Symptoms: Less than six months, 39; between six months and one year, 27; between one and two years, 8; between two and three years, 4; between three and four years, 1; between four and five years, 1; between eight and nine years, 1.

Noteworthy Circumstances Which Preceded the Return of Symptoms: Husband in bankruptcy two years after operation, 1; business, law suit two years after operation, 2; pulmonary tuberculosis one year after operation, 1; three years after operation, 1; traumatism to abdomen a few months after operation, 1; "fell down stairs" six months after operation, 1; operation on mother one year after operation, 1; sudden death of husband one and one-half years after operation, 1; pregnancy one year after operation, 1; five years after operation, 1.

Conditions Found at Secondary Operation in Nineteen Cases: Lane kink, 6; double barreled colon, 8; general abdominal ptosis, 11; cecum mobile, 12; cecal torsion, 1; omental adhesions, 3; pericolic membrane, 12; perienteritis (ileal), 1; cholecystitis (noncalculous), 4; mesenteric glands, 7; adhesions between ileum and colon, 1; megaduodenum, 1; "adhesions" absent at stump of appendix, 19.

Secondary Operations: By author, 19; by others, 8; pericolic membrane, division of, 12; cecopexy, 8; Lane kink, division of, 6; omental "adhesions," division of, 3; perisigmoiditis, division of, 1; colectomy, 3; enterostomy, 1; ileosigmoidostomy, 1; cecosigmoidostomy, 1; cholecystostomy for noncalculous cholecystitis, 3; dilatation and curettage, 2; tonsillectomy, 2; operation for kidney stone (no stone found), 3; nephrectomy, 1; exploratory laparotomy, 1; hysterectomy, 1; Coffey's hammock operation, 1; gastroenterostomy, 1; "retroversion" of uterus and ovarian cyst, 1.

Multiple Operations: Three, 4; four, 1; five, 2; six, 1.

Results of Secondary Operations: Unknown, 2; improved, 9; unimproved, 15; death, 1.

Results of Cases with No Secondary Operation: Unknown, 8; improved, 16; unimproved, 36. In three striking instances there was sudden spontaneous unaccountable recovery of health after a prolonged period of disability following secondary and in one instance multiple operation. Five improved after pregnancy.

SUMMARY

These cases of pseudo-appendicitis were usually in young thin adults from 15 to 30 years of age, more common in females, and about equally divided between married and single.

The duration of symptoms varied from "some weeks" to ten or more years. The number of "attacks" varies between one and six to "many," some recurring at regularly stated intervals.

The pain of attacks rarely put the patient to bed, though classed as "severe" in about one third and "mild" in one third of the cases. The pain is frequently described as "continuous" or "side ache" and made worse by exertion. Hypersensitiveness and tenderness are usual, and a "burning" sensation is frequent, but rigidity is not common.

Pain is usually located in the right iliac fossa, though it may occur anywhere on the right side, or at the umbilicus.

Tenderness at the scar of a previous operation is rare.

Temperature elevation is uncommon, subnormal temperature frequent.

Nausea is usual, vomiting rare, "indigestion" and "gas" frequent, with constipation present in two thirds of the cases.

General abdominal ptosis is very common, iliac tumor, gas tumor, dilated cecum and gurgling in the right iliac fossa almost constant.

Skin changes are variable, and urinary symptoms occasionally present.

These patients are frequently spoken of as "neurotic" in the history, and complain of "neuritis" in various parts of the body, usually on the right side. Goiter was present in a small proportion of cases.

Blood examinations show leukocytosis absent, lymphocytosis rarely present, the Wassermann in the blood, negative.

Spinal puncture in nine of twelve cases shows increased tension. The Wassermann in the spinal fluid is negative in twelve cases.

There was lack of hydrochloric acid in the stomach contents in one fourth of the cases examined.

Mucus in the stool is not common.

Roentgenoscopy shows ptosis, and delay at ileum or ascending colon.

Sections of the appendix show nothing characteristic. The recent report of Muschowitz is of interest in this connection.

Mesenteric glands, on section show simple hyperplasia, and cultures from same are negative.

At primary operation in forty-eight cases the appendix was usually small, and with fecal concretions in one fourth of the cases.

There was free fluid in the peritoneal cavity in one fifth of the cases and enlarged mesenteric lymph glands in one fifth of the cases.

Ptosis, cecum mobile, Lane kink and pericolic membrane are not uncommon.

The primary immediate result of operation is very satisfactory, but there is usually a return of symptoms within the first year.

Trauma, pulmonary tuberculosis or "nervous shock" in some cases precede the return of symptoms.

Findings at Secondary Operation (in Nineteen Cases) by the Author: Adhesion of omentum or viscera to site of appendix is absent. "Adhesions" are uncommon; ptosis, cecum mobile and various membranes are constantly present. Mesenteric lymph glands are found enlarged in one third of the cases.

The remote results of various secondary operations are not encouraging: in twenty-seven cases, unknown, 2; improved, 9; unimproved, 15; death, 1. In sixty cases in which operation was not performed a second time, the results were: unknown, 8; improved, 16; unimproved, 36.

CONCLUSIONS

The existence of such a clinical entity as "chronic appendicitis" has been questioned.

Evidence presented shows that the diagnosis is often incorrect and is being made with unwarranted frequency.

After eliminating all demonstrable pathologic conditions that might possibly be confused with "chronic appendicitis," there remains, in certain cases, some cause for pain in the right iliac fossa, other than the appendix, the exact cause of which is as yet not definitely known.

Such cases of pseudo-appendicitis are frequently associated with visceral ptosis, constipation and neurasthenia.

Appendicitis, either acute or chronic, or an appendix that has been the site of an unquestioned inflammation, calls for surgical treatment.

Pseudo-appendicitis, on the contrary, is in no way related to the appendix, and is a nonsurgical condition in which appendectomy is contraindicated; hence the necessity of a differential diagnosis between these conditions.

Every case of so-called chronic appendicitis that is associated with enteroptosis, constipation and symptoms of nervous instability should be looked on as pseudo-appendicitis until careful and painstaking study of the history and clinical findings prove it to be otherwise.

In patients unwilling, or unable, to submit to this careful differential diagnosis, the good repute of surgery demands that the facts, as to this uncertainty in diagnosis, and hence in the result of treatment based on such diagnosis, should be frankly presented to the patient or responsible relatives.

If it is then decided that the appendix shall be removed, the operation will be exploratory, a short cut to diagnosis, with the diagnosis and prognosis withheld until after the operation.

The diagnosis of chronic appendicitis presupposes a previous attack of acute appendicitis.

It is often impossible to determine the character of a previous attack of right sided abdominal pain, from the data available at a subsequent time, especially in view of the fact that cases of classical acute appendicitis with damage to the appendix, demonstrable at subsequent operation, are many times entirely free from all symptoms for long intervals.

Hence the advisability of seeing the patient in one of these attacks, the characteristics of which may clear up the case.

Cases characterized by more or less continuous discomfort in the right side of the abdomen, or of mild attacks of short duration, with brief intervals of relief, in which the pain is made worse by exertion and with relief on recumbency, associated with hypersensitivity of skin and spasm of muscle, gas tumor, cecum mobile, gurgling, nausea but rarely vomiting, normal or subnormal temperature, no increase in leukocytes, constipation, enteroptosis, and evidence of vagus irritability, leading sometimes to chronic invalidism, are often pseudo-appendicitis and are not permanently relieved by removal of the appendix. Such cases should, therefore, be given careful consideration before operative measures are instituted.

An entirely satisfactory explanation of this state of affairs has not yet been presented, though intensive study suggests that a lack of balance between the vagus and sympathetic divisions of the autonomic nervous system may be an etiologic factor.

This in turn may be due to abnormal function of some of the endocrine glands.

Much is to be learned regarding this clinical syndrome, but in the meantime accumulating experience strongly suggests the desirability of emphasizing the fact that the diagnosis of chronic appendicitis calls for more justification than is often given it.

ABSTRACT OF DISCUSSION

DR. H. A. BLACK, Pueblo, Colo.: There are but few structures within the upper abdomen disease of which may not give rise to symptoms which resemble those of chronic appendicitis. In chronic gastric disorders there is probably greater confusion than in any other condition within the abdomen as applied to chronic appendicitis. In these cases the Roentgen ray, the test meal, even hemorrhage from the stomach, does not and should not convict that organ of ulcer. The absence of pain and tenderness does not absolve the appendix from possible guilt. Of course, these cases can usually be demonstrated by operation, but it is much more pleasant to confirm rather than to be confounded by our operative findings. Pyloric spasm is probably the chief factor of confusion between chronic stomach disorders and chronic appendicitis. Pyloric spasm is very common in chronic appendicular disease, especially that form known as the obliterative type of appendix. Given a case of chronic peptic ulcer versus chronic appendicitis, there is required skilled surgical diagnostic ability as well as a very high degree of judicial temperament. The pyloric spasm will often confuse the

Roentgen-ray findings; not infrequently it accounts for hematemesis and I believe it is probably the direct cause of so-called "hypersecretion" through retention of the natural gastric secretions, rather than that the glands of the stomach have actually produced an abnormal amount—a hyperretention rather than a hyperproduction. I would apply the same reasoning to the condition of hyperacidity when encountered in connection with pyloric spasm, for the contraction not only retains the secretion within the stomach but also prevents the regurgitation of the intestinal secretion which normally takes place and to a normal degree lessens the acidity of the stomach contents.

DR. ERNEST LAPLACE, Philadelphia: Long before the days of appendicitis we heard of trouble in the right iliac region called typhlitis. In fact most right iliac conditions were referred to the cecum. We now know that these troubles start generally in the appendix. As a result the cecum is now almost forgotten. At the beginning of the colon there are two pouches, one the appendix and the other the cecum. As the appendix can receive and retain intestinal contents, we have entirely neglected the cecum which receives and may retain, beyond the proper time, intestinal contents subject to all decompositions. Now the cecum is coming back into its own. When we operate and find the appendix and remove it because there is trouble there, we have possibly overlooked the real seat of the trouble, the cecum, and there may be, probably there is, a chronic form of transudation of toxins through the cecum which leaves no apparent trace of itself. We know that in cases of so-called recovery after a phlebitis on the left side, the insidious poison may have traveled from the right side to the left and we must conclude that there are toxins which leave no trace behind. It would seem that decompositions take place in the cecum which do not result in the necessary irritation which produces bands and adhesions and so on, but which does produce a neurasthenia which precedes or follows the enteroptosis, etc. I wish to make a plea against the very small incision in cases of appendicitis. We must explore. Because pain is there we must not conclude that it is due to the appendix only. The whole region should be examined in order to fulfil the indication and not allow a neighboring lesion to pass unnoticed.

DR. M. HOWARD FUSSELL, Philadelphia: Dr. Connell advises what many of us cannot do, to differentiate between those cases which do not show any pathology and the actual cases of appendicitis giving rise to pain in the right iliac fossa. The reasons for this difficulty in diagnosis are appendix, gallbladder and gallduct disease; stomach conditions, kidney conditions and so on often are difficult and sometimes impossible to differentiate from true or apparent appendicitis. Now as he has suggested that all the pseudo cases, as he calls them, that is, all these cases of pain in the right iliac fossa which are *not* due to an inflammatory condition are frequently accompanied by splanchnoptosis and also practically all of the individuals, man or woman, are neurasthenic. The question of treatment is the great point. What shall be done in these cases. From the medical standpoint all such cases where the diagnosis of appendicitis or other abdominal inflammatory conditions is questionable or where it is fairly well shown that there is no inflammatory condition should be put on a diet which will fatten them, on rest that will keep them out of the turmoil of society, and a vast majority will clear up under that sort of treatment, but there still remains a certain proportion which does not clear up under such conditions. Tell the patient you are in doubt about the diagnosis. If you are a surgeon tell the man who sent you the patient that you are in doubt about the diagnosis, but the safest thing to do is to make an exploratory operation because with all our careful diagnoses there are a number of cases of inflammatory conditions which do give rise to pain in the right iliac fossa without the usual physical signs. It is a great deal better to open the abdomen and find nothing than to allow an old gallstone or a diseased appendix to remain with a possible serious result.

Progress of the Mind.—The march of the human mind is slow.—Edmund Burke.

PLASTIC AND RECONSTRUCTIVE SURGERY *

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BALTIMORE

Modern surgery is so vast a subject that no man can master it in all its branches. For this reason it has been necessary from time to time to separate, from general surgery, special branches which demanded special training, and better facilities for their full development. After a number of years' experience in plastic surgery I feel that the time has come for the separation of this branch from the general surgical tree.

The object of this paper is to advocate the special development and teaching of plastic and reconstructive surgery by those interested in it and trained for it.

I have heard many busy general surgeons say, "I do not like to do plastic cases, as they take too much time and require so much attention." These men will welcome the advent of the surgeon who is willing to devote his time to plastic work.

By plastic and reconstructive surgery I mean that branch of surgery which is distinctly formative or reparative. It deals with the repair of defects and malformations, either congenital or acquired, and with the restoration of function and improvement of appearance. This is accomplished chiefly by the transfer of tissue, either from the immediate neighborhood or from some distant part.

The deformities dealt with in plastic surgery for the most part involve the skin or adjacent soft parts, rather than the bones and joints, the ligaments or tendons.

The healing of large denuded surfaces, and of intractable wounds, should also come under the care of the plastic surgeon. The field of plastic surgery is a broad one; the cases are numerous, and of varied types.

Orthopedic and plastic surgery approach each other quite closely in certain cases, but my experience has been that the orthopedic surgeon is glad to turn the plastic cases over to the plastic surgeon, and vice versa.

There is no single group of surgical cases which are more consistently "botched" than those requiring plastic and reconstructive surgery.

Plastic surgery is done by nearly every general surgeon in his routine work, and is often attempted by eye, ear, nose and throat specialists, and by those physicians who "operate only occasionally." I do not believe that it should be done as a routine by any one of these groups of operators.

It is well known that if any surgeon is interested in a special line of work, and gives his attention to it, he will in time be able to do this work better than the one who operates in these cases only occasionally.

It is imperative that the surgeon who expects to do plastic and reconstructive work should have a thorough general surgical training before attempting to specialize in this branch. Above all he must know, and thoroughly appreciate, the principles covered in the healing of tissues, and in the repair of wounds.

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

A special knowledge of the resistance and utility of tissues more or less infiltrated with scar tissue is also necessary, as in many instances normal tissue is unavailable. A knowledge of the surgical handling of children is very important.

Thorough familiarity with the free transplantation of skin, fat, fascia, bone and cartilage is essential, as all of these tissues are constantly utilized in reconstructive work. The principles of tissue shifting, and of the use of pedunculated flaps, must be understood, and also the possibilities of combinations with the above mentioned free transplants. An accurate estimate of immediate and subsequent tissue shrinkage must be planned for.

This work should not be undertaken unless one has a definite aptitude for it. A certain amount of imagination is also a very helpful adjunct.

To sum up the whole matter, in the words of Sir Frederick Treves,¹ "No branch of operative surgery demands more ingenuity, more patience, more forethought, or more attention to detail."

My experience has been that we seldom, if ever, find two plastic cases exactly alike, and thus no "cut and dried" methods can be employed. This endless variety in itself brings a certain fascination to the operative treatment, and to the after-care of these patients.

Each case requiring a reconstructive or plastic operation should be carefully studied, and the various methods of repair considered from every standpoint.

Keen surgical judgment is often necessary to determine what should be done; whether or not a plastic procedure should be finished at one operation; how far to go in the initial operation, and when to follow with the secondary procedures.

The results in certain groups of cases are very slow, and in these the process is one of gradual building up; in such cases the entire series of operations should be planned with regard to the ultimate result, and not to the immediate relief of the condition. For example, in some instances I have been able to gain only a fraction of an inch at a time in shifting flaps where the blood supply was doubtful.

The postoperative treatment and dressings should be done by the surgeon himself, or directly under his eye, as successful results in a great measure depend on skilful and judicious after-treatment.

I am sure that all of us have seen patients with severe contractures following burns operated on in various clinics, with the result that at the completion of the operation the patient presented a perfectly sutured wound rivaling in appearance the schematic figures in the textbooks; and yet if these cases are followed in the wards, it is not uncommon to find that the beautifully sutured flaps, in which all the available material for repair has been used, have sloughed. Here, then, not only has the original condition not been bettered, but there has been superadded a disadvantage to the patient, and to the surgeon to whom he may drift later, that all the material useful for the repair has been wasted, and a longer and more tedious process has to be undertaken, with less likelihood of a good result.

In so many published reports of plastic cases, especially on the face, one is struck by the fact that while the original condition may have been rectified, the scar left by shifting a flap is as disfiguring as the original

defect or even more so. Such a result, in many instances, shows poor judgment on the part of the operator, as the aim of the plastic surgeon must always be to repair the deformity with the least possible scarring of the surrounding tissues.

The purpose of surgical intervention in any branch of surgery should always be the cure of the patient. The primary consideration, first, last and all the time, must be the patient. This fact is sometimes lost sight of in the desire to operate.

If a patient with a certain type of lesion requiring surgical treatment comes to a surgeon who has not had special experience in the operative treatment of that particular trouble, it is the duty of that surgeon to refer the patient to some colleague who is known to be skilled in that treatment. This may not be "good business," but it is certainly for the best interest of the patient, and furthers true efficiency.

In reconstructive surgery on the jaws and palate, the plastic surgeon should have the cooperation of a skilled dental surgeon. This combination has proved to be of inestimable value in France, and also in Germany, where the attempt has been made to concentrate as far as possible in certain hospitals those of the wounded who require reconstructive work on the face.

The plastic surgeon, with his special knowledge of tissue transplantation, can be of great use to the general surgeon and to the orthopedic surgeon in repairing the defects left by certain necessarily mutilating operations. This also applies to the gynecologist and genito-urinary surgeons, when called on to perform more extensive transplantations than these surgeons are accustomed to undertake.

The aim of the plastic surgeon is the relief of pain and deformity, the restoration of function, and, last but not least, of the ability to earn a living.

One occasionally hears the term "beauty doctor" applied to those doing plastic surgery. Although this term may have some foundation, as a matter of fact a very small part of legitimate plastic surgery is done for cosmetic reasons only. A number of patients have been under my care who previously were unable to secure even the humblest position on account of hideous facial deformities, and who, having been rendered presentable by a series of plastic operations, are now making a good living. If this is being a "beauty doctor," the title is worth while.

The tendency of modern surgery is toward increased efficiency, and anything that will improve results and advance the knowledge of surgical treatment should be given every possible opportunity for development.

It is only within the last few years that the surgeons especially interested in orthopedic surgery, in genito-urinary surgery or in cranial and nerve surgery have been allowed the necessary freedom required for development, and every one knows the wonderful advance which has been made in these branches.

In answer to the objection in certain clinics to any further splitting of the general surgical service, the following quotation may be of interest:

The problem of establishing special surgical services in large general hospitals is always difficult, on account of the inevitable and natural feeling on the part of the general surgeons that such a procedure takes from them opportunities which are legitimately theirs. At the same time it is imperative that such services should be established, on account of the best interest of the patient, of medical education and of those surgeons who are devoting their time

1. Treves, Sir Frederick: *Manual of Operative Surgery*, ii, 104.

and energy to the acquirement of expert skill in special branches of surgery.²

Any progress in any subdivision of a general surgical service redounds to the credit of the whole surgical service, as well as to the special branch in which the advance is made. This fact is occasionally forgotten.

After this brief outline of the subject the question arises, Is the field of plastic surgery large enough and interesting enough to justify a surgeon in specializing in it? For myself I can answer unqualifiedly that it is. Furthermore, I believe that it is only a matter of time, and that the time is rapidly approaching when there will be created in every large surgical clinic a department of plastic and reconstructive surgery, under men especially fitted and trained for this work. Which clinic will be the pioneer in putting this important branch of surgery on an efficient and progressive basis?

ABSTRACT OF DISCUSSION

DR. EMERY MARVEL, Atlantic City, N. J.: Dr. Davis's successes are due to his perfect technic, which ingrafting demands. The general surgeon relaxes and in many cases, perhaps, does not fulfil his whole duty. A man whose colon had been removed for malignancy and who was subsequently roentgenized, found himself with extreme destruction of the abdominal wall. The condition was so severe that he was incapacitated, but he refused operative procedures. From the anterior superior spine on the left to the anterior superior spine on the right below and the costal margin on the right to 2 inches above the costal margin on the left was a window, including the skin, the fascia, and the right rectus muscle. Dr. Davis covered these immense areas with skin grafts and when I saw the man afterward, the epithelial repair was nearly complete and after six weeks the defect was entirely closed. The testimony is as to the extreme area in which successful skin grafting has been obtained. The average surgeon would not give sufficient time and attention to this work; hence it should be done by the specialist or one who has the patience for such a tedious procedure.

DR. JAMES SAVAGE STONE, Boston: No branch of surgery requires more patience and detailed attention than plastic work. It requires also a very broad knowledge of the underlying principles of general surgery. There are two great groups of plastic work. The first deals with the various congenital malformations and defects; the second, with the results of trauma. In dealing with the congenital malformations there must be a thorough knowledge of the surgery of children and any one who undertakes the surgery of children must of necessity be able to treat well the various congenital defects, among which hare-lip and cleft palate occupy conspicuous places. A knowledge of the laws of growth is essential, especially of the growth of bone. Not only must we take account of the normal epiphyseal growth of bone, but also of the fact that bone grows to meet the demands that are put on it. There is no more striking example of this than the growth of a fibula which is transplanted to take the place of a lost tibia. This is a fortunate example of what nature can do to help the surgeon. The cessation of growth of the bones of the upper jaw and of the central part of the face may be a most unfortunate result of unwise operative interference with growing bone in operations for cleft palate. All these principles and many others must be understood in work with children.

Within the next few years there is going to be an immense amount of reparative work as the result of the war in Europe. Today the wounded men are constantly going back from the battlefields to the different hospitals in the big cities. When their primary wounds have healed so that they have become fit subjects for reparative work, and when the surgeons who now are more than occupied with the urgent life

saving measures are more free, then the immense opportunities for reconstructive work will give those interested in this branch wonderful chances for study and teaching. Reparative surgery will become a part of the general medical preparedness of which we hear so much now. The immense amount of work to be done, and the facilities for study and for teaching will give to plastic surgery an even more important position than that it now holds.

CONJUGAL PARESIS

REPORT OF A CASE *

H. H. DRYSDALE, M.D.

CLEVELAND

Paresis (dementia paralytica, general paralysis of the insane) is a progressive, chronic and incurable malady possessing a highly characteristic symptomatology which concerns the motor and psychic functions. It eventually annihilates intelligence, disrupts the personality and chooses for its victims vigorously constituted individuals who have not previously been afflicted with mental disease. The sole cause is syphilis.

At the onset, the alterations in the psychic life may occur so insidiously as to be practically unnoticed by friends and relatives. A skilled observer, however, even in the absence of physical manifestations, will readily interpret such early signs as failing attention, sluggishness of thought, dampened perceptive acuity, tiresome reiteration, unmotivated gaiety, erratic conduct, etc., as forerunners of this disastrous disease.

In not a few cases the first warning may appear with the ferocity and unexpectedness of an earthquake—an actual mental cataclysm. When the disease is ushered in so acutely, the patient is apt to run amuck and give way to violent impulsions. Often a history of recent alcoholism complicates the situation. A serologic investigation of the blood and spinal fluid will, of course, make the differentiation.

The disease, irrespective of the mode of onset, pursues a more or less irregular course which culminates eventually in a state of permanent dementia—that final wreckage of mind which permits of no opportunity for salvage.

In early years, paresis was pictured as an organic brain disease which had for its early manifestations grandiose ideas and extravagance of conduct. With the advent of the Wassermann era and the newly acquired knowledge and improved diagnostic methods which resulted, it became evident that many cases were improperly classified because the individual had not at some time exhibited symptoms of exaltation and grandeur. Today our interpretation of the malady has greatly changed, and it is now customary to recognize three clinical types, namely, the exalted, the hypochondriac and the demential. The exalted and hypochondriac forms are encountered more frequently among the professional and cultured classes; the demential type appears to predominate in women and among those of the poorer classes.

The course of the disease, while progressive, is subject to remissions which have always proved deceptive to the unknowing. These periods of arrest of symptoms may last for months, and in a few cases for several years. Many patients during these "temporary respites" cherish the belief that a genuine convales-

2. Surgical Specialties in Hospitals, editorial, Boston Med. and Surg. Jour., Dec. 2, 1915, p. 859.

* Read before the Section on Nervous and Mental Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

cence is at hand, and are often permitted to return to business and look after their personal affairs. This, at best, is always a dangerous procedure, as remissions may end abruptly; and if the unfortunate victim is not properly safeguarded, he may dissipate his funds or indulge in conduct which might prove troublesome and costly.

Leading serologists are quite agreed that paresis continues to be a hopeless and incurable affliction. Long continued investigations have disclosed the interesting information that the central nervous system, in these cases, is structurally damaged soon after the invasion of syphilis, and usually years before a physician is consulted. If this is true, the prospect of obtaining a cure for this tragic disturbance is certainly dark. Yet there are some among us who, in spite of the best information on the subject, have become "specific therapeutic enthusiasts," so to speak, and are subjecting well established cases of paresis, under the guise of cerebral syphilis, to intensive salvarsan therapy, and are interpreting ordinary remissions as evidence of their curative skill. Apparently these "alleged" cures are not long lived, as it is becoming quite a commonplace experience to examine patients in an advanced stage of the disease who had just previously passed through an ordinary remission following a course of intravenous or intraspinal medication.

Convulsive seizures occur in fully 60 per cent. of general paralytics. It may happen that the symptoms hitherto slight may become greatly intensified after a convulsion. In other instances, the subsidence of a seizure may mark the beginning of a remission.

The disease confines itself largely to the male sex in the proportion of about 9:1, and makes its appearance usually when the individual is in his prime. The average age of onset is 40 years, and the period of time that intervenes between the infection of syphilis and the development of paresis ranges from two to twenty-five years. Not more than 50 per cent. of the patients admit syphilis, or are aware of having contracted it. Ten per cent. of patients admitted to state hospitals are afflicted with dementia paralytica.

Hereditary syphilis may also lay the foundation for paresis, and it is apparently the usual cause of the infantile or juvenile forms of the disease. Reports of over 100 such cases have been collected.

Fortunately not every syphilitic becomes a paretic. In fact there are in some countries much syphilis but little paresis. In Algiers, for instance, where fully 60 per cent. of the natives are syphilitic, progressive dementia is a rarity. The disease, therefore, requires other elements to bring out its development, and to cover this point, von Krafft-Ebing coined the now famous phrase "civilization and syphilization." Perhaps it may prove, as in the case of malaria, that certain strains or species of the micro-organisms are the true cause of the disease.

Paresis has been observed in a case of a mother and child (Hoch) and in brothers (Collins, Oppenheim). The case of two brothers reported by Collins of New York is especially interesting, as the two boys attended college at the same time, and both have been suspected of contracting syphilis from the same source. Husband and wife may also become afflicted, and it is this phase of the disease which constitutes the subject of my thesis.

If the literature on the subject is a criterion, paresis appearing during the lifetime of both husband and wife is an extremely rare condition.

The "Index Catalogue of the Library of the Surgeon-General's Office, United States Army," makes no direct reference to any cases which may have occurred in the United States, but it does have a record of a few cases which have been reported in foreign periodicals. These, briefly, are as follows:

CASES IN THE LITERATURE

Laignel-Lavastine and Mercier presented the following case to the Society of Psychiatry in Paris, Nov. 21, 1912:

The wife, aged 39, an actress, had impairment of memory, megalomania, dementia, tremors of hands and lips, dysarthria and fixed pupils. Serologic examination disclosed a positive Wassermann reaction on the spinal fluid with increase of albumin and lymphocytosis.

The husband, aged 27, had less marked symptoms. Memory was not impaired, but there was a decided change in personality. Reflexes were responsive except the pupils, which were contracted and immovable. Dysarthria prevailed, and leukoplasia of the corners of the mouth was noted. The spinal fluid showed an increased albumin content, and the Wassermann reaction was positive.

These authors express the view that conjugal paresis is not altogether uncommon, but that few cases are reported because the symptoms do not develop in the husband and wife at the same time.

Ferenczi¹ publishes the report of a case of dementia paralytica in a man and cerebral syphilis in the wife. Both denied having ever contracted syphilis, and no clinical lesions were found in either patient.

The husband, aged 44, presented pronounced dementia, incoherency of speech and action, exaltation, rhombegism, and exaggerated deep reflexes.

The wife, aged 44, suffered with paralysis of the motor oculi nerve of the left eye and paresis of the facial musculature. The case was reported prior to the Wassermann era, and the author inferred that because the wife was syphilitic the husband also must have contracted the disease.

Garnier and Sautenoise² state that the object of their communication is to point out that syphilis is the cause of paresis, and they cite a case of a man and wife. The husband was syphilitic for twelve years and the wife for ten years. Both developed paresis and both were the offspring of psychopathic progenitors.

Sipocz³ reports three cases of conjugal paresis and one of taboparesis occurring during his eleven years' service in the psychopathic clinic in Budapest.

Junius and Arndt⁴ have collected among several thousand cases of paresis and tabes in the Anshalt-Dalldorf, during a period of twenty-five years, thirty-eight cases among man and wife. In seven cases, six men had paresis and one wife tabes, in one case, vice versa. One man was married twice. He too was a paretic. With his first wife he had one daughter who developed paresis at the age of 24. The wife finally became tabetic. The second wife was delivered of two still-born children, and she also developed tabes.

AUTHOR'S CASE

The case which I report concerns a man and wife, both of whom are living and inmates of the same institution. Both are afflicted with paresis, which now is in the terminal or advanced stage.

THE HUSBAND

G. L., German, aged 40, a paper ruler by occupation, was first examined, Sept. 1, 1913, in consultation with his physician, Dr. John Neuberger. The patient was a man of moderate stature but poorly nourished, and was somewhat emaciated. His ancestral history proved negative so far as his present condition was concerned. No inherited psychopathic taint was disclosed. His father died of pulmonary

1. Ferenczi, A.: Budapest. Konigl. Aerzte-Gesellsc., 1903, xvi.

2. Garnier, S., and Sautenoise, A.: Reflections on a Case of Conjugal Paresis of Syphilitic Origin, Arch. neurol., 1905, xix, 110.

3. Sipocz, G.: Orvosi hetil., 1908.

4. Junius, Paul, and Arndt, Max: Monatschr. f. Psychiat. u. Neurol., 1908, xxiv, 10.

tuberculosis at the age of 62. His mother and one brother died of organic heart disease, the former at the age of 52 and the latter at the age of 43. Two brothers and one sister are alive and well. The patient was the youngest of a family of five children. As a lad he was healthy and robust. He attended public school until he was 15. Then he went to work as a book binder and later as a paper ruler. He was a hard working, thrifty and industrious man and was considered healthy and strong. At the age of 27 he married.

In July, 1913, his wife noticed an unaccountable change in his temperament. In health he was reserved but most indulgent, affectionate and thoughtful. Now he was hateful, indifferent, and wished to be left alone. The condition was regarded as a "nervous breakdown" by his relatives. Sept. 1, 1913, he was obliged to give up his work, being no longer able to apply himself, and making many mistakes. His employers urged him to take a prolonged rest. This seemed to distress him, and he became quite agitated and disturbed. For hours he would hold his head in his hands and constantly bemoan his fate. He could not sleep; he walked the floor at night, and finally the wife came to realize the seriousness of the situation.

The physical examination disclosed total abolition of the patellar reflexes, tremors of the closed eyelids and separated fingers, fixed and contracted pupils, dysarthria, instability of gait and moderate emaciation. Mentally he was confused and distinctly apprehensive. Many of his answers were incoherent, and he was suspicious of his family. His wife's well intentioned solicitations were angrily repulsed, and he insisted that she leave the room. During her absence he voluntarily told us of having contracted syphilis in 1898. He consulted a physician, and soon thereafter considered himself cured, as all symptoms had rapidly disappeared. Two years afterward, 1900, he married, and finally came face to face with the cold truth that a cure was most unlikely, and that there was great danger of his having transmitted the disease to his wife and child. He further stated that he had carried his "secret" single handed during all these years, and had been hoping against hope that no harm had resulted from his folly and indiscretion.

A provisional diagnosis of dementia paralytica was made, and a specimen of his blood obtained for serologic investigation. Before this was completed, the patient became quite disturbed and boisterously incoherent. He could not be quieted, and assumed threatening attitudes toward the members of his immediate family. Sept. 4, 1913, it was necessary to arrange for his commitment to the Cleveland State Hospital. The result of the Wassermann test was finally reported as positive, four plus.

Since his admission to the institution the disease has pursued a progressive course with few slight remissions. At various times he has suffered with convulsive seizures, some of which were quite severe and prolonged. He is now markedly demented, stupid, untidy, resistive and partially bedridden.

The diagnosis is dementia paralytica (paresis). The Wassermann reaction is: blood, plus four; spinal fluid, plus four. The cell count is 28.

THE WIFE

H. L., a native of Ohio, aged 36, consulted me a short time following her husband's adjudication. Both her grandparents died of senility. Her father died of a complication of diseases, aged 50. One sister died of chorea, aged 30. Her mother and one sister are living and well. All the members of the family, including herself, were unmistakably neurotic. She suffered the usual diseases of childhood but developed normally. At school she was active and alert, but not especially vigorous or robust. Menstruation first appeared at the age of 13 and has since been normal. At the age of 23 she married. The family life was all that could be desired, and the man was at all times a devoted husband and father. She had known him from early childhood, and had every reason to believe that his habits were exemplary; in no manner was he given to excesses. The patient further informed me that she suffered a miscarriage shortly after her

marriage which necessitated a curettement of the uterus. An uneventful recovery followed.

At this point I suggested to her the advisability of submitting to a thorough examination, but this she deemed wholly useless as her health was good. It was then explained that her husband was afflicted with a specific disease, and it was most essential to determine whether or not the disease had been transmitted to her. She refused to consent, and left the office apparently under the impression that I was mistaken in considering her husband's condition incurable. It was also evident that she questioned the cause of his invalidism.

I saw nothing more of this woman until May, 1915, when she returned complaining of nervousness, insomnia and numbness in both lower extremities. She had been visiting her husband regularly at the hospital, and this had greatly depressed her. His condition had grown gradually worse, and he was now a patient in the "infirm" ward. A specimen of her blood was secured for serologic investigation, and this disclosed a positive reaction for syphilis. Treatment, however, was still refused; in fact, she assumed an attitude of total indifference, and declared that she no longer cared what became of her, as there was nothing left to live for.

Two months afterward, July, 1915, I was summoned to her home and found her quite excitable, erotic and rambling in her talk. The pupils were contracted and fixed, the left patellar reflex abolished, the gait quite ataxic, and considerable dysarthria prevailed. She had no recollection of what had transpired the day before, and seemingly had no insight into her condition. Specific medication was pushed, and in a short while all mental manifestations abated and she was quite herself again. Her regular visits to her husband were resumed, and she invariably insisted on making the journey alone.

From this time on her conduct was noticeably irregular, and she became ill at ease with those who were near and dear to her. She neglected her daughter, avoided meeting people, and lost much of her former pride and neatness of appearance. Oct. 14, 1915, I received a message stating that the patient was found wandering about the hospital grounds, and requested that the family be notified. Arrangements were made for her return to the home, where I saw her the following morning. I hardly knew her when I called, as she had lost much in weight, and was profoundly confused and incoherent. During the afternoon she became quite maniacal, and the relatives, finding themselves unable to cope with the situation, took the necessary steps for her commitment to the Cleveland State Hospital.

According to the hospital records the progress of the disease has been exceedingly rapid, and at present she is almost as deeply demented as her husband who was admitted two years previously.

The diagnosis is dementia paralytica. The Wassermann reaction is: blood, four plus; spinal fluid, four plus. The cell count is 30.

THE CHILD

In November, 1915, I had an opportunity of examining the daughter, who was then 8 years of age. She was of slender stature and poorly nourished. She told me that she felt well and was progressing nicely at school. Her aunt, who accompanied her, intimated that she was subject to "colds" and had periods when her appetite was poor. She had never been seriously ill, however, and had exhibited no signs of nervousness.

The clinical examination was practically negative, and no objective neurologic manifestations were elicited. Her mentation was normal, her memory was faithful, her attention good, and her ideas were expressed coherently and connectedly. Temperamentally she was quiet and reserved. The special senses were intact and the eyegrounds were negative. A specimen of her blood was submitted to a Wassermann test, and this was found to be positive for syphilis.

The condition of the child has been made known to the relatives, and the responsibility of her future care now rests with them.

COMMENT

This case presents some very interesting features. The father and mother are now hopeless invalids as the result of the ravages of syphilis. Their only daughter has inherited the disease, and no one can prophesy what her future health will be. The husband contracted syphilis two years prior to his marriage. The symptoms were slight and quickly subsided after a brief period of treatment. Eighteen years of syphilis preceded the development of paresis in his case.

Unquestionably he infected his wife, but just when no one can say. She did, however, become a paretic two years after her husband, who was syphilitic two years before they were married. It would be interesting in this connection to know if the number of years of syphilis preceding the appearance of paresis was the same in husband and wife.

The disease in both cases was of the demential type, and at no time during my observation were there any signs of exaltation or grandeur.

According to the literature, cases of conjugal paresis are rare; but it has seemed to me that members of this section whose experience has been more extensive than my own must surely have encountered conditions of this sort.

Rose Building.

ABSTRACT OF DISCUSSION

DR. JULIUS GRINKER, Chicago: This report brings up a number of reflections on the subject of syphilis and parasyphilis. Many of the ideas in connection with this subject are still hypothetical and in need of further proof. However, clinical reports such as this one seem to throw some light on the problem. For instance, why should the wife contract general paresis and not tabes? It appears as though there might be a special strain of these spirochetes which produce a certain nervous disorder of the tertiary or of the quaternary, or, as it is now called, the parenchymatous type of syphilis of the nervous system. This fact was very strongly brought to my mind when in 1903 I had occasion to study an entire family of syphilitics, most of whom, with one exception, had developed parasyphilis; this exception was the father, who died too young to develop any form of nerve syphilis and whom I had not examined.

The case was this: A man who had contracted syphilis married a woman who had previously been married and as a result of her first marriage had had a healthy son, who later had a healthy family. The first result of this second marriage was the birth of a boy, who early developed normally, attended college, and later entered a countinghouse, doing work satisfactorily. At about 19 years of age he developed juvenile paresis and died. The second child, a daughter, had all the evidences of hereditary syphilis on her body, snuffles and Hutchinson's teeth, but went on to womanhood and then developed an attack of right-sided hemiplegia with aphasia and in addition was the subject of a gummatous meningitis, as I determined on postmortem examination. The third offspring, a boy, developed symptoms of tabes early, with incontinence of urine and the peculiar difficulties that go with hereditary juvenile tabes, until at 19 there appeared an optic atrophy, causing total blindness, but very little ataxia. So slight was the ataxia that the patient could easily find his way through Chicago's busy thoroughfares, having made his living by peddling newspapers. The mother developed optic atrophy and tabes. There is no doubt that all had contracted the disease from the father.

It seems to me that the family tendency may have less to do with the variety syphilis will assume than the fact that there are different strains of one and the same organism. In consequence, we are beginning to believe that there are several strains of spirochetes, and the case reported by Dr. Drysdale would tend to support that theory. Referring to our new treatment of syphilis and whether intravenous salvarsan

injections or intracranial injections are preferable to the old method of administering mercury and iodids, only time and more experience will decide.

DR. JOHN MATTHEW PULLIAM, Fort Wayne, Ind: I have under observation at present a man who contracted syphilis twenty years ago. He is not married, but has had relations with a woman and presumably they have a child. This man is paretic; he is now undergoing a remission. The woman is paretic, and the daughter, now 17 years old, is paretic. The mother thinks the child is by this man, but is not certain. In regard to the spirochetes, I do not know that it is a question of strains. Tuberculosis manifests itself in many different forms: tuberculosis of the lungs, of the glands, and of the bones. So why could not syphilis affect the brain in a certain individual, in another individual of that family attack the cord, and so on down the line? We could have any part of the body affected and perhaps at the point of least resistance. I think this idea would be more logical than to say that there are different strains of the particular organism. I presume there are, and yet the disease might attack a point of least resistance where the conditions were more favorable to the spirochetes than in any other locality.

DR. LAWSON G. LOWREY, Hathorne, Mass.: We have had in the state hospital three members of one family, father, mother and daughter. The mother developed paresis first, then the father, and then the daughter came to us, not for paresis or any syphilitic disorder, but because of what appeared to be a state of manic depressive insanity. She, however, had a positive blood Wassermann. The mother eventually died and necropsy substantiated the diagnosis of paresis. The father and daughter are still in hospitals, but have been transferred. The father is of excitable type, and it is rather common that people of this class live longer than the more quiet ones. As to whether or not the nervous system is the locus of minor resistance, or whether different strains of spirochetes operate to produce paresis, there is evidence in both directions. It is a problem that must be solved experimentally, one on which a considerable amount of experimental work is now being done, and I believe that at the end of three years we shall know more about the subject than we do today.

DR. C. C. BURLINGAME, South Manchester, Conn.: In view of the work reported by Reasoner, it would seem that there is little doubt as to the existence of distinct strains of the organism. Dr. Reasoner took some twenty strains of the organism and experimentally produced syphilis in rabbits. He found, say, that Strain No. 5 produced a certain lesion of the eye; Strain No. 10, no matter how frequently repeated, never produced those symptoms of the eye. In brief, he has taken certain strains of the spirochetes and produced certain definite lesions which could not be produced with other strains of the organism.

DR. DAVID S. BOOTH, St. Louis: There came under my observation a family consisting of a wife and her two husbands, which I wish to report briefly since I do not know how much may have been sequence and how much coincidence. I was brought into the family to examine the second husband, making a diagnosis of paresis, when I learned that the first husband had been confined for the same disease and had committed suicide in the insane asylum. The second husband was committed to the asylum, and several years after, the wife was also committed to the hospital in the same condition. And one of these two committed suicide; I do not remember which.

DR. WILLIAM RAVINE, Cincinnati: In 1912 I saw a woman brought into the Anton Clinic at Halle a. S., in a state of depression with the physical and serologic findings of paresis. About 15 years before her admission to the clinic her husband was brought in with the diagnosis of paresis; he was sent to the state insane asylum and died of paresis. This woman married two years after the death of her first husband, and eight years later her second husband developed signs of paresis, was brought into the clinic, and subsequently sent to the asylum. He was still alive on her admission. Permission was obtained for the performance of brain puncture of husband and wife, and the typical lesions were produced

in the eyes and testes of rabbits. In a recent study of about 75 children of paretics, I was astonished to find that but one child showed evidences of hereditary syphilis, and but two gave positive Wassermann reactions in the blood; spinal punctures were not made.

DR. W. F. LORENZ, Mendota, Wis.: We make it a practice to examine relatives of paretics in the Mendota and Northern Hospitals. A large number of children have been examined, and less than five per cent. have shown a positive Wassermann. As a rule, they appear normal and bright, and, in fact, most of them are healthy and good-looking.

DR. CHARLES R. BALL, St. Paul: I recently had under my care the daughter of a parietic, age 17. The Wassermann test was negative. On two occasions the luetin test has been positive. This young woman is extremely nervous and erratic and seems absolutely devoid of any moral sense or responsibility so that at the present time she has to be watched constantly. She is extremely immoral and does not hesitate to steal or forge checks, and when confronted with her misdeeds manifests no sense of shame or remorse. There is no doubt but her moral void is an effect of the syphilis of her father. She might be properly classified under the cerebral palsies. The difference is simply one of localization; in this case the moral zone was damaged instead of the motor.

DR. GEORGE H. MOODY, San Antonio, Tex.: For many years I have been observing children of paretics rather closely and have made Wassermanns on some of them. This observation leads me to believe that children of syphilitic parents whose syphilis has existed for a long time are much more likely to appear normal and not so prone to present degenerative signs of hereditary syphilis as are those children whose parents have recently contracted syphilis, indicating that if an individual has had syphilis perhaps the time elapsing since contraction of the disease is the most important element in modifying the severity of the infection.

DR. S. G. BURNETT, Kansas City: I have as patients four brothers, each having paresis, the ages being 26, 30, 36 and 40 years respectively. Each gave an individual history of having contracted syphilis. The son of the oldest, at the age of 17, contracted syphilis and five years later developed paresis, the five patients contracting syphilis from different sources and all having paresis. It is hardly likely that the one strain of infection would be contracted by all these individuals. So the question is whether we have a special strain producing the same condition in different individuals derived from different sources, or whether we have the infection attacking the tissue which is most liable to be involved in the process.

DR. ROBERT HENRY HASKELL, Ionia, Mich.: At the State Psychopathic Hospital, Ann Arbor, for several years we took the blood reaction of wives or husbands of paretics and likewise of the offspring, if any. While we found that about 40 per cent. of the conjugal mates of paretics had a positive Wassermann, the percentage of positive reactions in children was very small, less than 10 per cent. I believe. In fact, these children were, as a rule, good-looking and bright. As you go through the family history in these cases you find that the number of deaths of children in early life is excessive, so that while the census for the state of Michigan shows about three living children in each family, in the families of eighty-four paretics we found on an average less than one living child in the family after an average married life of eleven years. It seems to me that why most of the children of paretics fail to show a positive reaction is that the actually infected ones have died young. Hauptmann lays great emphasis on the differences between actual hereditary infection with the spirochete and syphilitic intoxication of the germ plasm, a distinction which I believe we must keep clearly before us.

DR. GEORGE A. MOLEEN, Denver: About seven or eight years ago a woman was taken with apoplectiform seizures, in which there was introduced a type of paresis of the dementia class with confusion and other symptoms of the condition, which progressed, and in about four and one-half to five years she died in an institution. At about the time of her death the husband began to show definite signs of a

paretic type with loss of reflexes and some incoordination, however, with the tremor and then with the apoplectiform seizures, of which he has had two, without suffering a dementia, and only since the apoplectiform seizures has he had some confusion. Neither case, in fact, showed optic disturbances in the form of atrophy, but both presented the pupillary phenomena. The child of this conjugal relationship was a definite, simple-minded imbecile of rather a higher grade type. He presented the evidences and the stigmata of degeneration. With a little assistance he would probably be able to make his way in the world and help himself, but I doubt very much whether he will make any progress alone.

With reference to the strains: Many theories have been advanced, from the neurotropic theory of the French, and the symbiotic view of the influence of other organisms on the spirochete, as well as a selective affinity on the part of some nervous systems for the neurotic influence. Yet, as has been said, it will take time and judgment before we can arrive at definite conclusions as to whether or not there are such strains, even in spite of what would seem to be very good evidence at the present time.

DR. HARRY H. DRYSDALE, Cleveland: The condition does not seem to be as uncommon as the literature on the subject would indicate. It is to be regretted that these cases have not been reported. In my experience also, in the examination of children of paretics not more than one in ten gives a positive Wassermann. It is surprising that in examining children of parents afflicted with some form of syphilis, the Wassermann test is so frequently negative. I am extremely glad that I have reported this case as it has brought forth, in discussion, some very interesting and valuable points.

A BACTERIOLOGIC STUDY OF THE CAUSES OF SOME STILLBIRTHS

PRELIMINARY REPORT

JOSEPH B. DE LEE, M.D.

CHICAGO

Thirteen years ago, in consultation, I saw a child of a healthy mother born with a temperature of 101, which within a few hours rose to 103. The child died of streptococcus septicemia, the mother showing no signs of infection. A year later, a physician's wife, after a mild pharyngitis, developed albuminuria and eclampsia. Artificial delivery was performed. Out of the child's nostrils pure pus exuded. The pneumococcus was found in it.

Several other cases have indicated to me that the child can become ill, independently of its mother, and may even die, the mother being only indirectly affected, or not diseased at all.

CASE 1.—Mrs. F. H., primipara, who had always been well, and who was pregnant eight months, had a slight pharyngitis. A few days later the motion of the child ceased. Anemia and mild asthenia were observed, but no fever. Four weeks later labor came on. A macerated fetus was delivered. The organs contained a pure culture of *Streptococcus viridans*. The mother had postpartum hemorrhage, requiring the use of a tampon. A fever of thirty-six hours' duration subsided without complications.

CASE 2.—Mrs. R. P., who had had septic history in previous labor, and was pregnant seven months, had been well, without fever, but had felt no motion for ten days. There was spontaneous delivery of a macerated fetus. The organs contained pure culture of an anaerobic nonhemolytic streptococcus. Convalescence was interrupted by cerebral symptoms resembling thrombosis.

CASE 3.—Mrs. E. T. W., primipara, had two attacks of gallbladder trouble during pregnancy. Labor began three weeks prematurely. There was no fever. The fetal heart tones disappeared after twelve hours of infrequent, weak uterine contractions. When delivered, the child had just

begun to macerate and was very pale. There was odor to fetus and meconium. Professor Zeit's necropsy diagnosis of the fetus was hemorrhagic septicemia virulenta, and there was a pure culture of pneumococcus. The mother, although the perineum was stitched and the uterus packed, has had no fever or evidences of infection.

Other cases will be reported later, with more complete histories and pathologic findings. The object of this preliminary report is to put these facts on record and to urge other investigations along these particular lines.

I am convinced that this discovery opens up an immense field for study, that we may thus find the cause of many cases of so-called "habitual abortion" and repeated "premature labor after viability and before term," and that we may come on new problems of immunity, focal infections, nephritis during pregnancy, eclampsia, puerperal sepsis, blood-borne transmissions, and new aspects of the transmutations of bacteria.

Many alluring speculations and hypotheses present themselves.

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THE TREATMENT OF AMEBIC DYSENTERY*

JOHN PELHAM BATES, M.D.

GREENWOOD, MISS.

The conclusions following in this paper are from an experience with amebic dysentery in the Department of Sanitation of the Canal Zone in Panama, covering the period from 1904 to 1913 inclusive. During that time various therapeutic measures were tried: First, the treatment with quinin irrigations, a measure carried over from the Philippine service; later, treatment by large doses of bismuth subnitrate, a measure instituted by Dr. W. E. Deeks, and finally, the use of ipecac after its reintroduction by Rogers in India and Dock in this country, to which I subsequently added bismuth as a correlative treatment for the purpose of hastening the process of healing the ulcerations present in the intestine, left only partly healed after ipecac had served the purpose of eradicating the amebas.

Deeks¹ has also pointed out the advisability of using bismuth as an after treatment following ipecac or emetin, but so far I have seen no work of his reporting the results of such a method of treatment. What I wish to lay stress on here is the important point that all ulcers in the intestine must be healed entirely before one can expect permanent results from any treatment, and that one must also expect a considerable lapse of time before this is safely accomplished in cases of such extensive ulcerations as are found in amebic dysentery.

My present interest in the subject of the treatment of amebic dysentery has arisen because of reports in the recent literature of recurrent cases after repeated treatments with ipecac or emetin, and because a small number of recurrent cases have come under my immediate observation.

Judging from my own experience since the revival of the use of ipecac, it appears to me that recurrences

ought not to take place, if all of the problems entering into the treatment of amebic dysentery are considered and the treatment necessary to meet these problems is carried out; that is, treatment to aid the action of ipecac as an amebicide, treatment to hasten the complete healing of the ulcerations in the intestine and the allowing of ample time for these ulcerations to heal entirely before patients are discharged as well. In short, a cooperative or correlative treatment to ipecac.

I first began the treatment of amebic dysentery with powdered ipecac in Colon Hospital, Panama, in 1909, and continued its use until 1912. During this time I had a sufficiently large number of cases to form definite conclusions as to results obtained under this method. While it is not possible to follow after-results in all patients discharged from a hospital, I was able to follow some of them, and two of these patients especially. One, a negro, I saw a year after treatment. There had been no recurrence of symptoms during the year, and there were no amebas present in the stools after repeated examinations. The other, a native Panamanian, became an orderly in my wards after his discharge, and was under my immediate observation for two years. He had no recurrence of symptoms during this period. I took the trouble to examine his stools at various intervals, but each examination was entirely negative for amebas. With such results as these two men showed, men belonging to a class of patients low in the mental scale and always unfavorable, I feel safe in assuming that other patients treated in the same manner and discharged as well must also have remained well.

With these facts in mind, I have felt some surprise in noting reports of recurrent cases in the literature and also in encountering recurrences in patients who had had repeated treatments with ipecac, emetin, and alcrestia ipecac.

THE CAUSE OF RECURRENCES

Most writers attribute the cause of recurrences to the formation, under the action of the ipecac, of "encysted" forms of amebas. This may be true to some extent, but I hesitate to accept this phenomenon as the sole cause, and am rather more inclined to conclude that as soon as the amebas are reduced below the limit of microscopic detection, all treatment is discontinued, at a time when the ulcerations are only partly healed, and when a few living amebas are no doubt still present, though not detectable, to find lodgment again in half healed ulcers and thus renew the symptoms of the previous attack. I am forced to this conclusion from the history of one of my recent patients, who stated that throughout a period of twelve years he had suffered from numberless attacks of dysentery. In these attacks he had been treated with different forms of ipecac by various men, each of whom had dismissed him as well as soon as his immediate symptoms had disappeared. After variable intervals of time from these treatments, the symptoms had recurred. It may be of interest to note that this patient is now well and has remained uninterruptedly well for a period of seven months after the treatment to be outlined presently. It is from this man's statement and from the lack of any statements in the literature to the contrary that I conclude that the treatment of amebic dysentery as now practiced is incomplete, and that too much dependence is placed on ipecac alone, to the exclusion of such useful correlative treat-

* Read before the Section of Medicine of the Mississippi State Medical Association, May 10, 1916, Greenville, Miss.

1. Deeks, W. E.: Proc. Med. Assn. Isthmian Canal Zone, April-September, 1913, p. 85.

ment as rest, diet, enemas, bismuth, and most of all, time, to complete the healing of the ulcerations in the intestine.

SOME PROBLEMS IN THIS DISEASE

Before entering into the details of what I term "correlative treatment," I think it best to review some of the problems confronting us in this disease. Some of these problems are practical, some more or less theoretical.

One of the practical problems, which is of course obvious, is the destruction of the amebas. This, I think, is largely done with ipecac and hence needs no discussion here. One of the theoretical problems is a biologic property of amebas, namely, symbiosis, which may be discussed with the idea that by taking advantage of this property we can enhance the action of ipecac in destroying amebas. Another practical problem is the pathology of amebic dysentery.

Symbiosis.—It is well known that amebas live and multiply through symbiosis, that is to say, they are dependent on other low orders of life for their maintenance. This is probably accounted for in two ways: First, other bacteria disintegrate food particles in such a way as to make the food available for amebas to incorporate into themselves, and, secondly, in some instances, these lower organisms serve to liquefy their surrounding mediums so that amebas can move and find food held suspended in this liquid, for it is impossible for amebas to live except in fluid surroundings unless they are in the dormant or "encysted" stage. The dependence of amebas on other low orders of life for existence is well shown by the locations selected by amebas in the human economy for their habitat.

Thus we first find the amebas located in the mouth around the teeth and gums, where moisture and bacteria are both abundant. They next pass through the stomach and small intestines in the "encysted" forms, for in this stage they are enabled to resist the deleterious action of the digestive juices and ferments and to find lodgment finally in the large intestine, especially about the sigmoid flexure and rectum. Here again they are favored, as bacteria are abundant, and moisture, though less in amount, is still sufficient. They are no doubt favored again in this location by the comparative stasis of this portion of the large intestine. These "encysted" forms, now finding all conditions favorable, begin anew their normal life cycle by budding or gemmation, the process of "encystment" being a property reserved in amebas to preserve their existence when too closely pressed or menaced.

It appears to me, then, that the knowledge of this property of symbiosis of amebas can be used to advantage in treatment by teaching us to reduce the bacterial flora of the intestine to the minimum and thus place the amebas in an unfavorable condition for reproduction and growth. While it is not expected that one shall be able to destroy all bacteria in the colon, nevertheless I believe that frequent enemas will reduce the number of bacteria to a great extent and thus place the amebas in such an unfavorable condition for existence that their power of resistance will be proportionately reduced, and the effect of the ipecac on the amebas, enhanced in inverse ratio. However, if enemas do not accomplish all one could wish in this respect, they will at least wash away large quantities of surface amebas and hence reduce the amount of work required of ipecac or emetin. From this, then, it is clear that enemas are one of the important factors in the correlative treatment of amebic dysentery.

Pathology.—As I have just stated, the intestinal amebas are located principally in the sigmoid and the rectum. Therefore one would expect to find this area of the large intestine bearing the brunt of attack in amebic dysentery, which is usually the case. But in patients who suffer so severely from the ravages of this disease as to come to necropsy the lesions are far more widely distributed. All the large intestine is invaded, together with the head of the cecum, and ulcerations sometimes extend for a foot or more into the ileum. The ulcers are closely approximated and they frequently erode the surrounding tissue, joining several small ulcers into one large irregular area. They vary in size from that of a pin head to areas larger than a silver dollar. Some are round, some are irregular in shape, nearly all are excavated more or less, and the edges of the mucous membrane tend to roll into the craterlike area. In some places tunnels underneath the mucous membrane connect one ulcerated area with another. The ulcers usually pass through the mucous membrane; some extend down into the muscular coat and have irregular floors. In two instances, I have seen perforations occur; in one of these the perforation took place in the sigmoid flexure; in the other the perforation took place in the cecum. In the more acute cases the mucous membrane is red and very much thickened, but in the chronic forms the mucous membrane is often pale and is thinner than normal and the rugae are largely obliterated. The largest ulcers are usually first in the rectum and the sigmoid, but large ulcers are again noted in the head of the cecum. The latter fact, the tendency for the cecum to bear a heavier part of the invasion than the other upper portions of the colon, I shall refer to again in speaking of occasional cases intractable to all medicinal treatment.

In cases not so severe as to refuse to yield to treatment one would hardly expect such extensive destruction of tissue as that described above. But one must infer, if the case has been of any considerable duration, that destruction of tissue will be rather large and that some of the ulcers must be deep in the structure of the intestine. Therefore, in instituting any kind of treatment for the relief of such extensive ulceration, one must expect a considerable lapse of time before these lesions can heal.

TREATMENT

One of the first and most necessary factors in treatment, whether the case is mild or severe, is complete rest. The patient is put to bed and given a saline purge or castor oil. He is kept in bed until all the acute symptoms have subsided. After the purgative has acted, emetin or ipecac is begun. I usually use one-half grain injections of emetin daily for an adult until two grains are given. I then increase the dose to 1 grain a day and continue until all amebas are cleared from the stool, as shown by microscopic examination. This will usually require a total of from 5 to 6 grains of emetin. If one does not have access to the microscope, it is well to give a total of at least 6 grains of emetin. At this time the emetin is discontinued, and bismuth subnitrate in large dose is begun. Bismuth acts in two ways: first, as a sedative on the intestinal tract and as an aid toward the healing of the ulcers present; second, as was first pointed out by Deeks, bismuth itself acts as an amebicide and is an added help in destroying such amebas as may be left after the discontinuation of the emetin or those that may be formed from the "encysted" stage. Bismuth is usually

given in 1 dram doses every four hours during the waking hours until the stools are well formed, and until some constipation is present. It may then be reduced to 1 dram three times a day until the patient is discharged as well.

Enemas of normal saline solution, 2 or 3 quarts at a time, are begun as soon as the effect of the salts or castor oil has subsided, and are used every four hours during the waking hours, and continued in this quantity throughout the entire period of the administration of ipecac or emetin. They may now be reduced to two or three a day and later to one a day, merely to prevent the constipation following the bismuth. It is well to remember that in flushing the bowel it is necessary to use a short tube in order to avoid the ulcers that may be low in the rectum. At first it will be found that the bowel will tolerate only a small quantity of fluid; it finally becomes more tolerant, and a quart or more will easily be retained. In attempting to examine stools for amebas after these large enemas, it will be necessary to retain the whole stool, that is, the enema and such fecal matter as may be present. Out of this one should select particles of mucus, shreds of necrotic tissue, or flecks of bloody material, and at least six or more separate examinations of this material should be made before one concludes that the stools are negative for amebas.

Experience has shown that sweet milk is the best food in amebic dysentery. It may be given every two hours during the day in quantities of from 4 to 8 ounces at each feeding. After the more acute symptoms have passed and the stools are beginning to be partly formed, the milk may be gradually increased in amount and the time between the meals lengthened. At this stage eggs, soft-boiled or poached, may be added to the diet with one slice of dry toast at each feeding. As the improvement continues, the food may be gradually increased until the patient is finally returned to a full diet.

To carry out this management until one is reasonably sure that all ulcers are healed and replaced by new tissue will require in the acute cases at least four weeks' time. In the more severe cases it will require a total of from six to eight weeks before one should feel safe in discharging the patient as well.

I have stated with confidence that the management just outlined will effect a cure of amebic dysentery, and my experience has proved this to be true in a large majority of all the cases. Nevertheless it must be expected, especially in the tropics, that some cases will be encountered which have advanced so far that no kind of treatment can be of any help. Occasionally there will be others, though rare indeed, that will have relapses in spite of the treatment outlined. It will be recalled that in reviewing the pathology I called attention to the fact that the cecum sometimes seemed to bear the brunt of the attack, and that ulcers often extend well up into the ileum. It is this class of cases that I surmise offer the greatest resistance to treatment, and may present relapses in spite of any management, on account of the inaccessibility of this area to repeated enemas. In cases of this kind, when two or three efforts at treatment by medicinal means have failed, appendicostomy will have to be advised. After this the colon should be flushed out several times a day with saline solution, followed by powdered ipecac suspended in some bland material, such, for instance, as mucilage acacia.

DISCUSSION OF CRYSTALLINE LENS*

EDWARD JACKSON, M.D.

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The accounts of this operation found in the larger textbooks of ophthalmology are generally unsatisfactory, that of Fuchs being least so. Better descriptions, both as to indications for the operation and technic, are found in special works dealing with ophthalmic operations, especially in Beard's "Ophthalmic Surgery"; and the best description is given under the head "Discission" in the American Encyclopedia of Ophthalmology.

The great variations that occur in the behavior of the eye following this operation, however, are poorly reflected in any condensed account of it. They are best shown by rather full extracts from a series of case histories, six of which are given here with brief comments. In all these cases the needle was introduced through the limbus, as I have described elsewhere.¹ For the first entering of the lens I prefer a rather broad needle, as the Bowman stop-needle, or the medium size of Knapp's knife-needles, which will make a sufficient cut in the capsule by the mere forward thrust.* When, however, it is desired to divide the nucleus, I prefer, as for dividing the capsular membrane, the narrow knife-needle of the Hays-Ziegler type. In all cases the eye is placed and kept fully under the influence of atropin, at the time of operation and so long as there is any noticeable reaction. In some cases ethyl-morphin hydrochlorid (dionin) was also used to hasten the process of absorption, after reaction from the needling had subsided. No very marked benefit could be traced to the latter. Sometimes when the eye has become entirely quiet after needling, the absorption of the lens becomes rather sluggish. I then omit atropin, hoping that the action of the ciliary muscle will rather hasten the process of absorption.

CASE 1.—Miss M. D. was first seen April 4, 1903, when 10 years old. She always had poor sight; does not know that it has changed. Vision: Right, $\frac{4}{60}$; left, $\frac{4}{40}$ partly. Never had convulsions; had measles when 5 and typhoid when 9 years old. Teeth sound and well developed, although irregular.

Ophthalmoscope: Each eye shows lamellar cataract, almost complete at the nucleus with scattered "riders" in the cortex. The nuclear opacity is 5 mm. in diameter in the right, 4 mm. in the left. Needling of the right eye was advised but she was not seen again for nine years.

Sept. 5, 1912, eyes but little changed; patient has been in school for four years. Vision: Right $\frac{4}{45}$; left $\frac{4}{12}$ partly. Under atropin, right —7.50 sph., vision equal $\frac{4}{20}$. Nucleus entirely opaque.

September 26, a Ziegler knife-needle was passed into the anterior part of the right nucleus, making a horizontal cut 2 mm. long in the anterior capsule.

September 28, slight redness about the puncture in the temporal limbus; slight opacity about the cut in the capsule.

October 19, decided clouding of the whole lens.

November 23, no atropin has been used for three weeks. The pupil is gray with some mother-of-pearl reflex; the lens slightly swollen.

December 7, with a Ziegler knife, the nucleus was cut rather freely. There was bleeding into the anterior chamber, forming a line from the cut along the temporal limbus. This had disappeared next day.

Jan. 11, 1913, fundus red is seen in the edge of the pupil below and to the nasal side.

* Read before the Section on Ophthalmology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Jackson, Edward: Tr. Am. Ophth. Soc., 1913, xiii, 394.

April 7, the lens nucleus was freely divided by a horizontal incision. A large fragment, 3 mm. in diameter, and smaller ones fell to the lower angle of the anterior chamber. The tension of the eye, which had been 28 mm., rose seven hours later to 58 mm.

April 8, tension lower, eye more comfortable. Lens masses milky and fused together. After this the eye gradually became quiet and the tension fell to 24 mm.

August 28, there were still two fragments of lens in the bottom of the anterior chamber. But they disappeared soon after this.

October 15, right + 8.50 sph. \ominus — 0.50 cy. ax. $165^\circ = \frac{1}{4}$.

May 25, 1914, with a bifocal lens she constantly uses the right eye. Vision $= \frac{5}{16}$ partly; left vision continues $\frac{5}{15}$.

In this case of lamellar cataract in a girl of 19, the lens was wholly absorbed after three needlings, requiring a period of about one year. There was no severe reaction at any time, except the last needling, and no other distinct rise of tension in the eyeball. The number of operations required was about what might be expected from the average account of discission. But the time occupied in the absorption was greater, although the patient's age was within the generally accepted limits of 20 to 25 years. It should be noted that there was enough clear lens substance present to keep the cut in the capsule well opened by its swelling. This tends to bring about the desired result with the smallest number of operations. In the next case the lens was more generally opaque. Practically no swelling followed the operation, and six operations were required, although the time occupied was only about eight months, the two patients being of the same age.

CASE 2.—Miss G. H., aged 19, with negative family history, and without history of trauma, was noticed to have cataract of the left eye, at the age of 7 years. There is no reason to believe that this eye ever had good vision. It shows constant divergence, of which the history of onset is quite indefinite. Right: Vision 1.2; normal in all respects.

Jan. 5, 1915, L. Light perception and moderate projection. Diverges constantly 40 centrad. Reaction of pupil good. Anterior chamber rather deep. Pupil occupied with gray lens opacity.

July 27, broad iris shadow through clear cortex. Deeper lens substance gray-white. Pupil under atropin, circular 8 mm. Under cocain, a Bowman stop-needle was thrust 4 mm. into the lens substance, given a half twist on its axis, and withdrawn without any attempt to cut laterally. The lens substance encountered seemed soft, and a little opaque lens matter fell into the anterior chamber.

July 30, lens matter gone from the anterior chamber, pupil full width. Slight hyperemia, around the puncture only.

August 2, eye quiet. No clear cortex visible. Cut in capsule not bulging, but small triangular tongue of lens swings out of it.

August 13, a darker spot toward the nasal side of the pupil is noticed. Lens looks thinner.

August 23, with Ziegler knife-needle a vertical cut of 4 mm. was made in the lens. Layers of cortex flapped forward in the cut, and a small piece fell into the anterior chamber, and had disappeared next day.

August 27, hyperemia gone except at puncture. Pupil 8 mm. Little swelling of lens.

September 26, a horizontal cut was made in the capsule from the nasal margin of the pupil to the vertical cut. The lens substance was broken up well, but none fell into the anterior chamber. At this time it was found that the lens nucleus was opposite to the upper nasal quadrant of the pupil rather than behind its center.

September 7, little reaction. Tonometer shows tension of 26 mm.

September 13, eye entirely quiet. Fragments of lens were hanging forward through the opening in the capsule, but none had fallen into the anterior chamber. Red fundus reflex could now be obtained in the temporal margin of the pupil.

October 19, a cut was made in the nucleus at the upper nasal quadrant of the pupil. The needle penetrated obliquely through the vascular limbus and clear periphery of the cornea, causing notable bleeding. A fraction of a drop of blood escaped from the conjunctival opening; a small pointed swelling formed at the point of entrance, and a line of red showed the track of the needle in the cornea, with some gray clouding around its inner portion and termination in the anterior chamber.

October 20, the foregoing gray cloud has become a dense white opacity, 2 mm. in diameter, apparently at the posterior surface of the cornea, across which a red line shows the needle track. There is marked hyperemia around the puncture, and a slight pericorneal zone. The lens opacity is broken up with a dark almost clear opening in the center, and a crescent of black pupil to the temporal side.

October 23, the exudate at the seat of puncture is thinner, the red line about gone, the eye almost free from pericorneal hyperemia.

October 28, the exudate at the corneal puncture is getting thinner at the edges, and the patch smaller. It is probably situated in the deep layers of the cornea.

November 1, the exudate in the cornea is one-third its original area, and is separated from the opaque limbus.

November 8, the exudate is very faint and indefinite. The eye is quiet.

December 1, the atropin was stopped and pupil allowed to contract.

December 20, an oblique cut was made clear across the dilated pupil, from the upper temporal to the lower nasal margin. Lens masses fell freely into the anterior chamber. One hour later the patient suffered from a chill, with nausea and increasing pain. After seven hours the pupil had contracted to 4 mm. in diameter, and there was marked pericorneal hyperemia, and a little tenderness of the eyeball. Tension normal, to fingers. Atropin 1 per cent. hot stupes; and later morphin was given hypodermically to relieve pain.

December 21, pupil 7 mm. Less pain.

December 22, little pain, but still periods of nausea. The anterior chamber was one-third full of lens masses. The whole eyeball red and moderately tender.

Jan. 21, 1916, eye about quiet; a minute speck of lens substance is still visible on the posterior surface of the cornea.

January 25, all trace of lens gone from the cornea; and lower temporal two thirds of pupil clear. But the fundus reflex is dull, and no details are seen. There are membranous opacities of the vitreous. Plus 12. sph. gives vision of 0.04, and fixation is poor, although tending to be central.

March 3, an inverted T-cut was made in the capsule, dragging down some white lens substance in the upper part of the pupil.

March 6, eye almost white.

March 21, eye quiet.

The striking features in the progress of this case are the hemorrhage into the needle track; and the local and general symptoms excited, as in Case 1, when a large amount of lens substance fell into the anterior chamber, but here without rise of tension.

It may be noted that in Case 1 there was bleeding through the needle opening into the anterior chamber. In Case 2 after the fourth operation the line of blood was distinctly visible through the cornea; and the effects of the bleeding were watched until they had completely disappeared in about two weeks.

In the series of six cases there were in all sixteen needle operations. In only two was there noticeable hemorrhage in the track of the needle wound. The limbal puncture has been used by me for the division of "after" cataract or a membrane for about twenty-five years. And among some hundreds of such operations these two are the only instances of such hemorrhage that have been noted. A chief advantage of entering the needle through vascular tissue is that the wound shall be promptly, aseptically sealed by the

resulting hemorrhage. It was conceivable that some such hemorrhage might at times constitute an undesirable complication. But this experience of the few times it was noticeable, and the smooth progress of the cases when it occurred seems to rule out any possible danger from this source.

The white exudate that appeared in the vicinity of the needle track in Case 2 suggested that possibly lymph was being poured out from Schlemm's canal, either through injury of a part of this somewhat variable lymph space, or some rather large channel communicating with it. If this were the case, no harm was done. Schlemm's canal lies a little in advance and external to the extreme periphery of the anterior chamber. But a needle entered not more than 2 mm. back from the clear corneal margin, and thrust directly toward the lens so as to escape the iris when the pupil is fully dilated, will pass in front of Schlemm's canal, unless it be located in the clear cornea, or lie quite superficial in the sclera. Of such anomalies no evidence has been found, either in sections, photomicrographs or published accounts of the anatomy of this region.

The severe local and general reaction which occurred after the fifth operation was not attended with any noticeable rise in the tension of the eyeball. The tension remained, as after the preceding and subsequent operations, in this case at least quite as low as in the normal eye. The pain was severe and continued several hours, and the patient was seen when it was at its height, although the tonometer was not then used. The general symptoms were quite those of surgical shock, as described by Williams² in connection with contusion of the eyeball. The nausea was quite severe, went on to vomiting, and occasionally recurred for three days, large masses of lens substance being still present in the anterior chamber.

CASE 3.—Miss H. A., aged 18, suffered in early childhood with trachomatous keratitis causing perforation of the right cornea near its temporal margin, and adherent leukoma, bulging of the cornea and excessively high myopia. In the left eye the cornea had flattened, causing high hyperopia. Both corneas are nebulous.

June 26, 1912, lens right — 16. to — 25. D. gives vision 0.02 to 0.03; left + 4. sph. \ominus + 8 cy. ax. 168° V. = 0.05.

A Bowman straight stop-needle was thrust through the lower temporal limbus of the right eye into the center of the nucleus, given a half rotation on its axis, and withdrawn without cutting the capsule more extensively than by its mere forward thrust.

June 29, there has been rather sharp reaction, a marked pericorneal zone, and decided swelling and opacity of lens. Tension of right eye 40 mm. of mercury (Gradle tonometer). July 2, eye almost free from redness, quite comfortable. Almost no fundus reflex perceptible in the pupil. Outer quadrant of lens quite gray.

July 17, lens masses protruding from capsule, and in angle anterior chamber. Tension 47 mm. Eye red, but not painful.

September 4, eye quiet; but lens masses protrude through opening in capsule to the posterior surface of the cornea.

October 2, the protrusion of lens substance much less, anterior chamber much deeper.

November 6, red reflex shows in half the area of pupil. Eye white, but redness on examination and manipulation.

Jan. 22, 1913, the pupil is clear except a crescent of membrane at its lower margin. Right — 15. sph. \ominus — 5. cy. ax. 160° , vision = $\frac{3}{80}$. Tension 20 mm.

March 23, 1916, pupil clear. The fundus seems normal. Right — 14. \ominus — 6. cy. ax. 160° , vision = 0.06.

A girl of 18 had the lens needled for excessively high myopia. It was entirely absorbed in less than seven months, after a single operation, in which the cut in the capsule was not more than 1.5 mm. long. But the lens to start with was entirely clear. Its exposure to the aqueous humor resulted in immediate swelling, which continued to keep open the capsular wound with extrusion of small lens fragments and the needle puncture went to the center of the nucleus, which was to some extent disorganized by the rotation of the needle. In this case there was rather prolonged elevation of intra-ocular tension, which probably did not rise at any time above 50 mm. of mercury, and there was no reason to suppose it caused permanent impairment of vision. There can be no doubt that clear lens substance is much more prone to swell than opaque lens matter, and this by keeping open the rent in the capsule may hasten dissolution. This tendency may account for the rather rapid and complete removal of the lens that is sometimes seen after injury even in patients approaching middle life.

CASE 4.—Miss M. W., aged 24, had worn glasses four years, but lately noticed she did not see so well.

April 17, 1903, Right + 2. \ominus — 0.50 cy. ax. 150° , V. = $\frac{1}{4}$ mostly. Left + 1.12 \ominus — 0.62 cy. ax. 15° V. = $\frac{1}{3}$ mostly. This vision in the right eye was obtained under homatropin, but in the center of the lens there was slight opacity and irregular refraction.

May 1, 1908, corrected vision, right, $\frac{1}{12}$; left, $\frac{1}{3}$ mostly. Ophthalmoscope: Right opacity of lens in both anterior and posterior cortex, most dense in the periphery, and not extending to the posterior pole. Fundus normal. Left, media clear. The two irises are of the same gray color and normal in appearance.

Oct. 25, 1909, right vision $\frac{1}{45}$. At the nasal margin of the 7 mm. pupil there is still red reflex, and the largest retinal vessel can be made out.

Sept. 13, 1910, right vision equals $\frac{1}{60}$. No fundus reflex. Anterior chamber rather shallow.

November 22, the opacity is still not complete to the capsule, but on account of the white appearance of the pupil the patient seeks operation. A Ziegler knife-needle was thrust through the nucleus of the right eye.

November 23, moderate hyperemia chiefly at the puncture in the limbus. Cut in capsule 1.5 mm. long, cut edges whiter, anterior chamber rather more shallow.

November 28, eye quiet. Track of needle visible in lens. Other parts of superficial cortex still clear.

December 12, there is distinct fulness of large deep scleral vessels, and a slight purplish discoloration of the sclera. The track of the needle thrust is still noticeable. Tension plus T.

December 29, sclera normal. Nuclear part of lens whiter. Anterior chamber deeper.

Jan. 14, 1911, Ziegler knife-needle thrust deeply into nucleus seemed to drag nucleus with it toward wound of entrance, as though it were loose in the cortex.

January 16, deep hyperemia of globe. Cut edges of capsule and superficial layers of cortex are rolled back. Lens distinctly more swollen.

January 23, lens swelling more marked.

February 4, lens still swollen. Tension + T.? Specks of deposit on Descemet's membrane. Deep hyperemia of globe.

March 4, eye free from hyperemia, cortex hazy to extreme periphery.

April 1, the nasal edge of the lens can be seen on looking very obliquely. The lens cortex is hazy, gray, and the nucleus white. The anterior chamber is a little more shallow to the temporal side and the nucleus displaced in that direction. A knife-needle was passed into the nucleus and turned freely.

April 2, moderate deep hyperemia of globe. Pupil 8 mm. Some lens substance in the bottom of the anterior chamber.

June 10, upper part of nucleus absorbed.

August 31, a triangular piece of nucleus floats freely in anterior chamber. Light hurts the eye, and there is aching of that side of the head.

October 21, eye quiet. Nucleus dense yellow, white to lower temporal side. Cortex forms a mass in upper nasal part of pupil. Capsule wrinkled.

November 8, needled both nuclear and cortical masses.

December 8, eye quiet. Absorption proceeding. Nuclear mass 3 by 3.5 mm.

December 18, needle entered at lower limbus, cut from upper nasal margin of pupil to central opening. Then from lower temporal margin pushed remains of nucleus into upper angle of anterior chamber, where it adhered and remained a month, then becoming absorbed.

June 10, 1912, pupil slightly ovoid and displaced down and out 4 by 3.5 mm. Right + 11. $\text{C} + 1$. cy. ax. 60° , vision $=\frac{4}{4}$ partly.

Aug. 9, 1913, pupil nearly circular, clearer, correcting vision equals $\frac{4}{4}$.

A woman aged 31, who had been gradually developing cataract for seven years, but in which there was still considerable clear cortex, had five needlings, through which complete absorption of the lens was secured in about eighteen months. The eye obtained full vision, and less astigmatism than after an average cataract extraction, and the result was in every way satisfactory, except a slightly ovoid pupil. The point of this ovoid, turned down and out, was where the iris had been pressed on for a considerable time by swollen lens; and at this point the sphincter appeared slightly narrower than elsewhere. It seems probable that there had been some atrophy of tissue from pressure. This patient lived in another city, came to Denver, and remained a few days for each needling; and during the remainder of the time was engaged in rather exacting secretarial duties.

CASE 5.—Miss D. M., aged 32, consulted me in 1901, with a history of headache and nervous prostration. Correcting lenses gave much relief and vision as follows:

Right + 1.75 — 0.75 cy. ax. $10^\circ = \frac{4}{4}$ plus.

Left + 3.50 sph. $= \frac{4}{4}$.

July 5, 1906, her glasses and vision were:

Right + 2. + 0.75 cy. ax. $10^\circ = \frac{4}{4}$ plus.

Left + 4. Sph. $= \frac{4}{4}$ mostly.

At this time her accommodation was R. 5. D.; L. 4. D.

May 15, 1907, vision with the foregoing correction is Right $\frac{4}{4}$; Left $\frac{4}{15}$. She has been in poor health for one year and a half, but has recently been to the eastern coast and has gained 22 pounds in weight. The right eye appears normal in all respects. The left eye shows minute dots in and behind the nucleus. Her eyes are a blue gray, but the right also shows brown pigmentation over the region of the sphincter, which is quite absent from the left. There are no deposits on the cornea or other signs of pigmentation. Given ethylmorphin hydrochlorid 1:240 to be instilled every second night.

July 1, Left, vision equals $\frac{4}{30}$. There is evident general clouding of the vitreous. Given potassium iodid, 50 per cent., from 10 to 20 drops three times a day. This caused nasal watery discharge, disturbance of digestion, and was not pressed above this amount.

August 26, vision and vitreous as before. Transillumination normal. No fundus lesions have been seen.

Sept. 27, 1910, vision has varied from $\frac{4}{60}$ to $\frac{4}{20}$, and has now fallen again to $\frac{4}{100}$. The opacity has grown rather more dense at the center of the nucleus; although it was for a time less in other parts of the pupil. It is now general. The undilated pupil shows gray, and she wishes this appearance removed. Under cocain, anterior capsule punctured.

October 1, margins of cut in capsule and lens whitened for a space 3 mm. long, and 0.5 mm. wide. Eye quiet.

November 5, cut in capsule 3 mm. long. Needle thrust through center of nucleus.

November 7, very little redness about the puncture in limbus only. Noticeable bulging of lower lip of capsule, and some cortex protruding into anterior chamber. Atropin once daily keeps pupil fully dilated.

November 11, more swelling about the cut in capsule, and lens more opaque.

December 14, slow changes have continued in the lens. Anterior chamber noticeably less shallow. Eye entirely quiet.

Jan. 6, 1911, a 3 mm. cut was made in the capsule from below upward, temporarily lifting the margin of the lens into sight in the bottom of the pupil. Considerable cortex escaped into the anterior chamber. Eight hours later the cortex was 2 mm. deep in the bottom of the anterior chamber, the pupil 7 mm. in diameter, moderate pericorneal hyperemia, and the eye felt sore.

January 9, hyperemia much less. Fundus reflex seen in notch at lower edge of lens.

February 10, eye quiet. Fundus reflex at edge of 7 mm pupil.

March 14, nucleus 6 mm. in diameter. Thrust needle into center of it and twisted it fully around. Nucleus loose in capsule.

March 15, sharp pain last night. Marked pericorneal zone. Some lens matter in anterior chamber.

March 18, no pain. Eye almost free from hyperemia.

March 24, eye quiet.

April 1, with 6 mm. pupil crescent clear 1.5 mm. wide above and to temporal side.

July 6, eye quiet.

December 6, there remains an opaque disklike nucleus 4 mm. in diameter. Left + 12. sph. $= \frac{3}{40}$. With a Hay. knife-needle, entered through the lower temporal limbus, the lens was pierced near the lower nasal margin of the pupil and dragged outward. It was then pierced near the upper outer margin and dragged downward. The nucleus stuck to the needle, and was left in the anterior chamber in front of the upper outer part of the pupil and iris. With a bent lancet knife a 4 mm. incision was made at the corneal margin nearest the nucleus, which was easily extracted with the wire loop. It measured 4 by 4.5 by 1.5 mm. Shreds of capsule and vitreous were cleared away and physostigmin (eserin 1:1,000 instilled.

December 9, there is little discomfort, slight pericorneal redness and striate opacity of the cornea at the margin of the incision. Dressing omitted.

December 16, eye almost quiet. Some cloudiness of vitreous. With + 12. Vision equals $\frac{4}{45}$.

Jan. 9, 1912, Left + 16. D. sph. $= \frac{4}{22}$. Eye quiet.

March 21, Left + 14. D. sph. + 1.25 cy. ax. $120^\circ = \frac{4}{5}$ partly.

March 22, 1915, Left + 14. sph. $\text{C} + 1.75$ cy. ax. $130^\circ = 0.1$. The right eye continues normal. R. + 2.75 sph. $\text{C} - 0.7$ cy. ax. $73^\circ = 1.1$.

This patient was 41 years of age, with advance but immature cataract, before the first operation. At the end of fourteen months after the fourth operation there remained in the upper outer part of the periphery of the anterior chamber, a nucleus 1.5 mm. thick, and a little over 4 mm. in diameter, which was extracted through an incision made at the corneal margin, leaving an eye with a clear circular pupil, and practical good vision. It seemed probable that this nucleus would also have been absorbed, but by removing it the period of treatment was shortened. The eye required a dressing for two days, the patient not being confined to the house at any time.

CASE 6.—Mr. S. G., aged 35, when first seen, Nov. 14, 1904, had been treated several years before, for uveitis of the right eye.

Ophthalmoscope: Right, clouds of vitreous opacity through which the large vessels were just seen. The cornea and lens were clear, the iris normal and the anterior chamber deep. Left, media clear, fundus normal. Vision, Right $\frac{4}{4}$ Left $\frac{4}{4}$ plus.

Aug. 20, 1904, Vision, Right $\frac{4}{20}$.

April 21, 1905, Vision, Right $\frac{3}{150}$. Ophthalmoscope: Large vessels still visible, clouding most dense toward macula and disk.

Sept. 20, 1906, patient has been told he was getting cataract. Right vision $\frac{3}{150}$. Ophthalmoscope: No fundus reflex. Oblique illumination shows gray opacity of lens, chiefly of the nucleus. Broad iris shadow.

March 21, 1908, both eyes present a rather marked arcus senilis. Right lens uniform, milky, grayish white, with a narrow iris shadow on the milky fluid. The anterior chamber deep. Vision, counts fingers at 3 feet.

July 12, 1909, under cocain, with pupil dilated with atropin, a Knapp needle was entered through the temporal limbus, and plunged into the lens to the nasal side of the center of the pupil. No lens substance or fluid escaped into the anterior chamber.

July 13, slight hyperemia at puncture in limbus. No other reaction.

July 23, a horizontal incision 2.5 mm. long was made in the anterior capsule near the lower margin of the pupil.

August 6, reaction has been slight. The eye is now quiet.

September 1, there has been a notable shrinking of the lower portion of the lens. A free cut, 4 mm. long, was made in the capsule at the upper part of the pupil.

September 2, the eye has been uncomfortable. There is moderate general hyperemia, and lens substance is protruding from the cut in the capsule.

September 10, eye free from hyperemia. Large lens masses are hanging forward to the cornea.

November 5, absorption having ceased, leaving a nucleus of 6 mm. in diameter, this was freely divided from below and across by Knapp's knife-needle. During this operation the aqueous escaped so that the lens fragments were left lying against the cornea. This was done at 9:45 a. m. By 5 p. m. discomfort had increased to dull pain with tenderness of eye, pallor and nausea. Tension plus 1. Under cocain, holocain and epinephrin instilled, an incision, 6 mm. long, was made in the lower limbus, and the bulk of the lens fragments extracted with the Levis wire loop. The pain was relieved in a few minutes, and he had a good night's sleep.

November 8, pupil only three-fourths dilated under atropin solution, and hyperemia increased. Solid atropin dilated pupil. This was applied daily for ten days.

November 29, hyperemia subsiding, pupil dilated by a 1 per cent. solution.

December 13, hyperemia has gone except at lower limbus. Remaining lens mass shrunken to one-third its original size.

December 24, optic disk visible. Lower nasal part of the vitreous very cloudy.

Jan. 7, 1910, with Ziegler knife-needle, a remaining white mass was divided toward nasal side of pupil. This was followed by a moderate reaction.

February 25, a white mass was torn loose that was resting on the edge of the iris.

February 28, very little reaction. Vision, Right + 11. + 1.50 cy. ax. $120^\circ = \frac{3}{4}$ partly.

Oct. 12, 1915, Right + 12. $\ominus + 1.12$ cy. ax. $40^\circ = 0.9$. The left eye has continued normal with corrected vision of 1.3.

This patient was 41 years old with practically mature cataract that had been developing for three years, with history of disease in the eye running back about ten years before that. Good vision was scarcely expected in this case; but this patient and three of the others ought to get rid of the cataract because of the cosmetic indication. He was 41 years old before the first operation, three needlings had been done, and after four months there remained a nucleus 6 mm. in diameter. This was freely divided and the fragments left in the anterior chamber until seven hours later, when increased tension led to extraction of most of the lens fragments through a linear incision at the corneal margin. Removal of the debris gave immediate relief. But incarceration of the capsule occurred, causing distortion of the pupil. Later a resulting band

of white tissue was divided, or torn loose from the edge of the iris. In this case, as in all of the others here reported, severe reaction occurred only when a large amount of lens substance was left free in the anterior chamber, and this irrespective of whether the intra-ocular tension was markedly increased or not.

In all of these cases the cataract was unilateral; and it would seem that discission was especially applicable to unilateral cataract. It is scarcely to be considered where one eye has been lost, or where both are already blind, unless possibly for young children. The time required before the result is obtained rules it out when the patient is dependent on the eye affected. On the other hand, a patient with one good eye will generally be loath to submit to an operation that will require both eyes to be closed for some days, with confinement to bed and other annoyances of a serious operation.

As has been pointed out by Beard and others, discission may be done successfully much later in life than was formerly believed. Two of these patients were over 41 years of age, and there is every reason to think that the lens would have been completely removed by discission, if as much time had been taken for the process as for some of the younger patients. My belief is that many cataracts could thus be dealt with successfully up to the age of 50 or later. But whether it is worth while in general to do this, rather than to extract them, seems doubtful.

CONCLUSIONS

For monolateral cataract up to middle life, discission is to be considered as a proper procedure; and in many cases the patient will prefer it to extraction.

The first discission should make only a short opening in the capsule; but may well penetrate to the center of the nucleus, so that disintegration of the nucleus may begin as soon as possible.

The amount of swelling from a given interference will be proportioned to the size of the opening in the capsule, and the absence of previous change in the lens substance.

Severe reactions and surgical shock are provoked by the presence of large masses of lens substance in the anterior chamber.

Possible hemorrhage, from making the puncture through the vascular limbus, causes no danger to offset the greater safety from infection secured by this point of entrance.

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PRELIMINARY CAPSULOTOMY IN IMMATURE CATARACT*

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The value of any operation must be judged not merely by the results, however brilliant, secured with that procedure in the hands of one man, perhaps the originator of that special operation, but also, if not chiefly, by the results obtained by a large number of different surgeons.

For that reason it may be worth while to record my experience, though small, with preliminary capsulotomy, the so-called "Homer Smith" operation, in the extraction of immature cataract.

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It is not my intention to enter on any discussion of the relative merits of this procedure and the intracapsular extraction, now so much in vogue, as a result of the work and teachings of Colonel Smith of India. The very fact that so many operators are not as yet using the latter method is evidence that they are still seeking some other technic which to them, at least, appears not to be attended with so much risk.

I have developed a preference for preliminary iridectomy in cases of unripe cataract, and have adhered to that practice in these cases, though no doubt it is not necessary to the success of this procedure. This does, of course, subject the patient to an additional operation, but I have never seen it attended with any reaction in my own experience, except in one case many years ago, and that very slight; and if we can judge by the literature, not a few operators seem to prefer the preliminary iridectomy, as far as possible, in their cataract work. However, it is not intended to open a discussion on this question, and it is granted that this procedure is not necessary to the success of the preliminary capsulotomy.

I have used the Homer Smith knife in some cases and the Ziegler knife in others, and like the latter as well, if not better, provided it is one with a short cutting blade.

I have allowed a twenty-four hour interval to elapse between the preliminary capsulotomy and the extraction, doing the former one morning and the latter the next morning. Should excessive swelling and reaction occur, the lens could then be extracted the same afternoon instead of the following morning; but in my own experience I have had only slight reaction, and have had discomfort in only one patient. Perhaps, however, I have not obtained sufficient swelling of the cortical material, and yet it has been enough to obtain the desired result. When there is not much swelling of the cortex, and no reaction or pain, I am inclined, in my next patient, to try postponing the extraction for an additional twenty-four hours.

One drawback to this operation is that it does not seem to permit of the successful use of the capsule forceps in removing the anterior capsule after it has been incised, as is possible when dependence is placed entirely on the forceps in opening and removing the capsule, a procedure which in my regular work has entirely displaced the cystotome.

Another criticism of the operation lies in the fact that in performing the preliminary capsulotomy, we reach the cortex only on the anterior surface of the lens, while in these immature cataracts the cortex on the posterior surface is in the same condition. We may find this portion of the cortex not affected by the capsulotomy, still clear, and more or less adherent to the capsule, and may experience difficulty in getting rid of it; or on account of its being perfectly transparent we may not be aware of its presence, or the amount of it, until the following morning, when the pupil, which appeared clear after the removal of the lens, will show some opaque cortical material in it. This may absorb, or it may increase the probability or necessity of a discission later on, and is just what we wish to avoid by this procedure of preliminary capsulotomy.

I have felt also that it might be wise to use the lid elevator rather than the speculum while making the corneal section for the extraction of the lens after the preliminary capsulotomy, as any unruliness of the patient at this juncture, or squeezing together of the

lids, may be attended with expulsion of the lens immediately following the knife and loss of vitreous, though I have never had this misfortune.

For the removal of the soft cortical material I depend here, as usual, on irrigation of the anterior chamber.

This report includes six cases, the extent thus far of my experience with this operation. One of the patients unfortunately suffered an injury to the eye after she left the hospital, so that she should scarcely be included. A preliminary iridectomy, as stated above, was performed in each case. A discission of the capsule was later done on four of the patients, including the one who suffered the injury to the eye. One of the last patients operated on will unquestionably need a discission, and even the sixth one would no doubt be benefited by this procedure, so that in my own experience a discission of the capsule is needed in a larger proportion of cases than after the removal of fully mature cataracts.

VISUAL RESULTS

In one case $\frac{6}{5}$ was obtained, $\frac{6}{6}$ in two, and $\frac{6}{7}$ in one, though this undoubtedly could be further improved by a discission of some thin capsule remaining within the pupillary area. In my last case the vision is $\frac{6}{21}$. In this case irrigation of the anterior chamber could not be completed, so that there is considerable cortical material remaining, which will require a secondary operation. The other one—the sixth patient—is the one who suffered the injury to the eye after leaving the hospital, and I do not as yet know what vision can be obtained with her.

Without further comment, my notes in brief in the cases are as follows:

CASE 1.—W. B., man, aged 69, consulted me with the history of his sight failing for four years; he had been unable to read for six months.

O. D. — 5.00 V. = $\frac{3}{45}$

O. S. — 6.00 V. = $\frac{6}{60}$

Ophthalmoscopic examination revealed nuclear cataracts, slight red reflex in the periphery; with the pupils dilated; faint glimpse of the retinal vessels in O. D., but not in O. S.

June 15, 1914, iridectomy on O. D. Hemorrhage in the anterior chamber several nights later, probably from blow or pressure on the eye. Otherwise recovery was uneventful.

Nov. 5, 1914, V. of O. D. = fingers at 1 meter. Red reflex seen, but no details of fundus. Preliminary capsulotomy.

Nov. 6, 1914, lens fairly well stirred up, cortex swollen and opaque; slight reaction. Extraction under local anesthetic. Recovery was uneventful, and patient returned home in two weeks.

Jan. 7, 1915, some very fine capsule in the pupillary area; fundus in good condition.

O. D. + 10 $\overline{\text{C}}$ + 3.00 axis 135 V. = $\frac{6}{60}$, ordered for distance.

O. D. + 14 $\overline{\text{C}}$ + 3.00 axis 135, ordered for reading.

CASE 2.—Man, aged 58, consulted me in October, 1913, for gradual failure of vision extending over several years. V. O. D. = $\frac{6}{12}$; O. S. = $\frac{6}{12}$.

Jan. 7, 1914, O. D. $\frac{6}{60}$; O. S. $\frac{6}{15}$. Nuclear opacity in each lens.

Jan. 19, 1914, O. D. small iridectomy. He or the nurse struck the eye two nights later, causing hemorrhage in the anterior chamber. Otherwise recovery was uninterrupted and uneventful.

May 5, 1914, O. D. counts fingers at 2 feet. Preliminary capsulotomy with Ziegler knife.

May 6, 1914, patient has no pain; cortex not much swollen. Extraction of cataract under local anesthetic. Considerable cortex, which was clear at time of operation, showed up a day or two later. Anterior chamber was shallow for several days. Eye showed no reaction. With atropin and ethyl morphin hydrochlorid (dionin) the cortex gradually absorbed

June 30, 1914, some very thin capsule showed within the pupil, thicker in the periphery, media otherwise clear and fundus in good condition.

O. D. $+9 \text{ C} + 2.00$ axis 15 V. $=\%$. With $+4.00$ added, the patient reads 0.50 print very readily.

CASE 3.—Mrs. A. W., aged 68, consulted me because of vision failing for two years. With glasses vision = O. D. $\frac{6}{60}$, O. S. $\frac{6}{60}$.

Ophthalmoscopic examination: O. D. nuclear cataract, red reflex in periphery. No view of interior. O. S. ditto.

Oct. 22, 1913, small iridectomy: recovery uninterrupted.

Oct. 29, 1914, capsulotomy with Homer Smith knife. Capsule would not cut, but instead the lens moved readily before the knife. Rotated knife to stir up lens as much as possible.

Oct. 30, 1914, very small effect from yesterday's operation. Cataract extracted under local anesthetic. Considerable cortex removed. Irrigated anterior chamber as much as possible, but the cortical material would not readily come away and the patient became very restless, so that it was necessary to desist. No reaction followed, and patient returned home, November 16, with considerable cortex still remaining. This gradually absorbed in part.

Jan. 6, 1915, discission of capsule; stirred up small remaining particle of cortex. No reaction followed.

Feb. 8, 1915, entire pupillary area perfectly clear. Fundus in good condition.

O. D. $+10 \text{ C} + 3.00$ axis 165, V. $\frac{6}{60}$. Ordered for distance.

O. D. $+14 \text{ C} + 3.00$ axis 165, patient readily reads 0.50 print; ordered for reading.

CASE 4.—S. C., aged 70, consulted me with history of sight failing in right eye for seven or eight years and in left six years. Has been unable to read with right eye for five or six years and with the left for several months. O. D., nucleus of lens opaque, red reflex in periphery. O. S., nucleus of lens opaque, red reflex in periphery. With pupils dilated a hazy view could be obtained of the nerve and blood vessels. There is an excess of pigment in the choroidal spaces.

Sept. 11, 1914, iridectomy. No reaction followed.

Dec. 30, 1914, preliminary capsulotomy.

Dec. 31, 1914, moderate reaction. Lens somewhat swollen. Extraction under local anesthetic. Recovery uninterrupted. Some capsule remained.

March 10, 1915, discission of capsule with Ziegler knife. No reaction.

March 16, 1915, pupil clear; fundus in good condition.

O. D. $+7 \text{ C} + 3.00$ axis 180 V. $=\%$. Ordered for distance.

O. D. $+11 \text{ C} + 3.00$ axis 180. Reads 0.75 readily. Ordered for reading.

CASE 5.—K. A., aged 60, consulted me because of failure of vision, which has been progressing one and a half years. V. = O. D. $\frac{3}{60}$; O. S., fingers at 2 feet.

Ophthalmoscopic examination revealed: O. D. nuclear opacity involving most of the pupillary area. Red reflex in periphery, with no view of fundus. O. S. ditto. In O. S. with the pupil dilated a glimpse of some of the retinal vessels in periphery could be obtained, but no view of the nerve.

Dec. 10, 1915, O. S. iridectomy. No reaction.

Feb. 14, 1916, O. S. counts fingers. Considerable red reflex. Preliminary capsulotomy with Ziegler knife.

Feb. 15, 1916, moderate swelling of lens and slight reaction. Lens extracted under local anesthetic; patient was very restless so that a thorough irrigation of the anterior chamber could not be performed, and considerable sticky cortical material remained. At a moment while nothing whatever was being done to the eye, patient squeezed and expressed a bead of vitreous, so eye was closed without attempting to remove any more of the cortex. Moderate reaction followed, but recovery was uninterrupted.

March 7, 1916, thick capsule with cortex in the lower portion of the pupillary area; this has, however, been gradually absorbing and becoming smaller. There is a clear area above through which a good view of the fundus is obtained, and shows it in good condition.

O. D. $+11 \text{ C} + 2.50$ axis 105 V. $\frac{5}{21}$.

A discission at a later date will no doubt markedly improve this vision.

CASE 6.—Mrs. E., aged 60, was referred to the hospital from the dispensary because of nuclear cataract in each eye.

April 2, 1915, O. S. small iridectomy.

Oct. 25, 1915, preliminary capsulotomy with Ziegler knife.

Oct. 26, 1915, no reaction; no pain. Lens extracted under local anesthetic. Recovery was prompt and uneventful. The eye was looking fine when patient left the hospital, but there was some capsule within the pupil that would eventually require a discission. The patient was not seen again until February, 1916. Several months after leaving the hospital she had an injury to this eye by a severe blow upon it. The eye was inflamed and painful for a considerable time, but she failed to report to the hospital and had no treatment. When she was seen in February the pupil was entirely covered with a dense capsule and was displaced somewhat upward.

March 1, 1916, discission of the capsule and pupillary edge of iris was done with the Ziegler knife, and a clear central pupil obtained. I am unable as yet to report what the final vision is with this patient.

New England Building.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. JACKSON AND BRUNER

DR. WILLIAM E. GAMBLE, Chicago: The study of the conjunctival flora, with extermination of the pathologic varieties before operation, and the use of the limbal puncture has reduced the danger of panophthalmitis almost to the vanishing point; however, the complications of this operation, the increased intra-ocular tension, the low grade inflammation of the uveal tract as shown by ciliary injection and occasional shock are the complications that give much apprehension to the surgeon. The repeated operations, the thickened "after cataract," which the retained cortex in the capsule sometimes produces, and the long interval before restoration of sight are difficulties which in the nature of things cannot be avoided. Crystalline lenses react so differently to the traumatism of the knife that the only safe procedure, as Dr. Jackson pointed out, is to make a simple puncture of the capsule the first time. The knowledge gained by this reaction is about the only guide we have as to the amount of discission the eye will safely stand in future needlings. The limbal puncture much reduces the force applied to the lens in making discission or dilaceration of the capsule, as compared with that exerted by the needle when the puncture is through the clear cornea and should always be elected when one needle is to be used. This reduction in force in producing the opening in the capsule for discission of the lens is of great importance, since the least possible force exerted on the lens sometimes subluxates it. Most instruments for this purpose are too thick, producing too large an opening and rendering impossible the keenest cutting edge. I prefer a worn out cataract knife with the edge dulled a short distance from the point. Discission, per se, is clearly indicated in children and young adults with high myopia and clear and cataractous lenses; with laminar cataract, complicated with myopia and choroidal changes; in all cases in young adults or somewhat older individuals where a sudden reduction in intra-ocular tension from corneal incision would endanger the integrity of the eye. We are confronted at times with the complication of the nucleus of the lens developing early. Until we are able definitely to determine the absence of a well formed nucleus, the field of usefulness of discission alone, in adults, will not be greatly enlarged and is not the operation of choice.

Instead of tentative needlings over a considerable period of time, a thorough breaking up of the lens should, in my judgment, be done at one operation, followed in twenty-four to forty-eight hours by linear extraction. The lens can usually be removed by milking it out, aided by pushing back the posterior lip of the wound with a grooved director, thereby allowing the lens debris to ride out over it, and by irrigation of the anterior chamber. In older patients, if a small nucleus is formed, this can readily be picked out on a sharp hook and oftentimes can be removed by irrigation.

As to the patient remaining in bed with both eyes closed after this operation, my experience leads me to think it unnecessary and that a day or two in bed is a sufficient length of time for the patient to be quiet. There is but little more reaction than from iridectomy and no more need for remaining in bed, as the coaptation of the lips of the wound is so perfect that the anterior chamber closes within a few hours. This operation should be elected in many cases where the regular cataract extraction is now practiced, especially in traumatic cataract and other forms of monocular cataract. In senile cataracts coming on at an early age, if operated in this manner the greatest care should be used to remove all of the cortex, for I think it is an experience that most of us have had that some of these cases do not do well after operation. Low grade iritis of plastic type develops producing "after cataract."

DR. HOMER E. SMITH, Norwich, N. Y.: I agree with the essayist that the value of any operation must be judged not only by the results at the hands of its originator but of other men as well. Two years ago I presented before this section a paper in which were tabulated the results of 180 extractions reported by thirty-nine operators, of which 91 per cent. were successful, 6 per cent. partial failures and only 3 per cent. total failures. Taking into account unfamiliarity with a new procedure, and comparing the statistics of results in fully mature and operable cataracts with the percentages above given and in what is admittedly a more difficult and dangerous operation it will be seen that this method does not suffer by comparison. There is another factor in the case and which militates against a proper judgment of the value of a new operation and that is that operators are not content to follow exactly the procedure as laid down by its originator but must try what they think to be improvements, not realizing, perhaps, that what they consider such have been already tried and rejected. If the contention of the originator be correct that the lens capsule is held tense by the reefing lines of the zonula, then only through a large and ample capsulotomy can the capsule roll back fully and allow entrance of the aqueous between capsule and cortex to separate one from the other. The anterior chamber is crescentic in cross section and at the extreme periphery the space diminishes to zero; even with a 2 mm. blade one must press back the lens slightly to begin or end the incision properly. With a blade longer than this an insufficient cut is made and then the wound gapes only and the desired result is not attained. Much depends also on the shape and sharpness of the blade; if too pointed it catches in and may dislocate the lens; this will happen also if it is not superlatively *cutting* sharp clear up to the point. If capsulotomy is properly done no capsule remains in the pupillary area and there can be no use for capsule forceps. Only on the anterior capsule are there nucleated lens fibers; the posterior capsule has no epithelium, and if this portion of the cortex is not affected by the capsulotomy it simply means that there was an insufficient division of the capsule. Experience has convinced me of the advantages of a preliminary capsulotomy as compared with capsulectomy or that immediately preceding the delivery of the lens, when properly performed, and if an interval of six or more hours is allowed to elapse between the capsulotomy and the extraction proper, a separation between capsule and cortex will result and so make immediately operable cataracts in any stage of opacification, and the delivery of the lens, mature or immature, is cleaner and easier than by any other method.

DR. LEE M. FRANCIS, Buffalo: Dr. Jackson in his discussion of Case 2 speaks of "oozing of lymph from Schlemm's canal." I am under the impression that the most recent observers regard Schlemm's canal as a venous and not a lymph channel. Concerning Dr. Bruner's paper: My experience with the Homer Smith method of preliminary capsulotomy covers between twenty and twenty-five cases. I find that one is aided a great deal in making the preliminary capsulotomy by using a +3.00 lens with a 3 D prism base in and getting down close to the eye to introduce the capsulotome. Since adopting this procedure, I have to make my incision with greater precision. I have met with three

complications: First, owing to the swelling of the lens, the production of a very shallow anterior chamber makes the corneal incision rather difficult; second, bulging forward of the iris on the knife so that it is difficult to escape it in making the incision; third, spontaneous expression of the lens by the patient on completion of the corneal incision. In one case this occurred while I was changing my instruments. I have been unfortunate in having to contend with a great deal of remaining debris and I have not been sure that the operation offers any great advantage in this respect, although it is difficult to judge in so small a series.

DR. HAROLD GIFFORD, Omaha: There is a certain amount of misconception as to the position of Dr. Smith with reference to preliminary capsulotomy. From my conversation with colleagues I judge that a number of men believe that Dr. Smith was the first to suggest preliminary capsulotomy for cataract extraction. Of course, it is as old as the hills. About the first ophthalmic article I ever read was one by Steffen of Frankfurt. In it he spoke of doing preliminary capsulotomy as a regular thing with unripe cataracts. But the feature of Smith's operation is the extreme extent of the incisions in the capsule. In this it differs from anything which preceded it. I have tried this procedure, not with Smith's knife, however, but in the cases in which I have tried it the complications have been such that I have not been encouraged to continue it. I met with two forms of complication; one such as was mentioned by Dr. Francis. He did not speak of having glaucoma, but the fact is I got glaucoma within a very short time after the operation; in one case severe pain set in within an hour and the chamber got very shallow, and I had to extract the cataract under adverse circumstances. It is almost the rule to have increased tension and a shallow chamber within twelve hours after the operation. One objection is that if we do as Smith directs, we go to the hospital twice: we go in the morning to do the capsulotomy and in the afternoon to do the operation. If you wait twenty-four hours you are very likely to have glaucoma and must extract at a disadvantage. In one of the cases in which I had this experience the eye was markedly glaucomatous; there was no anterior chamber. I had to enlarge the incision with scissors. I extracted all of the cortex which apparently was opaque, and then after twenty-four hours there was found a large sheet of opaque matter that had been transparent when I made the extraction. This extensive capsulotomy does not always get all of the cortex opaque and ready to come out. My experience, therefore, has convinced me that it is simpler to use the capsule forceps, no matter what the age of the lens, and extract the lens without reference to its maturity or immaturity.

DR. S. D. RISLEY, Philadelphia: I agree with Dr. Jackson as to the feasibility of the removal of cataract by absorption following repeated discissions of the lens prior to middle life in selected cases. The objection to its frequent adoption is not only the danger inherent in frequently repeated operations, but the great inconvenience to both patient and surgeon caused by the prolonged detention in the hospital awaiting the slow absorption of the released cortex in the anterior chamber after each discission. This makes the method particularly prohibitive with private patients living at distant homes, since it is not safe to permit their return to the homes during the intervals between operations. This is true even in the case of very young children with opaque or semi-opaque lenses and is increasingly more aggravating in patients at 40 or 45 years of age. To avoid these difficulties I have devised a procedure which I have employed with increasing satisfaction for ten years or longer in the various forms of cataract in children and young people, and a few times in high myopia. It materially lessens the hospital days and secures better ultimate results and with less danger. The pupil is dilated under cocaine and atropia and a small Hayes-Ziegler knife is inserted at the upper corneal limbus and carried to a point on the lens capsule under the inferior pupillary border; a vertical slit is made in the capsule extending to the pupil border above. In suitable light this is seen to widen into an elliptical opening in the capsule

The knife is then carried to the same point below and a deep cut made in the cortex along the line of incision in the capsule. After twenty-four or forty-eight hours a keratome is entered at the upper corneal limbus and its point carried deeply into the lens at the upper border of the dilated pupil, cutting across the upper end of the capsule incision in the primary operation. The keratome is then slowly, but partially, withdrawn, the point of the knife being pressed backward to cause the wound to gape and to prevent the prolapse of the iris. The opaque and softened cortex is by this procedure allowed to escape over the anterior surface of the blade. The rapidity of its delivery can be controlled by pressure exerted through the fixation forceps below, and the back of the blade above, if too rapid by traction with the forceps and release of pressure above. The intra-ocular tension alone is usually sufficient to expel the cortex and must occasionally be controlled by traction with the forceps.

DR. J. G. DORSEY, Wichita, Kan.: I have a case which illustrates part of the feature that Dr. Jackson emphasizes regarding the swelling of the lens in the anterior chamber. The case was one of traumatic cataract produced in a peculiar manner. While shaking a banner a pin was projected into the eye, producing traumatic cataract. When the patient came in there was considerable swelling of the cortex and the anterior chamber was largely filled with lenticular matter. The eye was considerably inflamed, and although we knew that the pin was not sterile, we thought we would risk it rather than produce more trauma, and take the chances of further irritation. After the absorption of the particularly abundant lenticular matter the case went on for several days, when suddenly the girl complained of shock or pain, nausea, etc., and on looking at the eye I again saw it filled with this same swollen lenticular matter. The lens matter went on to absorption without further trouble. There was no glaucoma. It seemed to be an inflammatory condition. Speaking of the needling preceding a cataract operation, my difficulty in the operation of Dr. Smith has been in making my dissection large enough. I find difficulty in making the cross incision. There was some difficulty with the knife; but the results have been very good in the few cases I have done.

DR. D. C. LOUCHERY, Clarksburg, W. Va.: I should like to report the case of a patient 17 years of age. It was said that the child had lost its sight at 6. I cut across the lens capsule and extracted a remnant of lens. A nucleus was found in the other eye, but I obtained better vision than I could have hoped for in a person ten years or more in that condition. Four weeks ago I saw a man who received a blow across the eye with a bottle three or four days before. He had a traumatic cataract. The lens capsule was ruptured, and the iris was adherent to the cornea in the upper portion. The eye had had no attention whatever. I insisted on his going to the hospital, but he went home, and four days later came back. The lens had poured out and the anterior chamber was filled to the cornea. He had no tension. It is beginning to clear up so that he can see some. I suppose the lens will not absorb completely, but the results are so far most excellent. I do not know what the final result will be.

DR. E. J. BISSEL, Rochester, N. Y.: I have performed the Homer Smith operation eight times. There are two or three factors that I think need to be emphasized. The first is that the section of the capsule should always be made by artificial light. I use a Nernst lamp. I think it is difficult to follow the depth of the incision by daylight. I also use the Beebe binocular loup, which gives sharp detail. The first time I did the operation I had an instrument of the pattern of Dr. Smith's knife, but not made by the firm he suggested, and I found that the taper was not quite right, and lost some aqueous, which makes it difficult to make the second incision—the cross incision; but after getting the instrument just as he suggested I found no difficulty in making the capsule incision under the conditions I have named. I have found difficulty in making the corneal section. In two cases the iris was caught on the knife. It is quite difficult to avoid that if the lens becomes much swollen. I

have done the preliminary capsulotomy in the late afternoon and the extraction in the morning, and in only one case has there been any increase in tension. This patient developed pain in the night, and in the morning there was a severe glaucomatous condition. The final result was very satisfactory. The results in all cases have been good as regards vision. I have done the operation less often recently. There is great danger in cutting into the lens substance too deeply and getting too much swelling of the lens.

DR. CLARK W. HAWLEY, Chicago: About twenty years ago I reported several cases in which I did the same operation in a different manner—I made the incision horizontally instead of vertically, extending it clear across the capsule. I used a knife which I inserted to its full size, then withdrew it partly, and gently lifted the cornea and all the cortex will come out that has been softened. I learned this method from an accident in the Chicago Shipbuilding Company's yards at Chicago. In one case the entrance of a piece of steel into the eye cut the capsule clear across and the anterior chamber was filled with lens-matter. I have since used this knife and this method and have had such good success that I have used it in all cases.

DR. MARY BUCHANAN, Philadelphia: I have employed the Homer Smith method in twenty cases. In nineteen I used his own knife, in the other case the Ziegler knife, but found that it was not so satisfactory. I had to go in and assist the lens out, which I never do with the Homer Smith knife. We have had two cases in which there was marked rise of tension. In one, the man came from the country and was in a hurry to get home; so against my advice my assistant did not do a preliminary iridectomy, as the pupil would not dilate. By the next day there was a hard eyeball. An iridectomy was immediately performed but the next day the tension was just as high as the day before. We extracted the lens without accident and the man made a good recovery. I saw him on my way to the meeting and he had $\frac{5}{8}$ vision in that eye. In the other case I did a preliminary capsulotomy at 4 p. m. and the extraction at 5 a. m. the next day, having been called up on account of the patient's pain in the night. Since adopting the six hour interval between capsulotomy and extraction no glaucoma has resulted. There is often a lot of cortex that looks gray in the pupil one or two days after the operation; but if the capsulotomy has been done as extensively as Smith advises, the aqueous humor takes care of the cortex. I think out of the twenty cases I had to do a slight secondary operation once or twice, but there was only a little shred of membrane across the pupil and there was no difficulty at all in doing it.

DR. G. C. SAVAGE, Nashville, Tenn.: I have done the Homer Smith operation quite a number of times. I have not followed exactly the directions of Dr. Smith. I do not believe it is necessary to make the capsulotomy twenty-four hours before the extraction. What is the purpose of the capsulotomy? Not that the lens may be ripened and made cloudy especially, but it is that the aqueous humor may get into the layers of the lens fibers in contact with the capsule both before and behind. Through the opening the aqueous humor has little trouble passing within the capsule and going entirely around the lens substance, loosening the contact. I do the capsulotomy early in the morning, say about 8 or 9 o'clock, and then about six or eight hours later I extract the lens, with wonderful ease. I have never done the Smith operation with anything ugly following, chargeable to the operation itself. Every case except one has resulted splendidly, and the bad result in that one case was from a purulent inflammation which I am sure was due to autoinfection, which developed about thirty-six hours after the extraction. I believe the safest operation for cataract, everything considered, whether in or out of the capsule, is the Homer Smith operation, and I know it is the easiest operation of all of them. The capsulotomy done early in the morning and the extraction late in the afternoon has not given time for the lens to swell to any great extent. It has never swollen to a sufficient extent to interfere with the corneal incision as I do the operation. I believe that, in senile cataract, it would be better to divide the operation into two stages. These

stages ought to be as close together as possible; and the only reason that there should be any time intervening is that there may be escape of aqueous through the puncture wound you have made in making a good capsulotomy, making the anterior chamber so shallow as to make the corneal incision very difficult, without waiting for the chamber to refill. A capsulotomy can be better made when there has been no incision in the cornea. When this is done freely—whether with the Ziegler, the Knapp or the Smith instrument—as Smith directs, the capsule will open widely. If, on withdrawing the instrument in a senile case, the aqueous does not escape we can go ahead and take the lens out without trouble. I believe if we would do the capsulotomy before making the corneal incision, we could more often do a simple extraction of the cataract in a more perfect sort of a way. After the capsule has been opened, while you have the eyeball fixed in its position, if the pupil is sufficiently open you may take the spatula and make pressure on the eye below, completing the operation in almost half the time that must elapse if we make the incision, then the capsulotomy and then the extraction. I am going to do the Homer Smith operation until the Hulen operation has been so perfected that there will be no necessity for leaving any capsule in the eye at all. The large opening in the anterior capsule after the Smith method must greatly lessen the necessity for secondary operations.

DR. EDWARD JACKSON, Denver: In reference to Schlemm's canal, some one within the last year published the result of his investigation, reaching the conclusion that it is a lymph space. I think perhaps the most important evidence on the matter is that developed by Salzmann by ophthalmoscopy of the angle of the anterior chamber. In his last paper on the subject he figures a line parallel to the periphery of the anterior chamber which he takes to be caused by Schlemm's canal, rather darker than the sclera, and varying as to how much darker. In only two cases has it shown any pink color. He believes that at times some blood may be mixed with the lymph, but generally it is simply a gray line, in contrast with the white sclera. I have seen it. With reference to the residence of the patient, of course discussion is only applicable for patients who can come again and again, without having to travel very far and without serious inconvenience. The cases I reported have all been treated outside the hospital. They were not confined to the house at any time, except in one case. The girl who suffered the most severe reaction, without rise of tension, and with symptoms of shock, and who has an abnormal eye, a congenital defect, was the only one seen outside the office. One patient lived in a city nearly 100 miles away, and came to Denver for the operation, remaining two or three days—Saturday to Monday. She had a rather important position. I think at one time she was in Denver perhaps ten days, although at that time the reaction was over in two or three days. Of course, the procedure is only applicable to those patients who can be kept under observation. The early development of the nucleus I think is to be rather expected with an early development that runs very much the course of senile cataract. Three of these cases were of that character. They developed probably after some uveal disease, but without any iritic adhesions and without any evidence of active disease for several years. None of them showed evidence of active uveal disease from the time the cataracts began to obscure the fundus, up to the time the view was cleared up, and I think none showed any extensive changes in the choroid since the cataract was cleared up. All of the nucleus, even if well developed, can and will be absorbed if time is given after sufficient needling. The point I would like to emphasize about the operation is that it is the size of the opening in the capsule that determines the danger of swelling, and of the lens material flowing into the anterior chamber, where it will cause either a rise of tension, or severe reaction without rise of tension, and the symptoms which we wish to avoid. The penetration of the nucleus is not followed by any particular reaction. If the nucleus is cut into pieces and fragments fall into the anterior chamber, you are practically certain to have reaction. But if the nucleus is punctured, even clear to the center of the nucleus, at the first puncture, it does not add to the reaction

that occurs, provided you have a small opening in the capsule. It is an established point that it is safer to cut freely an opaque lens than a transparent lens, as regards danger from subsequent swelling.

DR. W. E. BRUNER, Cleveland: I should have stated that I use homatropin before doing the preliminary capsulotomy, so as to get as large an opening in the capsule as possible. I make the puncture as Dr. Jackson does, through the corneal limbus. In my experience I have been surprised at the small amount of reaction that followed. I have done the capsulotomy in the morning, prepared to do the extraction of the lens later in the day if necessary.

RETINAL DETACHMENT IN HYDROPTHALMIA *

ARNOLD KNAPP, M.D.

NEW YORK

It is surely striking that patients with congenital glaucoma apparently disappear from view after a certain length of time; for it is very unusual to find persons with this disease in middle life, though there are some reports of cases in which the process has been spontaneously arrested and some sight retained. That these enlarged eyeballs are extremely susceptible to injury is natural, and unquestionably most of these eyes are enucleated after rupture following often a trivial injury. It is even reported that this rupture can occur spontaneously. Furthermore, the ectatic cornea in these glaucomatous eyes becomes easily infected and stands infection badly, so that a number of the eyes are probably lost from this cause.

I have had an opportunity of observing clinically a case of hydrophthalmia in which a detachment of the retina occurred spontaneously, and the eye then went on to phthisis bulbi. As this outcome is not mentioned in the textbooks, I deem it worthy of report.

The patient, F. B., aged 11, was brought to the Herman Knapp Memorial Eye Hospital, Nov. 28, 1914, with the statement that both eyeballs were enlarged from birth and that the right eye was injured by a blow four years ago and subsequently removed. The left eye was enormously enlarged with all the characteristics of hydrophthalmia. The cornea measured 16 mm. The vision was $\frac{5}{200}$. With the tonometer the tension was slightly over 30, and after the use of pilocarpin it was reduced to 27. As the tension could be controlled with pilocarpin, and on account of the extreme ectatic condition of the eyeball, an operation seemed inadvisable, though it had been proposed at one of the other eye hospitals. The patient was brought to us from time to time with practically no change in the condition, and with tension averaging 25, until March 19, 1915, when the eye was found to be unusually soft, and the vision greatly reduced. The field was contracted to a small area around the point of fixation, in which the patient was still able to count fingers directly in front of the eye. With the ophthalmoscope a distinct detachment of the retina could be made out, of the usual color without any evidences of a hemorrhage. The pilocarpin was stopped and atropin was ordered. The eye remained soft, and gradually became smaller and blind. Nov. 6, 1915, the eye was shrunken, and a cataract had developed to which the iris was adherent. There was no light perception.

Axenfeld¹ has reported a case which is similar to this, in which a detachment was discovered by the ophthalmoscope before phthisis set in. Axenfeld

* Read before the Section on Ophthalmology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Axenfeld: Ueber das Vorkommen von Netzhautablösung beim Hydrophthalmos, *Klin. Med. f. Augenh.*, 1903, xli.

states that his is the first case in the literature in which this occurrence has been observed. Cases in which a gradual shrinkage and phthisis bulbi have occurred in hydrophthalmic eyes have been reported, though it had not been possible to determine the cause.

In finding a possible explanation, it is well to consider what becomes of glaucomatous eyes in general. Many of these remain hard, undergoing the well known degenerative changes. Others develop ectasias of the sclera and finally, according to Fuchs,² the termination of all glaucomas is a shrinkage of the eyeball which occurs after the eye has been hard for many years. Operations on eyes which have been in a state of increased tension for a long time frequently show a fluid vitreous, as is sometimes demonstrated during operation on these eyes.

It seems to me reasonable to assume, therefore, that in cases of hydrophthalmia the vitreous degenerates in the advanced stages of the glaucomatous process, and at a certain point or stage of degeneration conditions are present, sufficient to overcome the natural tendency of a glaucomatous eye against detachment, which produce a change from increased to decreased tension and a detachment of the retina.

The possibility of a spontaneous detachment of the retina should be considered before deciding to operate on advanced cases of hydrophthalmia.

10 East Fifty-Fourth Street.

ABSTRACT OF DISCUSSION

DR. DON M. CAMPBELL, Detroit: I find little to discuss on the subject of detachment of the retina—hydrophthalmia. Very few cases are reported and none in the textbooks. There does not seem, however, to be any reason why we should not have detachment of the retina in the hydrophthalmic eye, except for the increased intra-ocular tension which would keep the retina closely applied to the underlying tissue. Dr. Knapp states that the possible detachment of the retina is bound up with the fluid vitreous and the change from the hard to the soft eye. It has occurred to me that the cause of the change of the eye from hard to soft may be the cause really of the detachment of the retina and also of the decreased tension. We can, I believe, only judge of this subject from analogy. There is no pathologic material, so far as I have been able to find, to cover the explanation of the passage of a hard eye to a soft one; but we do know that in these cases of buphthalmos or hydrophthalmos certain changes take place in the anterior segment of the eyeball which may take place in the posterior segment and may serve to explain the softening and detachment. We know that in anterior staphyloma the choroid and sclera gradually become thinner; that eventually at areas in the anterior staphyloma the sclera breaks through and disappears entirely. In a similar way we may have the same thing take place in the posterior part of the eyeball, although we have no observations of an anatomic character to bear that out. There is an analogous condition in the ciliary region in buphthalmos, a separation of the iris from the ciliary region, a condition which Fuchs refers to as a spontaneous dialysis. There is also in the cornea of buphthalmic eyes a certain anatomic condition which has been observed that offers another explanation of the possibility of a detachment of the retina. It has been found that in hydrophthalmic corneas there is a rupture of Descemet's membrane, therefore it is not at all unlikely that the retina, which is more delicate than the elastic membrane of the cornea, might also be the seat of minute ruptures from its distention. We have, then, these two possibilities resulting from analogy: There is a partial rupture of the sclera posteriorly, overlaid by a retina which has undergone minute rupture also, and when we add to those

the fluid vitreous, it is not a great flight of imagination to conceive at least that the fluid vitreous might find its way through the retinal tents and produce detachment in these hydrophthalmic eyes. It seems that a possible explanation of this spontaneous detachment would be along the lines, first, of a fluid vitreous; second, rupture of the sclera, or a sclera very much weakened behind the retina; and third, the slight ruptures which might occur in the retinal tissue from its extreme distention in these highly distended eyeballs. This is purely theoretical and cannot at the present time be substantiated by anatomic research. At the same time it does not seem to be an unusual explanation. Of course, there are comparatively few buphthalmic eyes in that condition long enough to be observed. The cornea on the lens become more or less hazy and we cannot observe the interior of the eye.

DR. T. B. HOLLOWAY, Philadelphia: Dr. Knapp's case well illustrates the contentions of Axenfeld, who believes that retinal detachment is often the determining factor in the production of blindness in cases of buphthalmos. Axenfeld has emphasized this point, and further states that the detachment is promptly followed by reduction in the ocular tension. In speaking of spontaneous cure in these cases, he believes this may be in certain instances hereditary. At the Overbrook School for the Blind I have under observation at the present time eight children who have been affected with buphthalmos, and some of these have been under observation for five or six years. The first case, which I think is probably the only one, had a retinal detachment. The patient was first seen in 1909, and in 1911 the detachment was observed. The difficulties in studying these advanced cases of buphthalmos will be appreciated when we recall the searching movements, so frequently present, the changes that develop in the cornea as the result of ruptures in Descemet's membrane, the development of cataractous changes, and possibly diffuse opacification of the cornea. In the cases at Overbrook School, several show marked decrease in tension in one or both eyes, and I can recall instances where the eye when first observed had increased tension, and then gradual and progressive decrease in tension developed with gradual atrophy of the eye.

A CASE OF CEREBROSPINAL SYPHILIS ASSOCIATED WITH PNEUMOCOCCIC MENINGITIS

E. M. HAMMES, M.D., ST. PAUL

Marked advances in the diagnosis of organic nervous diseases have been made in the past few years. This is in a great measure due to the careful and frequent studies of the spinal fluid in our obscure neurologic cases. The importance of Nonne's four tests, to which may be added a fifth, Lange's colloidal gold test, are demonstrated in the following case. The combination of cerebrospinal syphilis with pneumococcic meningitis seemed of sufficient interest for publication.

A woman, aged 21, single, domestic, with negative family and personal history, except for an appendectomy in 1911, stated that about two years ago she had a sore on her hand, which the doctor pronounced a gonorrheal infection. Syphilis was denied. The present complaint began about Jan. 10, 1915, when the patient developed an abscess on her right thumb which was very painful. This continued to suppurate slightly for one week, and January 17 the abscess was lanced and drained. The evening previous, the patient developed severe headaches and shortly afterward had a general convulsion. She had another one, January 18, and her headaches since then have been mostly frontal and bilateral.

I first saw her January 19, when she complained of severe frontal headaches, and appeared somewhat drowsy and confused. The physical and neurologic examination at this time were negative, except for an abscess on the right thumb which was draining freely. The temperature was around 100 F. for two days, and then gradually became normal and has remained so. The pulse varied between 75 and 100. Leukocytosis was 12,200; blood pressure 122 mm. Hg; urine normal.

2. Fuchs: Lehrbuch der Augenheilkunde, Ed. 10, p. 445.

A diagnosis of metastatic involvement of the brain following the infection of the thumb was suggested.

During the night of January 19 she had ten major convulsions, and in the forenoon of January 20, she had at least twenty more, and it seemed as if she would pass into a status epilepticus. These convulsions were jacksonian in character, beginning with spasms of the left face, while the eyes were rotated to the left and upward. The spasm soon involved the left arm and leg, after which it became generalized. In an interval between convulsions, January 20, we performed a lumbar puncture and drew off about 8 c.c. of clear spinal fluid under pressure. This gave positive Nonne and Noguchi tests, a lymphocytosis of 12 per cubic millimeter, and a positive Wassermann. The colloidal gold curve was suggestive of cerebrospinal syphilis. The Wassermann in the blood was also positive. The neurologic examination at this time gave a bilateral Babinski and a mild optic neuritis, more marked on the right side. The Babinski on the left side disappeared, but on the right side was still present one week later. All the other neurologic findings were negative. A diagnosis of cerebrospinal syphilis was made. The patient was given six intravenous injections of 0.9 gm. neo-salvarsan each, at intervals of ten days, and made a clinical recovery. The Wassermann tests in the blood and spinal fluid were still positive. One month later I again saw her, when she had developed an apparently similar condition to the previous one.

Her sister gave the following history: Since leaving the hospital, she has been perfectly well until two days ago, when she complained of nausea and headache. Soon after she had a chill, and the following day had a convulsion and became unconscious. At the time of the examination, she was semiconscious, and had all the manifestations of an acute meningitis. There was a rigid neck, Kernig sign, and increased reflexes. The temperature was 103 F., pulse 120, respiration 35. Aside from a lobar pneumonia of the left lower lobe, the physical examination was negative. A lumbar puncture was performed, the spinal fluid was turbid, loaded with leukocytes and the *Diplococcus pneumoniae*; the globulin test was strongly positive. The colloidal gold test showed a discolorization in the last five tubes, such as we get in suppurative meningitis. The condition gradually grew worse and the patient passed into a state of coma and died. Postmortem examination was not permitted.

The interesting feature of the case to me was the change in the colloidal gold curve in relation to the nervous syphilis and the pneumococcic meningitis. During the acute phase of the cerebrospinal syphilis, the colloidal gold curve was 1124300000. During the pneumococcic meningitis the curve was 1121134421. I regret that we neglected to make a Wassermann test of the last spinal fluid examined.

1019 Lowry Building.

The Civilian in Army Practice.—People sometimes imagine that a practicing physician can be transformed into an army surgeon merely by putting a uniform on him. I was not lacking in ordinary intelligence and was willing to work, but I was utterly without training. To get two churches ready as hospitals I had to have beds, mattresses, sheets, pillow-cases, chairs, tables, kitchen utensils, knives, forks, spoons, peppers and salts, all sorts of crockery and other necessities for a dining room, all the drugs, appliances and instruments needed for 200 sick and wounded men; I needed orderlies, cooks and the endless odds and ends of things which go to make up a well organized hospital. I did not know how to get a single one of these requisites. As to drugs, I did not know whether to order 6 ounces or a gallon of laudanum, an ounce or two or a pound or two of opium, and I was in utter darkness as to the mode of getting any of the other things from a teaspoon to a cook. However, I inquired and as soon as I learned how, I set myself to work. For two nights I slept only about three hours each, and I had the satisfaction of reporting to Dr. Letterman at the end of three days, instead of five, that I was ready. On the fourth day I had 100 wounded men in each hospital.—W. W. Keen, *Addresses and Other Papers*, 1905.

Therapeutics

BLOOD PRESSURE

(Continued from page 203)

VENOUS PRESSURE

The venous pressure, after a long neglect, is now again being studied, and its determination is urged as of diagnostic and prognostic significance.

Hooker¹⁰ says there is a progressive rise of venous pressure from youth to old age. He has described an apparatus¹¹ which allows of the reading of the blood pressure in a vein of the hand when the arm is at absolute rest, and best with the patient in bed and reclining at an angle of 45 degrees. He finds that just before death there is a rapid rise in venous pressure, or a continuously high pressure above the 20 cm. of water level, and he believes that a venous pressure continuously above this 20 cm. of water limit which is not lowered by digitalis or other means is serious; and that the heart cannot long stand such a condition. These dangerous rises in venous pressure are generally coincident with a fall of systolic arterial pressure, although there may be no constant relation between the two. He also finds that with an increase of venous pressure the urinary output decreases. This, of course, shows venous stasis in the kidneys as well as a probable lowering of arterial pressure.

Clark¹² did not find that venesection prevented a subsequent rapid rise in venous pressure in dire cases. From his investigations he concludes that a venous pressure of 20 cm. of water is a danger limit between compensation and decompensation of the heart, and a rise above this point will precede the clinical signs of decompensation.

Hooker also found that there are daily variations of venous pressure from 10 to 20 cm. of water, with an average of 15 cm., while in sleep it falls 7 or 8 cm.

It seems probable that there may be a special nervous mechanism of the veins which may increase the blood pressure in them as epinephrin solution may cause some constriction.

Wiggers¹³ describes a method of taking and interpreting the supraclavicular venous pulse. He also¹⁴ carefully describes the readings and the different phases of normal arterial pulse, and urges that it should be remembered that "the pulse as palpated or recorded from any artery is the variation in the arterial volume produced by the intra-arterial pressure change at that point."

A quick method of estimating the venous pressure by lowering and raising the arm has long been utilized. The dilatation of the veins of the back of the hand when the hand is raised should disappear, and they should practically collapse, in normal conditions, when the hand is at the level of the apex of the heart. When the venous pressure is increased, this collapse will not occur until the hand is above the level of the heart. Oliver¹⁵ found that the venous pressure denoted by the collapse of the veins may be shown approximately in millimeters of mercury by multiplying by 2 each inch above the level of the heart in which the veins collapse. When a normal person reclines after standing

10. Hooker: *Am. Jour. Physiol.*, March, 1916.

11. Hooker: *Am. Jour. Physiol.*, 1914, xxxv, 73.

12. Clark, A. D.: A Study of the Diagnostic and Prognostic Significance of Venous Pressure Observations in Cardiac Disease, *Arch. Int. Med.*, October, 1915, p. 587.

13. Wiggers, C. J.: The Supraclavicular Venous Pulse in Man, *THE JOURNAL A. M. A.*, May 1, 1915, p. 1485.

14. Wiggers, C. J.: The Contour of the Normal Arterial Pulse, *THE JOURNAL A. M. A.*, April 24, 1915, p. 1380.

15. Oliver: *Quart. Med. Jour.*, 1907, i, 59.

there is a fall in venous pressure, and when he again stands erect there is an increase in venous pressure.

Bailey¹⁶ states that in interpreting pulsation in the peripheral veins, it should not be forgotten that they may overlie pulsating arteries. Pulsation in veins may be due also to an aneurysmal dilatation, or to direct connection with an artery. As the etiology in many instances of varicose veins is uncertain, he thinks that they may be caused by incompetence of the right heart, more or less temporary perhaps, from muscular exertion. This incompetence being frequently repeated, peripheral veins may dilate. Moreover, the contraction of the right heart may cause a wave in the veins of the extremities, and he believes that incompetency of the tricuspid valve may be the cause of varicosities in the veins of the extremities.

NORMAL BLOOD PRESSURE FOR ADULTS

Woley,¹⁷ after studying the blood pressure in a thousand persons, found that the systolic average for males at all ages was 127.5 mm., while that for females at all ages was 120 mm. He found the average in persons from 15 to 30 years to be 122 systolic; from 30 to 40, 127 mm., and from the ages of 40 to 50, to be 130 mm.

Lee¹⁸ examined 662 young men at the average age of 18, and found that the average systolic blood pressure was 120 mm., and the average diastolic 80 mm. Eighty-five of these young men, however, had a systolic pressure of over 140. It is not unusual to find that a young man who is very athletic has an abnormally high systolic pressure.

Barach and Marks,¹⁹ in a series of 656 healthy young men, found that the systolic pressure was above 150 in only 10 per cent., and that in 338 cases the diastolic pressure, read at the fifth phase, did not exceed 100 mm. in 96 per cent.

Nicholson²⁰ believes that with a low systolic pressure and a large pressure pulse there is probably a strong heart and dilated blood vessels, while with a low systolic pressure and a small pressure pulse the heart itself is weak, with also, perhaps, dilated blood vessels. If there is a high systolic pressure and a correspondingly high diastolic pressure, the balance between the vessels and the heart is compensated as long as the heart muscle is sufficient. He believes the velocity of the blood in the blood stream may be roughly estimated as being equal to the pressure pulse multiplied by the pulse rate.

Faber²¹ examined 211 obese patients, and in 182 of these there was no kidney or vascular disturbance. In 52 per cent. of these 211 persons the systolic pressure was under 140, while in the remaining 48 per cent. it ranged from 145 to 200 mm.

BLOOD PRESSURE IN CHILDREN

May Michael,²² after a study of the blood pressure in 350 children, came to the conclusion that the blood pressure in children increases with age principally because of the increase in height and weight, as she found that children of the same age but of different weights and heights had different blood pressures.

Sex in children makes no difference in the blood pressure, it being determined by the height and weight.

Judson and Nicholson²³ made 2,300 observations in children of from 3 to 15 years of age, and found there was a gradual increase in the systolic blood pressure from 3 to 10 years, and a more rapid rise from 10 to 14, with a rapid elevation during the fourteenth year, or the age of puberty. The systolic pressure varied from 91 mm. in the fourth year to 105.5 in the fourteenth year, while the diastolic pressure remained almost at a uniform level. The pressure pulse, therefore, increased progressively with the increase of the systolic pressure.

BLOOD PRESSURE AND INSURANCE

An epitome of the consensus of opinion of the risk of accepting persons for insurance as modified by the blood pressure is presented by Quackenbos.²⁴ Some companies have ruled that at the age of 20 they will take a person with a systolic pressure up to 137; at the age of 30 up to 140; at the age of 40 up to 144; at 50 up to 148, and at 60 up to 153, although some companies will not accept a person who shows a persistent systolic pressure of 150. Quackenbos says that when persons with higher blood pressures than the foregoing have been kept under observation for some time, they sooner or later show albumin and casts in the urine. In other words, this stage of higher blood pressure is too frequently followed by cardiovascular-renal disease for insurance companies to accept the risk.

On the other hand, too low a systolic pressure in an adult, 105 mm. or below, should cause suspicion of some serious condition, the most frequent being a latent or quiescent tuberculosis. Such low pressure certainly shows decreased power of resistance to any acute disease.

Statistics prove that there are more deaths between the ages of 40 and 50 from cardiovascular-renal disease, that is, from heart, arterial and kidney degenerations, than formerly. Whether this is due to the high tension at which we all live, or to the fact that more children are saved and live to middle life, or whether the prevention of many infectious diseases saves deficient individuals for this middle life period, has not been determined. Probably all are factors in bringing about these statistics.

While the continued use of alcohol may not cause arteriosclerosis directly, it can cause such impaired digestion of foods in the stomach and intestine, and such impaired activity of the glands, especially the liver, that toxins from imperfect digestion and from waste products are more readily produced and absorbed, and these are believed by some directly or indirectly to cause cardiovascular-renal disease. Hence alcohol is an important factor in causing the death of persons from 40 to 50 years of age.

The question of whether or not a person smokes too much, and what constitutes oversmoking, will soon be asked on all insurance blanks. As tobacco almost invariably raises the blood pressure, and when the blood pressure again falls there is again a craving in the man for the narcotic, it must be a factor in producing, later in life, cardiovascular-renal disease. Hence an increased systolic blood pressure must be in part interpreted by the amount of tobacco that the person uses.

(To be continued)

16. Bailey: *Am. Jour. Med. Sc.*, May, 1911, p. 709.
17. Woley, H. P.: *The Normal Variation of the Systolic Blood Pressure*, *THE JOURNAL A. M. A.*, July 9, 1910, p. 121.
18. Lee: *Boston Med. and Surg. Jour.*, Oct. 7, 1915.
19. Barach, J. H., and Marks, W. L.: *Blood Pressures: Their Relation to Each Other and to Physical Efficiency*, *Arch. Int. Med.*, April, 1914, p. 648.
20. Nicholson: *Am. Jour. Med. Sc.*, April, 1914, p. 514.
21. Faber: *Ugeskrift f. Læger*, June 10, 1915.
22. Michael, May: *A Study of Blood Pressure in Normal Children*, *Am. Jour. Dis. Child.*, April, 1911, p. 272.

23. Judson, C. F., and Nicholson, Percival: *Blood Pressure in Normal Children*, *Am. Jour. Dis. Child.*, October, 1914, p. 257.
24. Quackenbos: *New York Med. Jour.*, May 15, 1915, p. 999.

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SATURDAY, JULY 29, 1916

THE QUESTION OF PROTECTIVE ENZYMES IN THE BLOOD

Not long ago, in a review of certain features of the so-called Abderhalden reaction, attention was directed to the accumulating evidence of its nonspecificity.¹ The original claims made for the reaction have given rise to extensive series of investigations on the proteolytic enzymes of blood. The fundamental question is whether protein-splitting capacities develop in the blood in response to the introduction of foreign protein so that the serum will cause digestion when it is allowed to act on the protein injected. Much of the controversy has centered in the efficiency of the experimental technic employed. For this reason nearly all recent investigators in this domain have attempted to apply methods which will be reasonably devoid of sources of error and free from the bias of personal judgment.

At the University of Pennsylvania, Hulton² has lately tested the response of rabbits to a number of well-characterized isolated proteins, including protamin, casein, Bence-Jones protein, phaseolin, edestin, gliadin, soy bean globulin and lactalbumin. The results show plainly in all cases, to quote the investigator, that under the conditions of the experiment there is practically no digestion with the blood of the injected animal in excess of that which takes place with the serum of the normal control animal. The greatest amount of digestion takes place in the case of the Bence-Jones protein and milk albumin, which would naturally be expected, as these two proteins are more nearly related to mammalian proteins. It is further stated that the results would also lead one to suppose that the blood of the rabbit possesses to a slight degree proteolytic activity, but that this activity toward a particular protein is not increased by injecting the animal with that protein. The criticism might be offered that these proteins are too foreign; but if the reaction must be discriminated on the basis of the protein being just

foreign enough, it would seem that the possibility of usefulness becomes remote.

There is at present no reason for believing that the normal hydrolysis of the protein of the body occurs in the circulating blood. Metabolic changes of the sort postulated presumably belong to the tissue cells. Hulton offers a new view for consideration. It is easily possible, she says, to imagine introduced foreign protein being taken into the body cells and hydrolyzed there, without any reaction appearing in the circulating plasma. It may be shown that foreign protein introduced into the venous blood may be taken up by the tissues. In like manner, it might be imagined that the placental cells entering the maternal circulation would be held and hydrolyzed within the tissues, and leave no trace of any enzymic or other activity in the circulating plasma. In theory, therefore, one must separate the question of hydrolysis of foreign proteins from the question of the reaction of the maternal body to placental cells. It is entirely possible that there is a specific reaction of the host to placental cells or to neoplasms, without this being a hydrolysis of their proteins in the circulating blood dependent on the presence there of enzymic activity. This hypothesis leads us far away from the original contention on the basis of which the investigations of protective ferments have heretofore been planned.

NEW STUDIES OF EXOPHTHALMIC GOITER

The confusion which exists in respect to the treatment of exophthalmic goiter is indicated by the remark¹ that men trained to think surgically are apt to regard exophthalmic goiter altogether too much from a surgical standpoint, and internists from the standpoint of internal medicine, while men who have had much experience are liable to follow the method of treatment with which they have been most successful in the past, without due regard to whether or not the present case fits into the frame of the former cases. Physicians will therefore agree with Du Bois² that "there is a great need of some purely objective test in hyperthyroidism to indicate the effect of treatment, since psychotherapy can modify profoundly all subjective symptoms. At present the scientific status of the treatment of exophthalmic goiter is about at the point where we would be with diabetes if there were no laboratory tests for glucose and the acetone bodies."

What shall be the index to the severity and course of the disease? The rapidity of the heart, characteristic as it may be, is not a symptom confined to one disease; and a heart may be damaged beyond repair while other symptoms subside. The thyroid gives uncertain and variable objective manifestations in

1. The Specificity and Utility of the Abderhalden Reaction, editorial, THE JOURNAL A. M. A., April 8, 1916, p. 1117.

2. Hulton, Florence: The Formation of Specific Proteoclastic Ferments in Response to the Parenteral Injection of Foreign Proteins, Jour. Biol. Chem., 1916, xxv, 163.

1. Handbook of Therapy, Chicago, the American Medical Association, 1915, p. 362.

2. Du Bois, E. F.: Clinical Calorimetry, Fourteenth Paper, Metabolism in Exophthalmic Goiter, Arch. Int. Med., June, 1916, p. 915.

exophthalmic goiter. Other pathologic manifestations are present, but often are inconstant or unspecific. The picture of disease presented by the syndrome of effects is a help to the clinician, yet it has an element of extreme uncertainty when one desires to establish unmistakably either progress or decline. Clinical calorimetry, to which extended reference was made last week,³ has demonstrated new possibilities of prognosis. To those who are accustomed to think in terms of the energy requirement, says Du Bois,² exophthalmic goiter stands out *par excellence* as the disease of increased metabolism, and the increased metabolism stands out as the chief symptom of hyperthyroidism. The determination of the heat production seems to afford the best index of the severity and course of the disease. An increased basal metabolism is found with great regularity in exophthalmic goiter, and in severe cases reaches a level found in no other condition. On the other hand, in cretinism and myxedema the metabolism is lower than in any other disease. The administration of thyroid extract, particularly in myxedema, raises the heat production. All other diseases in which metabolism is increased are easily distinguishable from exophthalmic goiter, and they never approach the extremes found in this condition. The basal metabolism is higher than normal in youth, in fever, in lymphatic leukemia and pernicious anemia, in severe cardiac disease, and in some cases of severe diabetes and cancer. It is lower than normal in old age, in some wasting diseases, and perhaps in some cases of obesity. Diseases of the ductless glands other than the thyroid show in some cases an increase, in some a decrease; but these are comparatively small.

From the standpoint just discussed, the measurements made by Du Bois with the Sage calorimeter are highly significant. They throw light on some of the theories held in regard to the etiology of exophthalmic goiter. Very severe cases show an increase of 75 per cent. or more above the normal average, severe cases 50 per cent. or more, and moderately severe and mild cases less than 50 per cent., while a few mild and several atypical cases, or cases in which operation has been performed, may be within normal limits. In severe cases the warmth of the skin and sweating can be accounted for entirely by the necessity for the increased elimination of heat. At least a part of the tachycardia is due to the increased metabolism, and perhaps it might be possible to reproduce the extreme tachycardia, the cardiac enlargement, emaciation and mental irritability if we were able to stimulate the metabolism of normal men for twenty-four hours a day over a period of months or years. The specific dynamic action of protein and of glucose is within normal limits, and there is no consistent difference between the effects of protein in meat and an equal

amount in milk and eggs. One patient was able to derive 89 per cent. of his calories from carbohydrate in an experiment when he was showing an alimentary glycosuria. There is evidently no interference with the oxidation of carbohydrates.

Using the level of the heat production ascertained by clinical calorimetry as an index of the effect of medical treatment, Du Bois and his colleagues conclude that there is as yet no proof that any conservative form of treatment causes a greater reduction of metabolism than mental and physical rest. Ligation of the thyroid arteries with three out of the four patients studied caused a distinct rise in metabolism, the duration of which was uncertain. On the other hand, rest in bed for a week or more caused a drop of more than 10 per cent.

Many physicians of large experience will heartily agree with Du Bois that in the treatment of hyperthyroidism, "calorimeters and other forms of respiratory apparatus seem to be therapeutic nihilists." Mental and physical rest, he contends, is the surest means of securing the drop in the metabolism which indicates a diminution in the pernicious activity of the thyroid. Psychotherapy is of some value, and this combined with rest may account entirely for the improvement following most of the so-called medical cures. It is quite possible that some of the numerous current or now discarded procedures control some of the minor symptoms of the disease or render the major symptoms less apparent to the patient and his physician. We cannot consider the patient to be anywhere near a cure until the metabolism has approached the normal. We cannot consider a therapeutic agent to be curative unless it causes the metabolism to approach the normal more quickly than the tendency toward spontaneous improvement aided by mental and physical rest.

The new studies of Du Bois ought to make it sufficiently clear, furthermore, that patients with exophthalmic goiter need large amounts of food. In general he finds that they require from one and a half times to twice as much food as a normal person under similar circumstances. The severity of the case and the degree of muscular activity must obviously be taken into consideration. Unless food of high caloric value is given in large amounts, losses of body fat and protein may occur.

In contrast with these effects of what we may tentatively speak of as hyperthyroidism, the conditions pertaining in hypothyroidism as exemplified in cretinism are equally striking. One small cretin 36 years old produced about half the calories eliminated by children of his size. As estimated by the surface area, his metabolism was about 20 per cent. below the normal adult level. Three and a half days of treatment with thyroid extract raised his heat production to normal.

3. Clinical Calorimetry, editorial, THE JOURNAL A. M. A., July 22, 1916, p. 286.

DEATH RATES OF CITIES

The comparison of the crude death rates of cities for the purpose of determining relative "healthfulness" has long been a favorite pastime for some newspaper writers, and even, it must be said, in some municipal health departments. The complexity of the problem and the multiplicity of the factors involved, however, have deterred professional statisticians from attaching much importance to such comparisons. The principal objection to the use of crude death rates—the annual number of deaths per thousand population—as a measure of healthfulness is that it takes no account of the age and sex distribution of the population. Since the proportion of the sexes and of the population of each age group varies considerably in different places, and since the death rate in each group is different, it is plain that crude death rates may give quite misleading information as to actual conditions. Two communities having identical death rates in each age group may have crude death rates widely apart if, for example, in one of the communities there is a marked preponderance of one age group, say the group from 15 to 24 years, in which the mortality is low. An interesting attempt to meet this difficulty has been made by analyzing the vital statistics of certain American cities and comparing the death rates from specific causes, such as infant mortality, tuberculosis and typhoid fever.¹

Great differences are found among the fourteen cities chosen for comparison. As might be expected, the rating in "healthfulness" differs according to whether the crude death rate or the "standardized" death rate corrected with reference to the age and sex distribution of the population is used. Thus Los Angeles, which ranks fifth in the list based on crude death rates, jumps to second place (next to the lowest death rate) when considered in the order of the standardized death rates. There are even greater differences in the order of the cities when arranged according to death rates from specific causes. On the basis of the figures employed by Harmon, the city of Cincinnati holds a very good position (first) as respects typhoid, but very poor (eleventh) as respects tuberculosis. Pittsburgh has a poor rating in general, but stands high with respect to tuberculosis. New Orleans makes a poor showing with reference to typhoid and tuberculosis, but has the best record of all with regard to scarlet fever and whooping cough.

Unfortunately, infant mortality could not be calculated satisfactorily for more than eight of the fourteen cities, owing to that crying disgrace of American statistical practice, the lack of adequate birth registration. The incomplete figures available indicate that the divergence of ratings under this head is fully as great as in other cases. It is curious that Buffalo should apparently suffer from a much higher infant mortality

rate than St. Louis, in view of the influence thought to be exerted on infant mortality by summer heat.

It must be confessed that such analyses as the excellent one here cited are of limited value in determining the relative "healthfulness" of cities or the relative efficiency of health administration. The factor of climate may be favorable to a low death rate from certain causes, but may conduce to a high death rate from others. The city of Los Angeles presents the extreme case of a high death rate from tuberculosis due, not to the insalubrious character of the climate for persons with this disease, but to its advantageous nature. Some puzzling questions are raised by certain figures in Harmon's summary, such as the great gap between the tuberculosis rating of Pittsburgh (second) and the pneumonia rating (fourteenth) of the same city. In any given case it may be impossible to decide whether the high rate from specific infection is due to uncontrollable climatic conditions, to the inadequacy of public health measures, to the conditions existing in the neighboring outlying territory, or even in some cases to purely statistical variations, such as the local traditional methods of report and record.

GASTRIC ULCER AND GASTRIC ACIDITY

Although the pathogenesis of gastric ulcer has long been associated in the minds of clinicians with the peculiar qualities of the gastric juice, a direct interrelationship is far from being demonstrated, and other etiologic factors must now be taken into account. It is doubtless true that gastric ulcer may occur wherever gastric juice flows. Whatever the relation between this secretion and the lesion may be, healing is apparently prevented in some way by the action of the gastric juice. Sippy¹ has shown, in his treatment of gastric ulcer, that the gastric acidity appears to play an important rôle in establishing chronic ulcer. The neutralization of the gastric juice by the continued administration of alkalis, accordingly, appears to facilitate the cure of a large number of chronic gastric and duodenal ulcers.

To the varied conditions long regarded as possible factors aiding in ulcer formation, an added agency has demanded serious consideration in recent years. The intervention of bacteria in some stage of the genesis of such necrotic areas has been brought into prominence. Readers of *THE JOURNAL* will recall that Rosenow² produced chronic and acute gastric ulcers in dogs by intravenous injections of certain strains of streptococci. He showed that pure cultures of streptococci isolated from gastric ulcers in man, dog, cat or sheep, when injected intravenously into dogs and

1. Sippy, B. W.: Gastric and Duodenal Ulcer, Medical Cure by Efficient Removal of Gastric Juice Corrosion, *THE JOURNAL A. M. A.*, May 15, 1915, p. 1623.

2. Rosenow, E. C.: The Etiology of Articular and Muscular Rheumatism, *THE JOURNAL A. M. A.*, April 19, 1913, p. 1223; Elect Localization of Streptococci, Nov. 13, 1915, p. 1687.

1. Harmon, G. E.: *Quart. Pub., Am. Statistical Assn.*, 1916, xv, 157.

rabbits, produced typical gastric ulcers in a large percentage of the experiments. Whether the chronicity of this type of ulcer is due entirely to the streptococcus infection, or to the combined action of the streptococci and the corrosive action of the gastric juice, has not been proved experimentally.

It has been asserted³ that gastric ulcers can be produced quite uniformly in certain species by intravenous injections of the *Bacillus coli*. A recent investigation of this subject, at the Hull Physiological Laboratory of the University of Chicago, by Hardt,⁴ has failed to substantiate this behavior of the organisms of the colon type; but the work of Rosenow with streptococci actually isolated from gastric ulcers has been confirmed. The availability of a fairly dependable method of creating ulcers has further given an opportunity to study the mooted question of the behavior of the gastric acidity when ulcers are present. The extremely contradictory character of the statements hitherto made may be due to the fact that clinicians are usually dealing with a mixture of juices (bile, saliva and pancreatic and gastric secretions) in the specimens which they subject to analysis. A refinement in the technic was introduced in the Chicago laboratory by examining the gastric secretion in dogs with a Pawlow stomach pouch, which prevents the admixture of the contents of the rest of the alimentary canal. When gastric and duodenal ulcers were produced by streptococci as the result of Rosenow's procedure, it was found that there is no hyperacidity in the gastric juice under these experimental conditions. Hypersecretion was rarely encountered. Mechanical factors and corrosive action of the gastric juice were largely eliminated by the way in which the experiments were carried out. Therefore the production and chronicity of the gastric ulcers must be dependent primarily on the virulence of the streptococcus infection. The hematogenous origin of the infection is further demonstrated in the unsuccessful attempt to produce chronic ulcers by local injections of streptococci into the submucosa of the Pawlow pouch. Probably in the future less stress will be laid on the factors of acidity, secretion and mechanical obstruction in certain aspects of the ulcer problem.

3. Steinharter: *Lancet-Clinic*, 1914, iii, 88; *Boston Med. and Surg. Jour.*, 1913, clxix, 81.

4. Hardt, L. L. J.: *Contributions to the Physiology of the Stomach*, XXXIII, The Secretion of Gastric Juice in Cases of Gastric and Duodenal Ulcers, *Am. Jour. Physiol.*, 1916, xl, 314.

Dirt.—To the sanitarian, dirt includes rubbish, manure, and organic wastes of all kinds. It may be the vehicle, but not the source, of infection. It breeds and harbors flies, fleas, lice, rats, mice and vermin of all sorts that act as intermediate hosts or carriers of infection. While dirt cannot originate typhoid fever or other infections, it favors conditions which encourage the spread of such diseases. Rubbish in vacant lots, in back yards, and in alleys, in cellars, garrets and other places may be taken as an index of the failure to appreciate the modern teachings of hygiene and sanitation. It was once the chief duty, and still is an important one, of the health officer to insist on cleanliness of premises and surroundings, both in country and city.—Rosenau.

Current Comment

LIFE INSURANCE AND ALCOHOL

An interesting analysis of the experience of American life insurance societies in respect to the mortality among abstainers from alcohol, temperate users and moderate users is presented in the current bulletin of the city of New York health department.¹ Dividing the policy holders into three classes according to whether they are total abstainers, temperate users or moderate but habitual users of alcohol, it is shown that the mortality of the first class is about 15 per cent. less than that of the second, and about 25 per cent. less than that of the third. This much diminished mortality among total abstainers as compared with nonabstainers is marked even when the general section of a company's policyholders, that is, the nonabstainers, presents a mortality experience which is favorable as compared with that of other companies. For example, in the case of one such company in 1906-1910, the mortality in the abstainers' section was 40 per cent. less than that in the general section, and in the years 1911-1915, 35 per cent. less. Results are given of investigations into the subsequent history of those who have at one time drunk to excess and of those who have undergone an alcohol cure. In neither case is the risk a good one from the insurance point of view. The importance of these statistics is derived from the fact that they have not been collected for controversial purposes by parties holding a brief against alcohol, but are the figures by which commercial organizations, whose interest in the matter is purely financial, are guided in fixing premiums. While there can be no doubt left in the mind of any one who reads this paper that even the moderate use of alcohol shortens life, the writer of it remarks that the relatively low mortality among abstainers is not solely attributable to abstinence from alcohol, but it is due to "temperance in all things and total abstinence from alcohol."

AN INFANT MORTALITY RATE OF ZERO

Dr. S. G. Moore, medical officer of health at Huddersfield, England, states² that when he first learned that at Villiers-le-Duc, a little commune in the south of France, the infant mortality rate had been zero for ten years, he did not believe it; it seemed incredible. Application to the French Academy of Medicine, however, brought confirmation in the form of official documents, showing that between 1893 and 1903 no child under 1 year of age had died in Villiers-le-Duc, and no mother had died in childbirth. The infant mortality rate for the preceding ninety years had been from 20 to 30 per hundred, except during the period from 1854 to 1863, when it fell to 15 per hundred. This fall during the 1854-1863 period is attributed to the incumbency of a mayor who, though unacquainted with medicine, was much interested in public health and particularly in children. Similarly, the zero rate from

1. Hunter, Arthur: *Life Insurance and Drinking Habits*, Monthly Bulletin of the Department of Health, New York City, May, 1916.

2. Moore, S. G.: *Infantile Mortality and the Relative Practical Value of Measures Directed to Its Prevention*, *Lancet*, London, May 6, 1916, p. 913.

1893 to 1903 is said to be due to measures taken by another mayor, the son of the one just mentioned. When M. Morel de Villiers, the son, took office in 1884, he, too, knew nothing of medicine, but his interest in saving the lives of babies led him to study medicine. The measures which he has introduced in Villiers-le-Duc include the following: Every pregnant woman, married or unmarried, lacking the means to provide for her own welfare and that of her child, has a right to assistance from the village authorities, for which she must apply before the seventh month. The midwife selected by the woman must make an examination, and, if she finds albuminuria, dangerous presentation or other untoward condition, must notify the village authorities, who shall then provide the woman with the services of a physician to be selected by her. The mother is to receive a grant for the six days following her confinement, provided she remains in bed. Nurses or mothers who can show healthy nurslings a year old are also entitled to municipal grants. Other regulations provide for the sterilization of milk and for the welfare of infants placed out to nurse. Dr. Moore emphasizes particularly the value of the compulsory features of the plan, and of the notification of pregnancy. In connection with the results, of course, it must be remembered that Villiers-le-Duc is a small village with simple, rural conditions of life. In the absence of statistics which Dr. Moore has either omitted or been unable to give (population of the community, number of births, and changes in population due to emigration), it is impossible to place a correct value on the infant mortality rates. Notwithstanding, the measures enforced by Dr. Morel de Villiers are interesting and a more complete statement of the factors which have contributed to the results would doubtless be instructive. —

THE BLOOD IN INTESTINAL OBSTRUCTION

It is sometimes almost as important to know the exceptions to a diagnostic rule as to appreciate its less variable indications. In the more recent development of clinical diagnosis through analysis of the blood, the occurrence of abnormally high values for the non-coagulable nitrogen of the blood has become associated quite extensively with the existence of renal disease. Recent observations by Cooke, Rodenbaugh and Whipple,¹ of the George Williams Hooper Foundation for Medical Research at San Francisco, indicate that a high content of noncoagulable blood nitrogen exists in most cases of intestinal obstruction, especially with signs of acute intoxication. This finding is not entirely new, inasmuch as other observations in harmony with them have already been reported in man.² But these later investigations have the added value of being fortified by carefully controlled experimental conditions, intestinal obstruction being artificially induced in most of the cases. In practically all of them the kidneys were normal. With acute intoxication the

rise in noncoagulable nitrogen may be rapid and reach as high as even ten times the normal. With more chronic intoxication little or no rise may ensue. From a clinical standpoint the high figures are looked on as indicative of a grave intoxication. It is not easy to account for the apparent accumulation of noncoagulable nitrogenous substances in the blood stream in the absence of any kidney impairment. The California investigators point out, however, that in intestinal obstruction the current of fluid is mainly out of the body and by way of the intestinal tract. The kidneys ordinarily excrete only small amounts of highly concentrated urine. Furthermore, if proteoses find their way from the obstructed bowel into the circulation, as Whipple and his associates have long maintained, a resulting proteose intoxication may injure the body and lead to tissue destruction with consequent alterations in the blood quite independent of any impaired renal function. The observed definite rise in noncoagulable nitrogen in the blood in general peritonitis may be explained on this basis in connection with the paralytic ileus that attends it, as well as on the basis of intoxication with absorbed proteose which has been demonstrated to arise in the exudate present in this disease.

COLORED FOODS

The federal Food and Drugs Act, now in force throughout the United States, has justified itself quite as much by the educational influences which it has put into operation as by any protection which it has afforded to the innocent purchaser or the exposed consumer. As the result of the agitation which the enforcement of the law always provokes, it has brought to light some of the perverted tastes and foolish demands which the prolonged indulgence in misguided beliefs has created. We may recall the popularity of "coppered" peas, of brilliantly colored jams, jellies, fruit juices and candies, of tinted beverages of both alcoholic and nonalcoholic character, and of butter with an artificially deep yellow color to resemble perennially the natural June product. Street has wittily sensed the situation by remarking that too often "our tables become laden with foods of rainbow hues in the attempt to appeal to perverted senses and jaded appetites."¹ It may be a relief to those who are looking for better days in the domain of food manufacture to realize that according to the watchful government analysts few mineral pigments are longer used. Iron oxid, Prussian blue, copper sulphate and other poisonous mineral pigments have been abandoned by necessity of law or correction of nefarious practices. The great majority of the artificial colors used belong to the class of coal-tar products known as anilin dyes. Unfortunately, says Street, the United States government, chiefly in answer to the clamor of business interests, soon after the passage of the federal Food and Drugs Act of 1906, granted permission to use seven coal-tar dyes in foods, the so-called permitted colors. However harmless these may be in the quantities actually used and under the best conditions of inspection

1. Cooke, J. V.; Rodenbaugh, F. H., and Whipple, G. H.: Intestinal Obstruction, VI, A Study of Non-Coagulable Nitrogen of the Blood, *Jour. Exper. Med.*, 1916, xxiii, 717.

2. Tileston, Wilder, and Comfort, C. W., Jr.: The Total Non-Protein Nitrogen and the Urea of the Blood in Health and Disease, as Estimated by Folin's Methods, *Arch. Int. Med.*, November, 1914, p. 620.

1. Street, J. P.: Artificially Colored Foods, *Mod. Hosp.*, July, 1916, p. 33.

employed, they nevertheless encourage a sort of deception for which the manufacturer is only partly responsible in ultimate analysis. When the public once is thoroughly taught, if it ever can be, that the artificial devices which please the eye can be used not only for psychologic effects but also for the purpose of deception by concealing inferiority, the burden of knowledge and the danger of injustice will be placed where it properly belongs. An intelligent people cannot expect the government forever to be everything in all things to its members. Some effort and initiative is demanded of all citizens of a free country. In the matter of food colors, Street's advice is sane: The consumer cannot tell, even if it be a permitted color, whether it is pure and free from poisonous contamination. The consumer has but one safe course to pursue—to read the label carefully, intelligently and unremittingly. Whenever evidence is found that artificial color has been used, he must decide whether he is willing to accept the responsibility or prefers to exclude that particular brand from his home.

NEBRASKA STATE MEDICAL JOURNAL

At its last meeting, the Nebraska State Medical Association voted to publish its own journal, and the first number is now received. Dr. Irvin S. Cutter, Omaha, is editor, and Dr. Joseph M. Aiken, secretary of the state association, is business manager. The new journal makes a neat appearance. One wonders why the word "State" should have been inserted in the title. "*Nebraska Medical Journal*" would be shorter and more euphonious and would tell all that the publication represents. This is, however, a minor criticism. There are now twenty-nine state owned journals representing thirty-three state associations. With the exception of the *Illinois Medical Journal*, all limit their advertising of proprietary medicines to those accepted by the Council on Pharmacy and Chemistry of the American Medical Association. As stated above, thirty-three state associations are now journalizing their transactions. Those who look back to that time when a single more or less bulky volume of *Transactions* was issued anywhere from four to ten months after the annual meeting—then usually "shelved" unopened—will appreciate the tremendous advance that has been made by the constituent associations in this respect.

Effects of Alcohol.—"Wine makes a man better pleased with himself. I do not say that it makes him more pleasing to others. Sometimes it does, but the danger is that while a man is better pleased with himself, he may be growing less pleasing to others. Wine gives a man nothing. It neither gives him knowledge nor wit. It only animates a man and enables him to bring out what a dread of the company has repressed. It only brings into motion what has been locked up in frost, but this may be good or it may be bad."

Q.—"So, sir, wine is a key which opens a box but this box may be either full or empty?"

Johnson.—"Nay, sir, conversation is the key. Wine is a pick lock which forces open the box and injures it. A man should cultivate his mind so as to have that confidence and readiness without wine which wine gives."—Boswell, *Life of Johnson*.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ILLINOIS

Baby Clinic.—The Peoria *Journal* Milk and Ice Campaign made possible the opening on July 12 of a Baby Clinic and Dispensary at the Douglas School, Peoria. The clinic will be open once each week for the examination of babies of the city, and will be under the care of Dr. Fred M. F. Meixner.

Personal.—Dr. Frederick C. Vogt, Gillespie, who was operated on at the Litchfield Hospital, July 12, is reported to be making satisfactory progress toward recovery.—On account of the illness of Dr. Jeremiah H. Stealy, the Freeport General Hospital which he and Mrs. Stealy have conducted for the past three years has been closed.

Chicago

Personal.—Dr. Haim I. Davis, formerly superintendent of the Cook County Psychopathic Hospital, has been appointed a member of the attending staff of the Michael Reese Hospital in the department of neurology.—Dr. Kellogg Speed is in charge of the Twenty-Third General Hospital for the British Expeditionary Forces, at Etaples, France.

Conference on Mental Defectives.—A conference on mental defectives was held in the County Court Building, July 24, on invitation of Judge Thomas F. Scully. The medical members of this conference were: Drs. Anna Dwyer, Morals Court; William Healy, Juvenile Court; William J. Hickson, psychopathic expert of the Municipal Court; Charles E. Scelesh, House of Correction; Anna E. Isham, Psychopathic Hospital; Henry J. Gahagan, superintendent of the State Hospital at Elgin; Ralph A. Goodner, superintendent of the State Hospital at Kankakee; Adam Sz wajkart, superintendent of the Psychopathic Hospital; Mr. Clayton F. Smith, warden of the County Hospital; John Dill Robertson, city health commissioner; George Leininger, superintendent of the Chicago State Hospital; James Whitney Hall of the county's staff of alienists; Edgar M. Reading, Loyola University; Herman C. Stevens, University of Chicago; Dennis P. Russell, Psychopathic Hospital, and Harold N. Moyer, city psychopathic ward.

MONTANA

Health Officers' Meeting.—The City and County Health Officers of Montana held their annual meeting in Miles City, July 10 and 11, under the presidency of Dr. Arthur Morrow, Kalispell, at which Dr. Victor C. Vaughan, Ann Arbor, Mich., delivered an address on "The Eradication of Disease." Dr. Joseph C. Denney, Clydepark, was elected president of the association; A. N. Allard, Billings, vice president, and Dr. William F. Cogswell, Helena, was reelected secretary.

State Association Meeting.—The thirty-eighth annual meeting of the Medical Association of Montana was held in Miles City, July 12 and 13, under the presidency of Dr. Rudolph Horsky, Helena. Kalispell was selected as the next place of meeting, and the following officers were elected: President, Dr. John A. Donovan, Butte; vice presidents, Drs. Arthur Morrow, Kalispell; Robert H. Beach, Glendive, and Arthur C. Jones, Butte, and secretary-treasurer, Dr. Elmer G. Balsam, Billings (reelected). The principal address of the meeting was delivered by Dr. Victor C. Vaughn, Ann Arbor, Mich., on "The Protein Poison and the Part it Plays in Disease."

NEBRASKA

Personal.—Dr. Herschell B. Cummings, Seward, has been reappointed a member of the state board of health.—Dr. William D. Jack, Omaha, has returned after six months' war service in Flanders.

Health Secretaries Elect.—At the meeting for reorganization of the Board of Secretaries of the State Board of Health at Lincoln, July 12, Dr. Charles T. Burchard, Falls City, was reelected president; Dr. Herschell B. Cummings, Seward, was elected vice president; Dr. E. Arthur Carr, Lincoln, was elected secretary, and Dr. Lucien Stark, Hartington, was reelected treasurer.

New Hospital.—Messrs. Charles L. Coolidge and Charles L. Houghton of Palmer have donated their entire properties, part available immediately and the remainder at their death, to the Coolidge Hospital and Sanatorium Association, Palmer, for the erection and endowment of a small hospital and sanatorium. Other donations have been received from citizens of the village and surrounding country. The building is to be of brick and will be ready about October 1. It is to be called the Coolidge Hospital and Sanatorium, after the principal donor.

NEW YORK

Personal.—Dr. Ross M. Chapman, Binghamton, has been appointed assistant superintendent of the Government Hospital for the Insane, Washington, D. C. Dr. Chapman is at present connected with the New York State Hospital, at Binghamton. He will fill a position that has been vacant for more than a year.—Dr. Bertis R. Wakeman, Watertown, district sanitary supervisor of the northern district for the state department of health, has been transferred to Hornell.

Infantile Paralysis Up-State.—The state health department announced, July 21, that up to that date there have been in all 195 cases of infantile paralysis, with twenty-three deaths. Governor Whitman has promised state health department officials additional funds to carry on the campaign against infantile paralysis. Arrangements have been made for several additional diagnosticians, sanitary supervisors, nurses and assistants for Westchester, Ulster, Orange and Sullivan counties. The state department of health announces that in 1914 there were 224 cases of infantile paralysis in the state, with sixty-eight deaths, while in 1915 there were 261 cases and forty-seven deaths.

Psychiatric Clinic for Convicts.—With the return of Thomas Mott Osborne as warden to Sing Sing Prison, it is announced that one of the innovations will be the instalment of a complete psychiatric clinic, wherein old prisoners as well as new arrivals will undergo thorough mental examination. The clinic has for its object the separation of the feeble-minded and mentally disabled prisoners from the normal group. The Rockefeller Foundation has contributed the money for this undertaking. Dr. Bernard Glueck, Washington, D. C., will become resident psychiatrist, and will have a staff of assistants. Mr. Osborne announces that this is but the forerunner of a plan on which he is now working in cooperation with the National Committee on Prisons to turn Sing Sing into a great receiving station, where prisoners can be observed, classified and then placed in the hands of experts to receive medical treatment and individual training which their particular cases demand.

New York City

Change of Name.—The International Health Commission of the Rockefeller Foundation announces the change of its name to International Health Board of the Rockefeller Foundation.

Personal.—Dr. Thomas A. Storey, director of physical training in the College of the City of New York, has been appointed state inspector for physical training of the Military Training Commission for the state of New York.—Dr. Elbert M. Somers, for about five years superintendent of the Brooklyn State Hospital, has resigned, to take effect August 1.—Dr. Abraham Sophian, for many years in the research laboratory of the department of health, has been engaged by Bridgeport, Conn., to take charge of that city's campaign against infantile paralysis.

Promotions at Rockefeller Institute.—The following promotions and changes have been announced for the Rockefeller Institute of Medical Research: Dr. Alphonse R. Dochez, hitherto an associate in medicine, has been made an associate member. Dr. Henry T. Chickering has been appointed resident physician in the hospital to succeed Dr. Dochez. Dr. Louise Pearce and Dr. Frederick L. Gates, Montclair, N. J., have been appointed associates in pathology and bacteriology. Dr. Oswald H. Robertson has been appointed assistant in pathology and bacteriology and Mr. Ernest Wildman, assistant in chemistry; Dr. Roda Erdmann has been appointed associate in the department of animal pathology; Dr. Rufus A. Morison, assistant in medicine and assistant resident physician; Dr. John Northrop, assistant in the department of experimental biology; Dr. Jean Oliver, assistant in the department of pathology and bacteriology; Dr. Ernest W. Smillie, fellow in the department of animal pathology, and Dr. William D. Witherbee, assistant. Hardolph Wastenays, hitherto an associate in the department of experimental biology, has

accepted an appointment as associate professor of pharmacology in the University of California.

The Poliomyelitis Situation.—The number of cases of poliomyelitis reported up to July 21 is 2,527, and the total number of deaths 519. The number of cases reported daily has been gradually decreasing during the past week, and though no positive statements are made, it is hoped that the epidemic is on the wane.—The new cases reported, July 22, totaled 135, with 39 deaths. Of the new cases 82 with 16 deaths occurred in Brooklyn; 23 with 10 deaths in Manhattan; 17 with 6 deaths in Queens; 8 with 3 deaths in Richmond and 5 with 4 deaths in the Bronx. On that date there were 1,294 cases of poliomyelitis in hospitals, including 826 in department hospitals, 144 in other city hospitals; 268 in private hospitals, and 56 at Swinburne Island. The number of private hospitals cooperating with the department of health in caring for infantile paralysis is now twenty-four.—Persons desiring to take their children out of the city are required to have permits from the department of health. Certificates are issued provided the children do not come from infected districts and do not show any symptoms of contagious disease. This ruling has been extended so that the certificate of a reputable physician who examines the child in his or her home will also be accepted. The certificates are issued in triplicates, one being filed with the department of health, one sent to the health officer of the locality to which the child is going, and one is kept by the parent or attendant accompanying the child.

NORTH DAKOTA

New Medical Board Appointments.—The following appointments on the State Board of Medical Examiners were announced July 15: Dr. Gustavus J. McIntosh, Devils Lake, to succeed Dr. Francis Peake, Jamestown; Dr. Joseph G. Dillon, Fargo, to succeed Dr. Albert W. Skelsey, Fargo, and Dr. George M. Williamson, Grand Forks, reappointed. At the meeting of the board July 15 the state license of Dr. Heber Wilbur Coulter, Sharon, is said to have been revoked. The license, issued by the board in 1913, was obtained through reciprocity with South Dakota, and the board on investigation discovered that Heber Wilbur Coulter had apparently been licensed under the application of Herbert Coulter and was not the man certified by the South Dakota board. Dr. Coulter was notified to appear at the meeting and show cause why his license should not be appealed. He did not appear, and the board therefore revoked his license to practice.

PENNSYLVANIA

Personal.—Dr. James E. Silliman, Erie, has been elected medical director of the Pennsylvania Department of the Grand Army of the Republic.—Dr. Edgar M. Green, Easton, has been appointed a member of the advisory board of the state department of health, to fill the vacancy caused by the death of Dr. George W. Guthrie, Wilkes Barre.—Drs. Astley P. C. Ashhurst and John H. W. Hreine, assistant surgeons at the Plattsburg Military Camp, have been advanced to the rank of first lieutenants. Lieutenant Ashhurst has been assigned to the Sixth, and Lieutenant Hreine to the Seventh Regiment.—Dr. Joseph K. Weaver, Norristown, has been reappointed a member of the State Board of Prison Inspectors.

Philadelphia

Physicians and Red Cross Work.—A call was issued to 2,500 physicians of Philadelphia and the adjoining counties to attend a joint conference, with a view of enlisting in Red Cross work.

Infantile Paralysis Situation.—Four new cases of infantile paralysis were reported in this city, July 20. Thus far one patient has died and the total number of cases reported to date aggregate eight, the largest number being reported on the date mentioned.

To Aid Blind Soldiers.—A state branch of the British French and Belgium Permanent Blind Relief Fund has been formed here. The work of this society is to administer aid to those who have been rendered blind by war. The beneficiaries are to be natives of the countries mentioned. Mrs. Barclay Warburton, Philadelphia, is chairman of the association, and Mrs. Joseph E. Widener has been named as vice president.

SOUTH DAKOTA

Hospital Notes.—Plans for the new State Methodist Hospital at Mitchell are practically finished and the contract for construction will be let on September 1. A greater part of the funds needed for the building have already been

raised.—Dr. James L. Stewart, Spearfish, has begun the construction of a private tuberculosis sanatorium at Pringle.

New Board Officers and Members.—The governor has reappointed Dr. Ernest W. Feige, Huron, and Dr. William E. Daniels, Madison, members of the state board of health. At the midsummer session of the State Board of Health and Medical Examiners held in Deadwood July 17, the following officers were elected: president, Dr. Felix E. Ashcroft, Deadwood; vice president, Dr. Ernest W. Feige, Huron, and secretary, Dr. Park B. Jenkins, Waubay.

VIRGINIA

Funds for Infantile Paralysis Fight Granted.—The Board of Aldermen of Richmond, July 11, voted an appropriation of \$1,998 asked for by Health Commissioner Ernest C. Levy for preparation against infantile paralysis.

New Hospital for Alexandria.—Ground was broken, July 14, for Alexandria's new hospital, which will be located on the north side of Duke Street, between Columbus and Washington streets. The land on which the hospital will be constructed was donated several months ago by Edward L. Daingerfield. A campaign to raise funds for the building was started in April, 1914, and the finance committee recently reported more than \$40,000 in cash and pledges. It is expected that the building will be ready for occupancy early next spring.

Personal.—Dr. Sherwood Dix, Portsmouth, has been appointed full time health officer of Norfolk County. Dr. Dix will, in addition to his other work, be expected to make the school medical inspections which have heretofore been in charge of five physicians.—Dr. George Ben Johnston, Richmond, was appointed a member of the state board of health, July 1. Drs. John B. Fisher, Midlothian, and Lewis E. Harvie, Danville, have been reappointed members of the board.—Dr. Ennion G. Williams, Richmond, has been reappointed state health commissioner.—Dr. Ernest C. Levy has been reelected city health officer of Richmond.

CANADA

Hospital News.—A cottage hospital has been opened at Beverley, Alta. It is the first hospital in that province to be established and maintained by a municipality.—British Columbia recently adopted an amendment to the hospital act whereby if the hospital bill is not paid by the patient the municipality from whence the patient came must pay the charges, and then collect the amount from the patient.

Personal.—Maj. Rowland K. Kilborn, medical officer at the Royal Military College, Kingston, Ont., has resigned on account of ill health. He held the post for sixteen years.—Dr. J. Russell Stanley has been appointed medical officer of health at St. Mary's, Ont.—Dr. Henry E. Young, Victoria, B. C., for several years minister of education and provincial secretary for that province, has been appointed secretary of the health department of British Columbia and provincial officer of health.—Dr. George T. Wilson has been appointed medical officer of health and city bacteriologist for New Westminster, B. C., in succession to Dr. Alexander L. McQuarrie, who has gone overseas with the One Hundred and Twenty-First Battalion.—Dr. R. Eden Walker, New Westminster, B. C., has been appointed coroner of that city.—Dr. George S. Graham, pathologist and bacteriologist at the City Hospital, Boston, has been appointed chief of the Vancouver General Hospital Laboratories.—Lieut.-Col. Robert M. Simpson, Winnipeg, has been appointed assistant director of medical supplies at Camp Hughes.—Maj. Edward O. Steeves, Moncton, N. B., has been given command of the military hospital at Aldershot Camp, N. S.—Maj. Lewis E. W. Irving, Toronto, is in command of the Canadian division at the Woodcote Park Convalescent Hospital, near Epsom, England.—Capt. C. J. McMillan, Charlottetown, P. E. I., has been appointed second in command of the McGill Overseas Unit, which is in training in Montreal.—Capt. George G. Corbet, St. John, N. B., is registrar at the Canadian Convalescent Hospital at Bearwood Park, Wokingham, England.—Capt. Harold Chaplin, St. Johns, who was in the Newfoundland Naval Reserve, surgeon on the *Hampshire*, was lost when that vessel met with disaster off the Orkneys.—Among recently recorded wounded at the front are: Capt. John Aylmer Reid, Pinkerton, Ont.; Capt. William L. Shannon, Vancouver; Capt. J. J. Jamieson, and Lieut. Edward V. Sullivan, St. Stephen, N. B.—It is now officially announced that Capt. Walter R. W. Haight, Toronto, who was reported missing, was found bayoneted in his hospital tent along with his entire staff.

GENERAL

Successful Candidates for Navy Medical Corps.—At the examination recently held in various cities throughout the United States the following named medical men successfully passed the examination for appointment as assistant surgeon in the Medical Reserve Corps, with a view to subsequent examination for appointment in the Medical Corps of the Navy: James A. Halpin, M.D., Washington, D. C.; William D. Heaton, M.D., Wahoo, Neb.; Aubrey M. Larsen, M.D., Salt Lake City; Lincoln Humphreys, M.D., Argenta, Ark.; T. Edward Cox, M.D., Cleveland; Arthur W. Hoaglund, M.D., Minneapolis; Carroll H. Francis, M.D., Camden, N. J., and Harold L. Jensen, M.D., San Francisco.

Infantile Paralysis.—The total of cases in greater New York up to and including July 25 was 3,098, with 647 deaths, or 20.88 per cent. The grand total for the country on the same date was 5,501 cases, with 850 deaths, a mortality of 15.44 per cent. New Jersey and Connecticut have declared a quarantine against New York on account of infantile paralysis.—The Rockefeller Foundation, July 15, donated \$50,000 to be expended under the direction of a committee headed by the mayor of New York, with Dr. Simon Flexner, New York, as vice chairman. Five additional surgeons of the Public Health Service have been ordered to New York. These are: Surg. William J. Pettus, Charleston, S. C.; Surg. Henry W. Wickes, Detroit; Surg. Dana E. Robinson, Ellis Island (on leave); P. A. Surg. R. A. Herring, Louisville, Ky., and Senior Surg. Parker C. Kalloch, Portland, Me.

Bequests and Donations.—The following bequests and donations have recently been announced:

Miss Hattie Newman, superintendent of the Loofbourow Hospital, Monroe, Wis., has been bequeathed the institution, free of all incumbrance, by the will of Dr. Nathan A. Loofbourow.

Washington Home for Incurables, \$12,236.85; Children's Hospital, Washington City Orphan Asylum, Washington Home for Foundlings, Washington Aid Association for the Blind, and Ruppert Home, each \$8,157.89, and National Homeopathic Hospital, George Washington University, Garfield Memorial Hospital, German Orphan Asylum, Central Dispensary and Emergency Hospital, and Eastern Dispensary, Washington, D. C., each \$4,078.95, by a compromise between all the parties interested in the will of the late Theodore J. Meyer, Washington.

For a Negro Tuberculosis Ward in the Charity Hospital, New Orleans, a subscription of \$3,500.

Long Island College Hospital, Brooklyn, \$20,000; Brooklyn Hospital, \$12,000; and Hospital of St. Giles the Cripple, Brooklyn, \$10,000, by the will of Francis Ripley.

New York Academy of Medicine, the residuary estate amounting to \$119,179, and scientific books valued at \$142, by the will of Dr. Rudolph Witthaus, New York.

Mt. Sinai Hospital, Montefiore Home, and Hospital for Chronic Diseases, New York, and Zion House, Buffalo, each \$1,000, by the will of Norbert Gunzberger.

Visiting Nurses Association of Chicago, an annuity of \$2,400; Wesley Memorial Hospital, and United Charities of Chicago, each an annuity of \$2,000, and Illinois Children's Home and Aid Society, an annuity of \$1,000, by the will of Norman W. Harris, Chicago.

Death of Sir Victor Horsley.—Sir Victor Alexander Haden Horsley, the noted brain surgeon and specialist in cerebral localizations, died in Mesopotamia, July 16, from heat stroke. Dr. Horsley was born in Kensington in 1857, received his M.B. and B.S. with the gold medal in surgery in 1881, from University College, and the F.R.C.S. England, in 1883. He received the Fothergill Gold Medal of the Medical Society of London, and the Lannelongue International Gold Medal for Surgery in 1911. He was professor of pathology in University College, London, from 1893 to 1896, professor of clinical surgery until 1906, and thereafter professor emeritus of clinical surgery, surgeon to the National Hospital for Paralysis and Epilepsy, consulting surgeon to University College Hospital, professor-superintendent of the Brown Institution from 1884 to 1890, secretary to the Royal Commission in Hydrophobia, Fullerian professor at the Royal Institution, and president of the pathologic section of the British Medical Association in 1892-1893. He made many important contributions to the literature of epilepsy, brain anatomy and surgery, the thyroid and pituitary bodies and other subjects pertaining to surgical neurology. While Sir Victor Horsley was a great scientist, he also took deep interest in medico-social affairs. To him belongs the credit of the reorganization of the British Medical Association when it was changed into a direct, systematic, representative body. He early saw the advantages of this plan and urged them, notwithstanding the criticisms of the conservative members of the association, and eventually, after much tribulation and obloquy, carried his point, with the greatest possible resultant good to the organization. He was the first chairman of the representative body—comparable to the House of Delegates of the American Medical Association—and held the position for

some four or five years. He was aggressive in pushing what he believed was right, and consequently made enemies. Sir Victor was an ardent patriot, served with distinction in the Boer War, was a colonel of the Royal Army Medical Corps; and was on duty with the Tigris expedition in Mesopotamia when he was stricken by heat and died.

FOREIGN

Tuberculosis Fight in China.—Recent reports from missionaries in China show that the antituberculosis fight has extended into that country. James M. Yare, a missionary in Chengtu, Western China, writes that 4,500 calendars giving facts regarding tuberculosis were recently issued in a city-wide campaign in Chengtu, and in addition thousands of pamphlets were distributed to the citizens.

Havana to Have a Preventorium.—The authorities at Havana are arranging a preventorium for children threatened with tuberculosis, the first of the kind in the country. It is to be installed in a former hotel, the Palacio Campoamor, henceforth to be called the Palacio de la Infancia Desvalida, but is generally known as the Preventorio Marti. The *Prensa Medica* states that there were 3,192 deaths from tuberculosis in Cuba during 1915, of which 1,004 were in Havana, a proportion of 28.21 deaths per 10,000 inhabitants. The editorial adds that as medical science has eradicated yellow fever, plague and smallpox from the island, tuberculosis will be conquered in time in the same way, and to train the children in hygienic modes of life and prepare them for the combat with the tubercle bacillus is the first great advance in this line.

WAR NOTES

Split in American Ambulance.—It is reported from Paris, under date of July 16, that the field section of the American Ambulance, Neuilly, has separated from the organization and established itself with separate quarters, separate repair shops, parks, officers and funds unconnected with those of the Neuilly organization.

War Relief Appropriation Almost Expended.—Of the \$3,000,000 appropriated by the War Relief Commission of the Rockefeller Foundation during the six months ended June 30, \$2,159,985 has been expended and of this sum \$1,290,292 was expended for Belgian relief. In Armenia and Syria \$360,000 was spent, and in Serbia \$148,894. For relief work in and about Constantinople, \$35,000, while \$55,000 was devoted to the surgical laboratory at Compiègne, France, which is under the direction of Dr. Alexis Carrel. An appropriation of \$1,000,000 for relief work in Poland, Serbia, Montenegro and Albania is yet to be expended.

OUR TROOPS ON THE BORDER

Hospital Train for Army.—A hospital train of ten Pullman cars, designed by the Army Medical Department, has been ordered from the Pullman shops in Chicago. Five of the cars are to be equipped with regular hospital beds and will have large side doors for loading and unloading stretchers. Two of the cars will be of the regulation sleeper type equipped with extra fans, medicine cabinets and ice tanks; one will have a completely equipped operating room and another car will be furnished as a kitchen, sufficient to care for more than 200 men. In addition to the medical personnel, there will be a special corps of army nurses on the train, which will be painted maroon and will bear the insignia of the Army Medical Department.

Want Graduate Nurses for Service on Border.—The War Department intends to employ a large number of graduate nurses for service on the Mexican border. In accordance with its policy of taking the best of care of the National Guard on the border, the medical department of the army has established a series of base hospitals along the Mexican line, at which these nurses will be stationed. It is announced that 276 nurses are needed. Their pay will be \$40 a month, with an increase of \$10 for service outside of the United States, if they should be called on to go south of the border. The increase in nurses was authorized under the recently enacted army reorganization bill. Maj. Douglas McArthur, U. S. A., the War Department censor, has made public this statement on the subject:

"The Medical Department of the army has established a series of base hospitals along the Mexican border and consequently a large increase has been authorized for the Army Nurse Corps. Graduate nurses who desire to make application may obtain full information from the Superintendent, Army Nurse Corps, office of the Surgeon General, War Department, Washington, D. C."

LONDON LETTER

LONDON, July 3, 1916.

The Combating of Venereal Disease

The first annual meeting of the National Council of Combating Venereal Diseases has been held under the presidency of Sir Thomas Barlow. In his address he dwelt on the salient features of the work of the council since its inception in November, 1914. From the beginning the council conceived that the most vital thing it had to tackle was the army, and a great deal of work had been done in that direction. A large number of lectures on these diseases and their effects had been given by physicians in London, Liverpool, Leeds and other important centers. In fact, over a thousand lectures had been in every case favorably and enthusiastically received. The council had had the cordial support of Sir Alfred Keogh, the director-general of the Army Medical Corps and his staff. The second subject to which the council had given its attention had been lectures on the social aspect of this wide and many sided question. In connection with this work it had received invaluable help from several women physicians and other women. There had also been interesting conferences as to the relation of these diseases to national health insurance, and to the desirability of conferring further powers on the civil as well as on the naval and military authorities for dealing with the diseases. The council gave its most enthusiastic support to the recommendations of the Royal Commission (given in a previous letter to THE JOURNAL).

The State and the Birth Rate

Mr. Long, president of the Local Government board, received a deputation representing the National Council of Public Morals, which presented the report of the commission which has inquired into the decline of the birth rate. Dean Inge, who presided over the later sitting of the commission, presented the report. He said that in considering what recommendations to make they had not forgotten that legislators were obliged to take human nature as it is, and that many reforms which might seem desirable to a moralist would be impracticable or even mischievous if attempts were made to enforce them by law. For this reason attention was called to the urgency of certain problems without suggesting how they ought to be dealt with. The only quite definite recommendation they made was that the sale of certain drugs widely used for the purpose of abortion should be made illegal. They supported the recommendations of the Royal Commission on Venereal Disease, and hoped that measures would be taken to diminish the ravages of these racial poisons. At the same time they were convinced that these diseases would probably remain unmanageable until public opinion condemned more effectively the vices through which they were mainly diffused. They also drew attention to the effect of housing difficulties in discouraging parenthood, and expressed the opinion that, in adjusting the burdens of taxation, special care was needed not to penalize parenthood among the classes which were capable of prudence and foresight. The large and socially valuable middle class especially needed consideration of this kind.

Dr. Mary Scharlieb said that consideration should be shown to middle class parents of small means permitting them to write off educational expenses, as they already wrote off their life insurance, from income tax returns, or that the state should devise some means whereby all children whose parents needed such relief should at the age of 14 receive a subvention sufficient to procure for them the means of continued education or of making a satisfactory start in life.

Principal Garvie said the reckless poor did not limit their families; the prudent, even if well-to-do, not to say rich were more and more practicing restriction. The circumstances and characters of the one class must be so improved that they would not incur the responsibility of parenthood without the ability to meet its demands, and the difficulties and anxieties of the other class must be so relieved that they would be free to accept the blessing of parenthood. It would be folly to encourage an increase of numbers without taking steps to secure an improvement of quality in the population.

Mr. Walter Long, on behalf of the government, thanked the commission for the splendid work it had done. The commission had not hesitated to indicate what ought to be some at any rate, of the directions in which the future policy of the government should be turned, but it was difficult for a government to take what might be described as direct action in connection with all the recommendations. With regard to taxation, any proposals in the matter of relief would

always receive his cordial support. He had long felt himself that the chancellor of the exchequer lost a very useful and proper source of income when he allowed bachelors to pay the same sort of taxation as the married men paid. Any proposal which tended to relieve those who spent a portion of their incomes in caring for their children would receive his hearty support. Another proposal concerned emigration. It was essential, and it had never been more essential than at the present moment, that our great race should extend and grow over the globe. We had had in this terrible war a most wonderful illustration of what the British race could do for the flag. In Canada there was room for a hundred million people; in Australia there was room for millions, and in South Africa there was magnificent territory from Cape Town almost to the Zambesi. We must rear the children who were to be the men and women to occupy these lands in the future. He heartily agreed with the suggestion made that there might be a central emigration board under which the work of migration might be coordinated and properly directed. With regard to venereal disease, they had instituted a new scheme as a result partly of the report which had been made on this question. They were endeavoring to make arrangements with hospitals throughout the country in order that provision might be made for these unfortunate subjects.

PARIS LETTER

PARIS, June 29, 1916.

The War

TREATMENT OF WOUNDS OF THE KNEE JOINT

In my previous letters I have spoken of the discussions which have taken place concerning the treatment of wounds of the knee joint. Some surgeons have been in favor of immediate arthrotomy, while others recommended abstention. Dr. Pierre Delbet, professor of clinical surgery at the Faculté de médecine de Paris, has just drawn the attention of the Société de chirurgie to the fact that in general, the reasons invoked in favor of abstention or intervention are insufficient. Delbet incubates the pus in a pipet and examines it after twenty-four hours; that is to say, he makes a pyoculture. By proceeding in this way one cuts short all the discussion as to early arthrotomy or systematic abstention. The indications would be very simple, according to Delbet, who advises: Suppose a recent articular joint wound of small dimensions and containing no foreign body, the articulation distended by an effusion. Puncture must be immediately practiced and a smear obtained for microscopic examination; this would take from three to five minutes. If germs are recognized in the smear, a simple arthrotomy must be immediately made by means of lateral vertical incisions. If no microbes are seen, one remains expectant, in the meantime immobilizing the articulation. In each case the pipet is incubated for twenty-four hours. If germs do not develop in the pus, no further action is necessary except possibly that one may suture the arthrotomy wound. If the result of the incubation is positive, and especially if it yields a number of streptococci, one should make a "wide arthrotomy" by a transverse incision through the patellar ligaments. Should there be a foreign body in the articulation, it is preferable to remove it at once. Should one suture, drain or leave fully open? One must again be guided by the degree of infection. If there are no germs visible on the smear, one may suture the wound but still make the pyoculture. If the result is negative, the suture will be left. If it is feebly positive, the articulation will be kept under close observation, and one must be ready, at any moment, to remove the sutures. If the positive result is moderate in quantity, one will at once reopen the wound. If it is abundantly positive, the simple arthrotomy must be converted into wide arthrotomy.

Delbet has had no opportunity of applying these methods to recent knee wounds, but he has used them in wounds of this sort dating from several days with the following results: Of seventeen cases, four proved aseptic and healed without arthrotomy; thirteen were septic. In three of these, only a simple arthrotomy was done, the pyoculture having given a feebly positive result. The clinical history of these three has been very simple. One has healed with ankylosis, the other with a knee capable of flexion to 90 degrees; the third is still under treatment. There remain ten cases in which the pyoculture was positive and yielded an abundance of dangerous germs; all these had lesions of the bones. In all of them treatment was commenced by a wide arthrotomy with immobilization, as rigorous as possible, and extension. In one case resection has been practiced because the bony ends were

seriously damaged. This patient was cured. Five patients have been cured with ankylosis; four have required amputation. In one of the latter cases the limb would certainly have been saved had the only lesion been that of the knee; but there existed at the same time and on the same side an arthritis of the ankle joint with a crushing of the calcaneum. The latter alone had great weight in deciding for amputation. Delbet practiced amputation in the three other cases because the number of microbes continually increased and the general condition declined. All the patients recovered. Delbet thinks that pyoculture guiding him to complete abstention in a certain number of cases and permitting in the others a graduation of intervention, according to the degree of the infection and the resistance of the subjects, has been of essential service.

Professor Quénu was of the opinion that it is to the interest of clinical medicine to utilize to the utmost the teachings of the laboratory, and he congratulated Delbet on his efforts to increase the precision of the indications for operation, but on one condition, and that is that laboratory examinations should not be allowed to delay operations considered urgent. Now, the urgency of operative intervention in joint wounds, and especially in wounds of the knee, is as great as that of laparotomy in abdominal wounds. One can reproach Delbet's pyoculture system with the grave inconvenience of delaying the decision for twenty-four hours. Even supposing that one fourth of knee wounds are aseptic, Quénu would prefer, personally, to run the risks of one useless operation against three chances of a necessary operation, always supposing, of course, that the cleaning up of the region, aseptic precautions and the technical skill of the surgeon were irreproachable.

IODIN FUMIGATION IN THE TREATMENT OF WOUNDS

At the last meeting of the Réunion médico-chirurgicale de la XVI-e Région, Dr. L. Cheinisse of Paris drew attention to the excellent results that can be obtained by the treatment of certain wounds with iodine fumigations. The technique is very simple. A glass flask has a stopper with two tubes. One tube is adapted to a rubber blowing bulb; the other is intended for the escape of the iodized vapors. To obtain these, one places in the flask an appropriate quantity of iodine. The flask is heated by a spirit lamp, metal gauze being interposed. As soon as violet vapors of iodine commence to make their appearance, the current of air is forced through the flask by means of the bulb, and the vapors are directed so as to reach the remotest parts of the wound, and the operation is continued until the wound is completely dry and covered with a fine, bluish-gray powder with metallic reflections. Iodine fumigation must not be combined with wet dressings; the latter would take away all the efficacy of the fumigation. The wound, immediately after fumigation, must simply be covered with aseptic gauze and cotton. Iodine fumigations are particularly successful in highly infected, gangrenous wounds covered with adherent false membranes. They rapidly cause the wound to clean up. The putrid odor of the secretions disappears and the progress of the infective process is arrested. In a case of compound fracture of the scapula with fulminating gangrene in the infraspinous and supraspinous fossae, which had resisted washing with Labarraque's solution and interstitial injections of hydrogen peroxid, etc., Cheinisse saw, under the influence of iodine fumigations, that the wound cleaned up completely, and the general condition of the wounded man which had been so serious (high temperature, extremely feeble pulse) improved very rapidly.

Another indication for the use of iodine fumigations is atony of wounds whose condition remains stationary notwithstanding the most varied local applications. In one case a sergeant had undergone Chopart's amputation, and the stump, during two long months, had shown no sign of cicatrization, and grafts were about to be tried; but a few iodine fumigations sufficed to stimulate the atonic tissues and caused rapid cicatrization.

Diminution of Rabies

The health council of the department of the Seine has just received a report on the treatment of rabies in the department during the period 1910-1914. No case of hydrophobia in man has occurred during these five years. At the Institut Pasteur there were treated, in 1910, 119 persons who had been bitten; in 1911, 105; 1912, 111; 1913, 95; 1914, 92. No death occurred. The reporter concludes that rabies continues to decrease in the department and that this fortunate circumstance is due above all to the capture of wandering dogs. This measure must therefore be more and more developed and applied with perseverance as being the most efficacious.

Marriages

WILLIS HESS LEFEVRE, M.D., Ephrata, Pa., to Miss Marguerite Heiserman of Harrisburg, Pa., in West Philadelphia, July 7.

LEIGH FOWLER ROBINSON, M.D., Raleigh, N. C., to Miss Dorothy Beardsley Barrows of Hartford, Conn., July 12.

JOHN HOWARD BAKER, M.D., Indianola, Okla., to Miss Thelma A. Southworth of Walnut Ridge, Ark., May 25.

DAVID PAUL WHITMORE, M.D., Rock Springs, Wyo., to Miss Eva Belle Barber of Spring Valley, Minn., June 26.

EDWARD JOHN GOTTHELF, JR., M.D., Tucson, Ariz., to Miss Edna Alexandra Pelto of Los Angeles, July 15.

ALEXANDER LESLIE MARSHALL, M.D., Harrisburg, Pa., to Miss Margaret Blalock of Philadelphia, July 6.

DAVID C. TRACH, M.D., to Miss Emma M. Frantz, both of Kresgeville, Pa., at Cherryville, Pa., June 6.

WILLIAM ROBERT PERKINS, M.D., to Miss Ethel Mae Fausett, both of Washington, D. C., July 15.

WILLIAM A. SEIDLER, M.D., Jamaica, Iowa, to Miss Ethel N. Knapp of Colfax, Iowa, June 29.

CHARLES J. MCGEE, M.D., to Miss Rose Gertrude Fuller, both of Leavenworth, Kan., July 4.

RICHARD C. SEBERN, M.D., to Miss Edythe Kiner, both of Odebolt, Iowa, April 6.

JOSEPH S. GLICKMAN, M.D., to Miss Victoria Miller, both of New York, June 20.

Deaths

William Simon, M.D., Baltimore; aged 72; professor of chemistry in the College of Physicians and Surgeons, Baltimore, since 1880; eminent as a chemist; died at Eaglesmere, Pa., July 19. He was born in Eberstadt, Hesse, Germany, Feb. 20, 1844; received his education at Giessen, was given the degree of Ph.D. by the University of Giessen in 1869. He served as assistant to Prof. H. Will in Giessen, from 1869 to 1870, and after serving in the Franco-German War, came to the United States and opened a chemical laboratory at Baltimore in 1871. He was professor of chemistry in the Maryland College of Pharmacy from 1872 to 1902, and in the Baltimore College of Dental Surgery since 1888. In 1880 Professor Simon was given the honorary degree of M.D. by the College of Physicians and Surgeons, Baltimore, and in 1915, the University of Pennsylvania conferred on him the degree of Sc.D. In 1887 he was elected president of the Maryland Pharmaceutical Association; he was a fellow, member or honorary member of many chemical and pharmaceutical societies.

Francis M. Harrington, M.D., Providence, R. I.; College of Physicians and Surgeons, Boston, 1891; aged 47; a Fellow of the American Medical Association; formerly secretary of the Pawtucket Medical Association; a member of the Clinical Congress of Surgeons of North America; professor of surgery in his alma mater for many years; and for the last ten years professor of physiology and toxicology in the Rhode Island College of Pharmacy; surgeon-in-chief of the Pawtucket Hospital and consulting surgeon to the North End Hospital and Dispensary, Boston; died at his home, June 6.

Carnie Casander Thayer, M.D., Clifton Springs, N. Y.; Rush Medical College, 1878; aged 76; for twenty-one years a member of the medical staff of the Clifton Springs Sanitarium, and during a portion of that time director of the medical staff; for a few years a missionary in Turkey; a member of the United States Sanitary Commission during the Civil War for two years or more; died in the sanatorium, June 24, from gastric and duodenal ulcer.

Harris H. Baxter, M.D., Cleveland; Cleveland Homeopathic Medical College, 1868; aged 69; professor of principles of medicine, the organon and materia medica in the Cleveland-Pulte Medical College; a member of the Medical staff of the Cleveland Homeopathic Hospital; for fourteen years a member of the Ohio State Medical Board and once president of the board; died at his home, July 9, from heart disease.

Hilliard James Rowe, M.D., Willow Springs, Mo.; Missouri Medical College, St. Louis, 1886; aged 56; a Fellow of the

American Medical Association; formerly president of the Southwest Missouri Medical Society; division surgeon for the Frisco System for twenty-five years and local registrar ever since the vital statistics law went into effect in Missouri; died at his home, June 17, from carcinoma of the rectum.

William Abraham Haskell, M.D., Alton, Ill.; Harvard Medical School, 1869; aged 71; a Fellow of the American Medical Association; one of the most prominent practitioners of western Illinois; a charter member of the Madison County Medical Society; a member of the Illinois State Board of Health and president of the board from 1887 to 1892; died at his home, July 13.

Rudolphus D. Jennings, M.D., Hot Springs, S. D.; Chicago Homeopathic Medical College, 1889; aged 62; a member of the South Dakota State Medical Association; formerly president of the state board of health and governor and chief surgeon of the Battle Mountain Sanitarium National Home for Disabled Volunteer Soldiers; died at his home, July 12, from diabetes.

Charles Edwin Selvage, M.D., Newark, N. J.; College of Physicians and Surgeons in the City of New York, 1906; aged 33; a Fellow of the American Medical Association and a well known orthopedic surgeon; a member of the staff of the Orthopedic Hospital, Manhattan; City Hospital, Newark, and Orange (N. J.) Hospital; died at his home, July 7, from typhoid fever.

Edward Francis Hodges, M.D., Indianapolis; Georgetown University, Washington, D. C., 1874; Harvard Medical School, 1877; aged 65; a Fellow of the American Medical Association and Royal Microscopical Society of London; professor emeritus of obstetrics in the Indiana University School of Medicine; died at his summer home in Cavendish, Vt., July 11.

Charles Wesley Overpeck, M.D., Rockville, Ind.; Medical College of Indiana, Indianapolis, 1904; aged 37; formerly a member of the Indiana State Medical Association; died at his home, July 10, from the effects of a gunshot wound of the right side, self-inflicted, it is believed, with suicidal intent, while temporarily deranged on account of family troubles.

Charles Frederick Braden, M.D., El Paso, Texas; Pulte Medical College, Cincinnati, 1890; aged 49; a Fellow of the American Medical Association; secretary of the local Red Cross Society, and secretary of the El Paso County Medical Society; died in a hospital in El Paso, July 6, from gastric ulcer.

Samuel Floyd Vaughan, M.D., Jonesville, Texas; Tulane University, New Orleans, 1869; aged 72; formerly a Fellow of the American Medical Association; a member of the State Medical Association of Texas, and once president of the Harrison County Medical Society; died at his home, July 7.

Robert Wesley Baker, M.D., Peoria, Ill.; Rush Medical College, 1879; aged 67; a Fellow of the American Medical Association; one of the most prominent practitioners of Peoria; for several years a member of the local board of education; died at his home, July 17, from heart disease.

James B. Drake, M.D., Norwich, N. Y.; College of Physicians and Surgeons, Baltimore, 1882; aged 63; a member of the Medical Society of the State of New York; visiting physician to the Norwich Hospital and Chenango Valley Home; died suddenly while driving his automobile, July 12.

Nathan Allen Loofbourow, M.D., Monroe, Wis.; Rush Medical College, 1873; aged 67; a Fellow of the American Medical Association; for many years a practitioner and druggist of Monroe, and head of the Loofbourow Hospital, Monroe; died in that institution, July 6.

William Alvares Franklin, M.D., Chicago; University of Michigan, Homeopathic Medical School, Ann Arbor, 1878; aged 67; formerly professor of pediatrics in Hering Medical College, Chicago; died at his home, July 6, from acute gastritis and pleurisy.

Charles Eugene Putnam, M.D., Jersey City, N. J.; New York Homeopathic Medical College, New York, 1883; aged 51; a member of the Medical Society of New Jersey and formerly a member of the Jersey City Board of Health; died at his home, July 13.

Francis Marion Spenogle, M.D., San Francisco; University of Wooster, Cleveland, 1879; Long Island College Hospital, Brooklyn, 1885; Bellevue Hospital Medical College, 1886; aged 64; died at Buena Vista (Calif.) Sanatorium, July 9, from diabetes.

Charles Wesley Shill, M.D., Lafayette, Ind.; Louisville (Ky.) Medical College, 1876; aged 65; for two terms coroner

of Tippecanoe County, Ind., and county health officer for several years; died at his home, July 8, from cerebral hemorrhage.

Thomas Marvin Johnson, M.D., Buffalo; University of Buffalo, N. Y., 1861; aged 88; for many years a practitioner and pharmacist of Buffalo; died at his home in Bath, N. Y., May 6, from arteriosclerosis complicating a fracture of the hip.

David William Edgar, M.D., Ames, Iowa; Rush Medical College, 1874; aged 69; formerly a member of the Iowa State Medical Association; died suddenly from heart disease, July 10, while driving across the college campus in his automobile.

John Y. Bennett, M.D., Leroy, Ill.; Physio-Medical College of Indiana, Indianapolis, 1896; Illinois Medical College, Chicago, 1898; aged 43; a Fellow of the American Medical Association; died at his home, about July 9, from pneumonia.

Thomas W. Reynolds, M.D., Charleston, S. C.; Medical College of the State of South Carolina, Charleston, 1904; aged 37; formerly a member of the South Carolina Medical Association; died at his home, about July 2.

James Fuller Crane, M.D., Richmond, Va.; Medical College of Virginia, Richmond, 1875; aged 66; a Fellow of the American Medical Association; for many years city physician of Richmond; died at his home, about July 11.

John Hermann, M.D., Sioux City, Iowa; Chicago Homeopathic Medical College, 1889; aged 55; lecturer in the German Lutheran Hospital Training School for Nurses, Sioux City; died at his home, about July 10.

George P. Eddy, M.D., Lewiston, N. Y.; University of Buffalo, N. Y., 1865; aged 75; for more than half a century a well known practitioner on the Niagara frontier; died suddenly at his home, July 4.

Elizabeth A. Neff, M.D., Halliday, N. D.; Chicago Physio-Medical College, 1896; aged 50; a Fellow of the American Medical Association; died suddenly on the street in Halliday, from heart disease, July 11.

Sovereign G. Popplewell, M.D., Milo, Mo.; College of Physicians and Surgeons, Keokuk, Iowa, 1876; aged 69; died at the home of his son in Sheldon, Mo., July 5, from carcinoma of the stomach.

Moses H. Bonner, M.D., Nashville, Tenn.; University of Nashville, Tenn., 1879; aged 59; who had been under treatment at Johns Hopkins Hospital for several weeks; died in Philadelphia, July 8.

Fred Knight Porter, M.D., Southwick, Mass.; Medico-Chirurgical College of Philadelphia, 1898; aged 42; formerly a member of the Massachusetts Medical Society; died at his home, April 12.

Isaiah Charles Barnhart, M.D., Brooklyn; Long Island College Hospital, Brooklyn, 1886; aged 68; died at the Huntington (L. I.) Hospital, July 12, after an operation for appendicitis.

Richard W. Sipe, M.D., Orange, Ind.; Indiana Medical College, Indianapolis, 1875; aged 76; a member of the Indiana State Medical Association; died at his home, June 30, from uremia.

John Selby Morris, M.D., Charleston, W. Va.; College of Physicians and Surgeons, Baltimore, 1904; aged 38; a Fellow of the American Medical Association; died at his home, May 12.

Joseph G. Scott, Princeton, Mo. (license, Missouri, 1883); aged 79; a practitioner since 1867; died at the home of his son in Princeton, June 24, from cerebral hemorrhage.

Robert Hallenus McGehee, M.D., Rockcastle, Ala.; Vanderbilt University, Nashville, Tenn., 1887; aged 52; died suddenly, from heart disease, in Rockcastle, July 3.

Charles Sacramento Wood, M.D., New York City; College of Physicians and Surgeons in the City of New York, 1886; aged 52; died suddenly at his home, July 6.

Lafayette Martin, M.D., Batesville, Ind.; Eclectic Medical Institute, Cincinnati, 1887; aged 70; died at his home, April 14, from carcinoma of the liver.

Horatio C. Burritt, M.D., Toronto, Ont.; McGill University, Montreal, 1863; aged 75; died at his home in Toronto, April 21, from arteriosclerosis.

Edward Hale Dickie, M.D., Homer City, Pa.; University of Wooster, Cleveland, 1884; aged 58; also a druggist; died at his home, July 5.

Willis S. Bryant, M.D., Dale, Ind.; Miami Medical College, Cincinnati, 1874; aged 67; died, July 6, after an operation for gallstones.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

WINE OF CARDUI SUIT

(Continued from page 307)

May 24, 1916, Afternoon

TESTIMONY OF MR. SCOTT DUNNING

The Court met pursuant to adjournment. Mr. Dunning was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Dunning testified that he resides in Nashville, Tennessee. His mother lives in Slayden, and he lived in Slayden up to four months ago. He met Dr. Heizer in Slayden, Tennessee. At that time, the witness was working for a livery stable. The witness was with Dr. Heizer driving him for one day. They started from Slayden, and drove to Mr. G. T. Cooksie's store on Yellow Creek. This is a merchandise store. Dr. Heizer talked with Mr. Cooksie's wife. Dr. Heizer then went to the home of Dr. Dixon, a mile and a half away, then back to Cooksie's store. The witness stated that Dr. Heizer asked him if he knew of any one who drank Wine of Cardui around there. The witness stated that he mentioned some women but he did not know whether they drank it or not.

Dr. Heizer asked him concerning a disreputable place, and the witness told him that the women might drink it, but he did not know. Dr. Heizer stated that he would get some Cardui and come back to see him. The witness does not know if he bought any Cardui or anything else. He bought something and put it in the buggy. They then went to L. J. Browning's and Dr. Heizer entered, so that the witness did not know what he did. They then went to Pea Ridge, the disreputable house.

Dr. Heizer asked one of the women if she knew of any one who wished to make fifty cents and told her that he would give any one fifty cents to drink Wine of Cardui. The witness saw Dr. Heizer taking a picture of a Wine of Cardui sign in G. T. Cooksie's store. The women mentioned are women who live in a little old log cabin out in an old field.

The witness identified his signature to a document signed by J. J. Parrot. The witness stated that this is the second time he has been in Chicago. The first time he came was the latter part of March, at Dr. Heizer's request.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness testified that he has seen Mr. Richter lately in Nashville. Mr. Richter came there to see him. There was an understanding that the witness was to be paid his expenses and \$5 a day for his time. The witness stated that he went home about the first of April. The witness knows Dr. Dixon and Dr. McCormick. He also knows J. J. Parrot and he has seen Dr. Keaton.

The witness stated that he told Dr. Heizer that he had seen F. T. Parrot drink Wine of Cardui. The witness stated that he told Dr. Heizer about the women of ill repute. He had known of their reputation for six or seven years. He told Dr. Heizer that it was possible that these women used Wine of Cardui.

The witness stated that Mr. J. J. Parrot is a drunkard and a farmer. He has known him for about six years. The witness drove Mr. Richter out to see Mr. Parrot at the time the affidavit was made. The witness does not remember the conversation that occurred between Mr. Richter and Parrot. It was about Wine of Cardui, but he does not remember what they said. The witness saw this statement at the Great Northern Hotel. Mr. Richter brought it over.

Mr. Parrot stated in the statement that he had taken two or three bottles of Wine of Cardui and that it did not hurt him, only left a bad taste in the mouth. The witness stated that he also signed a statement for Mr. Richter, but he does not remember what it was about. He does not remember

whether it contained what he told Mr. Richter. The statement was signed over a year ago. The witness does not remember that he told Mr. Richter to scratch out a portion of the statement before he would sign it.

REDIRECT EXAMINATION BY MR. FOWLER

Mr. Dunning stated that it was several months after he first saw Dr. Heizer that he saw Mr. Richter. He told Mr. Richter what had transpired between himself and Dr. Heizer.

DEPOSITIONS

Some depositions were read and then adjournment was taken until 10:30 a. m., May 25, 1916.

May 25, 1916, Morning

DEPOSITIONS

The Court met pursuant to adjournment and a number of depositions were read, after which the Court adjourned until 2 p. m. the same day.

May 25, 1916, Afternoon

TESTIMONY OF MR. WILLIAM DOWDLE

Mr. William D. Dowdle was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Dowdle testified that he resides in Millport, Ala., and has a cousin named Dowdle living there who does not drink. The cousin is a high church man and the witness never heard him accused of drinking nor did he ever see him drink. The witness was asked what kind of a man the other Dowdle is. Objection was made to the question. The Court ruled that the witness might testify only that the other Dowdle was not seen drinking by this witness and the witness has not heard of his drinking. The witness stated that the other Dowdle is his cousin. He has been intimately acquainted with him all his life and knows his habits.

Mr. Dowdle has known of Dr. Kay for six or seven years. The witness testified that he is a contractor and builder, also an insurance writer. He knows of Mr. Cox, who ran a store in Millport in 1912. He had not been in business in 1910, but went out of business in 1907 and resumed in 1912.

The witness stated that Dr. Kay had not seen him drink Wine of Cardui in Cox's store. He stated that the conversation which Dr. Kay said occurred between himself and the doctor did not occur. He stated that he had never drank Wine of Cardui, and that he did not know there was alcohol in it.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness testified that he would not have known anything about Wine of Cardui from examining it except from reading the label. Even if he tasted it he could not have told that there was alcohol in it. He stated that Dr. Kay lives about 125 miles from where he does. The witness has lived in the neighborhood twenty-two years. He stated that Cox lived there from 1902 until 1907, moved away and came back in 1912. He knows this because Cox told him. He knows about the resumption of business from memory. Cox runs a drug store. During his absence the store was conducted by Drs. Doty, Collins and See. The witness does not know whether or not he kept Hostetter's Bitters. He knows that he did not keep Wine of Cardui because he can read the cartons. He never went around to see whether there was any Cardui there. He saw the shelves. He could not state any special thing which he saw on the shelves except drugs.

The witness stated that he drinks whisky, but he does not drink any tonics. He believes he drinks about a gallon a year. He orders it from Memphis. He does not buy bootleg whisky because it is too cheap. He did taste Peruna once ten or twelve years ago.

Mr. Dowdle testified that Mr. Denton first spoke to him about coming to Chicago. The witness believes that his expenses are being paid by the Chattanooga Medicine Co.; and thinks that the Court is paying his per diem. He has no arrangements as to what he is to receive from the Court. The Court said perhaps he had better advise the witness to get that idea out of his head.

The witness stated that when Mr. Denton came to him he asked him whether he (Mr. Dowdle) would come to Chicago if the company paid his expenses; he also asked some of the questions which were read to him a while ago. The witness also saw a Mr. Butler of the Chattanooga Medicine Co. Mr. Butler asked him if he was ready to go. Mr. Butler gave him \$5 to pay his expenses to Maplesville. Mr. Glover bought the tickets at Maplesville. There were present Mr. Glover, Mr. Fitts, Mr. Dixon, Mrs. Adams, and a darky named Ben something. He met Mr. Richter at the depot in Chicago. Mr. Richter took charge of him.

Mr. Dowdle says that he has never tasted or drunk Wine of Cardui.

REDIRECT EXAMINATION BY MR. FOWLER

The witness stated that his recollection is that Cox came back in November after an absence of five years.

TESTIMONY OF MR. FRED JAMES (COLORED)

Mr. Fred James was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. James testified that he resides in Maplesville, Ala. He has worked for Dr. Kay six months in all; two months each in 1914, '15 and '16. He was attending to Dr. Kay's horses, working in the office, etc. He stated that Dr. Kay had never seen him take a drink in his life; he never took a drink of Wine of Cardui during the time he worked for Dr. Kay.

Last January Dr. Kay asked him if he ever drank Wine of Cardui, and he told him that he purchased Wine of Cardui for his wife and drank one swallow back in 1910. He stated that Dr. Kay had no other business but practicing as a physician. He kept no drugs of his own. He kept Jamaica ginger. Objection was made and sustained to the latter question and answer.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness testified that he is 48 years old, has been married, and has lived in Maplesville eighteen years. He sometimes drinks gin and whisky. He has not drunk Hostetter's Bitters or Peruna or Manola. He orders whisky from Pensacola two quarts at a time.

Mr. James bought two bottles of Wine of Cardui. His wife may have purchased another. He was notified to come to Chicago by Dr. Glover by telegram. He supposed that he had to come to Chicago and that is the reason he came.

TESTIMONY OF MRS. SUSIE ADAMS

Mrs. Susie Adams was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mrs. Adams testified that she lives 2½ miles from Maplesville. She has been married over three years and had one child two years ago last February. Dr. Kay and Dr. DuBois took care of her. She was unconscious from Friday night until Monday morning. Her mother told her she had convulsions.

The witness stated that she had not taken Wine of Cardui before the baby was born, and she did not tell Dr. Kay that she had.

Cross-examination was waived.

TESTIMONY OF MR. B. O. GLOVER

Mr. B. O. Glover was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Glover testified that he resides in Maplesville, Ala. He knows Dr. Kay and had known him since he came to Maplesville three years ago. His lot and that of Dr. Kay's adjoin.

The witness stated that the general reputation of Dr. Kay for truth and veracity in that vicinity is bad. He would not believe him on oath.

The witness was asked by the plaintiff's attorney if he knew the general reputation for truth and veracity of the colored man, Fred James, who had testified for the plaintiff a short time previously. The Court ruled that this evidence was not in order.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that he has been postmaster, has run a saw mill commissary, worked in the store and rented his farm and worked on his farm. When he worked in the saw mill commissary he sold Wine of Cardui. This he did about three years ago. He has also been justice of the peace. He stated that Maplesville is a town of about 700 or 800 people.

The witness testified that Dr. Kay does not pay his debts and that he does not tell the truth. He knows that Dr. Kay will not pay his debts because he knows people that Dr. Kay owes money and will not pay them. He knows that execution was issued against Dr. Kay in two instances; collection was forced. Dr. Kay paid in those two instances, and he also paid the Court costs.

Mr. Glover had an argument with Dr. Kay about a road. Dr. Kay contended that it was a public road, and the witness stated it was not. The witness closed it up. He heard Dr. Kay's reputation generally discussed during the last two years. There are about 700 to 800 people in the town. The witness named two people whom he heard talk about Dr. Kay. He stated that the general reputation means that people do not like the man and that he is not popular. That is what the witness means by his general reputation for truth and veracity being bad.

REDIRECT EXAMINATION BY MR. FOWLER

The witness stated—after numerous objections to questions which were sustained—that by unpopular he means that the man does not fulfil his obligations properly and people do not like him.

TESTIMONY OF MR. R. E. FITTS

Mr. R. E. Fitts was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Fitts testified that he lives in Stanton, Ala. He farms, builds houses, and is an officer of the county. He is justice of the peace and has been for about eight years. He has known Dr. Kay for a little less than three years. He knows Dr. Kay's reputation for truth and veracity in that community to be bad, and he would not believe him on oath.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that he had heard that Dr. Kay was elected mayor of Maplesville. He named four people whom he heard speak of Dr. Kay's reputation. Some of them are physicians who are competitors of Dr. Kay. Two are brothers. The witness cannot swear whether the conversations occurred before or since the suit.

The witness did not see Mr. Richter until he came to Chicago. Mr. Glover asked him to come to Chicago. He did not know what was wanted of him until he came here. He testified that he had not the slightest idea that they were wanting to prove by him that Dr. Kay's reputation for truth and veracity was not good. Mr. Fitts stated that he made a statement to a representative of the Chattanooga Medicine Co. about a criminal case against Dr. Kay some time ago. He gave the representative the docket of the case in his court as justice of the peace.

TESTIMONY OF B. O. GLOVER

Mr. B. O. Glover resumed the stand.

FURTHER DIRECT EXAMINATION BY MR. FOWLER

Mr. Glover stated that it is about a year since Dr. Kay was mayor of Maplesville. He did not know that Dr. Kay resigned.

DEPOSITIONS

The Court objected to the testimony as to why Dr. Kay resigned. Some depositions were then read.

May 26, 1916, Morning

The Court met pursuant to adjournment. Mr. Walker, attorney for the Chattanooga Medicine Co., asked that the jury might have the privilege of testing Wine of Cardui organoleptically themselves. The Court stated that he could see no objection after the witnesses had been disposed of.

TESTIMONY OF DR. BENJAMIN H. BREAKSTONE

DIRECT EXAMINATION BY MR. WALKER

Dr. Breakstone testified that he is a physician, a graduate of Rush Medical College in 1899. He passed the state board examination in 1898—while a junior in the medical college. He took postgraduate work in diseases of women and in surgery; taught chemistry in the Jenner Medical College in 1898; from 1898 to 1901 was assistant in diseases of women at the Central Free Dispensary, from 1899 to 1902 house physician at the Central Free Dispensary; assistant in surgery, attending surgeon and attending genito-urinary surgeon in the United Hebrew Dispensary for 13 years; assistant to Professor Brauer in nervous diseases at the Central Free Dispensary for four years. He also stated that he was attending genito-urinary surgeon at the Illinois Medical College Dispensary, and was assistant professor of gynecology at the Illinois Medical College. He was professor of surgery at the Jenner Medical College until 1906, when he became professor of operative surgery at the American College of Medicine and Surgery, which later became the Chicago College of Medicine and Surgery, and since 1908 he has been professor of surgery at the Bennet Medical College.

The witness also testified that he has been attending surgeon at the Cook County Hospital; consulting surgeon to the Mary Thompson Hospital for women and children, and chief surgeon of the Maimonides Hospital. He is now attending surgeon at the Jefferson Park Hospital and the Douglas Hospital, and is consulting surgeon to the Municipal Tuberculosis Sanitarium. He is a member of Chicago Medical, Illinois Medical Association, the Chicago Academy of Surgery, the Illinois Surgical Society, the American Medical Association, and the International Hospital Association. He stated that he was founder and first president of the West Side Physicians Club; he has been councilor of the Chicago Medical Society and Chairman of the Committee on Abuse of Medical Charities of the Chicago Medical Society. One year he was delegate to the Illinois State Medical Society. He has written 45 papers which have been published—one item twelve years ago in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. His practice is chiefly among foreign Americans.

The witness stated that he has specialized in surgery and diseases of women for the last eight or ten years exclusively. He has seen about three hundred patients a year suffering with female diseases, covering all ages, and has performed all kinds of operations which seemed reasonable to him. He has very frequently seen gonorrhea in women. In his experience 80 to 90 per cent. of the women suffer at the time of the establishment of menstruation. Medicines are given at this time and frequently he thinks they are useful.

Dr. Breakstone testified that he studied his surgical work privately under Nicholas Senn, to whom he was assistant for a while. He was also a pupil of Christian Fenger, James H. Ethridge, and J. Clarence Webster. He stated that he has seen all the leading gynecologists of the United States and Canada operate and some of the European ones. He stated that he is familiar with all the disturbances of menstruation. He considers that between 85 and 90 per cent. of disturbances of the female organs of generation are non-surgical; about 10 per cent. of the cases that are now referred to him are non-surgical. He testified that in normal healthy women no medicines are indicated, and that pregnancy is not a disease; it is a physiologic affair. If there are distressing symptoms the condition is not normal and he gives medicines. Tonics are indicated for a run down condition. Medicines are frequently indicated at the time of the menopause. Medicines are also indicated in practically all female conditions which are non-surgical, and very frequently inflammatory conditions require non-surgical treatment. He mentioned such conditions.

The witness stated that there are cases of sterility which might be treated by non-surgical methods. He stated that he is familiar with the drug known as viburnum prunifolium and uses it in his practice, as he believes it has therapeutic value. He has never used carduus benedictus. He knows of it from reading; in his opinion it may be of benefit as a general and special tonic. He considers it possible that the medi-

cine be both a tonic and sedative. He distinguishes between a tonic and a stimulant.

Q.—Doctor, take a medicine known as Wine of Cardui. Have you ever used that in your practice? A.—I have never used any proprietary nor any ready-made formula of any kind.

Q.—At any time in your practice? A.—At any time.

He considered that the alcohol in the hypothetic medicine similar to that described to previous witnesses would have no effect at all. It would not have any effect in the dosage given in gonorrhea. He considers that gonorrhea is a self limited disease and cleanliness and keeping up the elimination of the body will cure it. He would not consider a tonic containing the amount of alcohol mentioned in the hypothetic medicine as detrimental.

Q.—What amount of alcohol, as alcohol, doctor, in your opinion, can be taken without injury, in a day? A.—Well, of course, it depends on the patient, and it depends on whether they are used to alcohol, but I would say from two to six ounces is absolutely harmless.

Q.—Would you make the answer to those that are not used to it, the minimum answer of two ounces? A.—Yes, sir, as the minimum.

Q.—Would you expect to have any deleterious results involved with the use of that amount of alcohol? A.—No, sir.

Q.—How many drops, doctor, are there in two ounces? A.—960 drops.

Q.—Take a young girl who is suffering—

The Witness:—I want to qualify that answer. I should say 960 minims. A drop is not quite the same as a minim.

Dr. Breakstone does not think that the hypothetic medicine given to a girl during puberty would heighten her passions, nor would it give her an alcoholic habit. He stated that a drop of water is approximately a minim, but a drop of alcohol is about half a minim. He testified that he did not think the taking of a medicine such as Wine of Cardui in the dosage named would be injurious to the organs of secretion of a woman at this time of pregnancy, nor does he think it would mask or conceal a cancer at the time of the menopause, nor does he think it would mask tuberculosis.

The witness stated that alcohol, beer, light wines, etc., are frequently taken by foreign women during pregnancy without bad effect on the mother or the fetus. There was described to the witness the experiment of Dr. J. Clarence Webster, and he stated that in his opinion it did not prove anything as to the efficacy of the medicine when taken by the mouth in the treatment of the sick. The fact that pituitrin acted on the uterus would not be evidence, in his opinion, that the previously mentioned medicine would not act on diseased women if taken through the mouth.

Mr. Walker: Q.—What would be the effect, if any, doctor, upon the tissues, of a local application of a medicine—if there be any—that would kill, itself, the gonococcus? A.—You mean that the medicine itself would kill gonococcus?

Q.—Yes? A.—Why, any medicine that will kill a microbe will destroy the tissue on which the microbe grows.

THE COURT:—Then tell us how it acts. Perhaps we have a misconception. When you make a local application in a case of gonorrhea, what do you do it for, and what is the chemical action or the physical action of the patient? A.—Well—

Q.—What happens to the microbe? A.—Well, in acute gonorrhea we do not use any local application at all. In the chronic gonorrhea we only use it to help the tissues—

Mr. Walker:—Louder.

The Witness:—(Continuing.)—to help the tissues throw off not particularly the microbe but its toxins. The microbe itself cannot be killed by any medicine unless it will also kill the tissues on which it grows.

Q.—What figure, doctor, does cleanliness cut in the cure, where there is a gonorrheal infection? A.—A great figure. In fact, years ago we used to use very strong antiseptics in surgery and the healing was not as rapid as it is today when we merely use aseptic precautions, not antiseptic.

Q.—What is the distinction? A.—An antiseptic is an agent which is calculated to kill the microbe or its effects. An aseptic is to render the tissues devoid of microbes that are already there, so that the tissues could be able to take care of the microbes which might be introduced during the operation or treatment.

Dr. Breakstone has read the Home Treatment Book for Women. He stated that gonorrhea is not brought on by sexual excess, the germ has to be there; it is not caused by discharges from the womb without the germ being present, but such discharges are the cause of vaginitis.

The witness stated every case of vaginitis is not due to gonorrhea. He testified that leukorrhea is a symptom, and that a tonic medicine would be indicated frequently even when there are malpositions of the uterus. He knows of malpositions that have been treated nonsurgically and cured.

The witness knows what is meant by synergistic action of drugs.

Q.—Well, what do you understand by the term? A.—Well, a synergistic action is an action that is helped by the presence of another drug. That is, there are some drugs that have to be given in quite large doses, yet, if we combine it with another drug, it takes a smaller dose of it.

Objection was made to questions regarding the witness' opinion of carduus benedictus, as he had never used it in his practice.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

Q.—Doctor, in regard to synergistic action; what is it that determines synergistic action? A.—I don't know.

Q.—You don't know? A.—No.

Q.—All right. Then you would not know whether or not in the hypothetical medicine which Mr. Hough talked to you about—or Mr. Walker talked to you of—whether or not alcohol would aid the carduus benedictus or the viburnum prunifolium in a synergistic way, do you? A.—I don't believe that the alcohol would aid it in any way, except to keep it in solution and to preserve it.

Q.—Now, doctor, do you know the difference between adjuvant and synergistic action? A.—How is that?

Q.—Adjuvant and synergistic action, do you know the difference between the two? A.—Why, an adjuvant is supposed to be a drug that aids the action of another drug, and can be explained on physico-chemical lines; whereas, synergistic action is one that we have not yet been able to explain on those lines.

Q.—Now, do you know whether there is any difference between the two actions, doctor? A.—How is that?

Q.—Do you know whether or not there is a difference between the actions, that is, the adjuvant action and the synergistic? A.—I presume there is.

Q.—You have no knowledge upon the subject yourself? A.—Well, I am not a specialist in that line.

Q.—What is aseptic, doctor? A.—Aseptic means the absence of the sepsis, the absence of the germ, or the toxins.

Q.—Well, aseptic then is a condition, is it not? A.—Yes, sir.

Q.—It is not a thing itself? A.—Well, we speak of an aseptic agent as an agent that will produce asepsis; and the antiseptic, as one that will kill the germs.

Q.—Now, what is the difference between them, doctor? A.—Between which?

Q.—Between the two terms that you have just used? A.—Well, an antiseptic agent is an agent that will kill the germs, whereas an aseptic agent is an agent that will render the field free from germs.

Q.—In what way will it render the field free from germs? A.—Well, mechanically.

Q.—How do you mean? Give us an illustration. A.—Well, by scrubbing and using various agents that might dissolve toxins, such as alcohol, and also—generally by giving tonics that will render the system, or render the blood in such shape that they may be able to throw off germs, or dead germs or toxins already there.

Q.—In using the word "aseptic" in connection with the gonorrhea, I understand you to say—or gonorrheal conditions—that the effect will be to destroy the tissues, if you use an antiseptic? A.—Yes, sir.

Q.—That is, if it were strong enough to kill the germ? A.—Yes, sir.

Q.—Now, how about iodine, doctor? You have used that many times, haven't you? A.—I have.

Q.—Well, do you think that would kill the gonococcus? A.—Iodine does not kill the gonococcus.

Q.—Have you ever had any experience in trying it? A.—Yes, sir.

Q.—How about nitrate of silver? In 10 per cent. solution? A.—Nitrate of silver does not kill the germ.

Q.—How about oxychlorid of copper, one in a thousand? A.—That does not kill it.

Q.—Did you ever try it? A.—I have never tried oxychlorid of copper.

Q.—Then whether it would kill it or not you don't know? A.—Well, from my readings of experiments that have been made, it will not kill it.

Q.—How about argyrol in 20 per cent. solution? A.—It will not kill it.

Q.—Have you tried it? A.—Yes, sir.

Q.—How many times? A.—Many times.

Q.—How about urotropin; did you try the use of that? A.—Urotropin will not kill the gonococcus.

Q.—Did you ever try it?

THE COURT:—See if we cannot put them together and save time. There is not anything in your experience that will kill the microbe itself without destroying the tissues?

The Witness:—No, sir, there is not.

Mr. T. J. Scofield:—The trouble with that is there are some things he has not used himself. He has mentioned one or two of them.

THE COURT:—He does not go outside of his experience. He says there is none that he knows of.

Mr. T. J. Scofield:—Well, I think I have a right to ask him about those—

THE COURT:—You may. I was trying to save time.

Mr. T. J. Scofield: Q.—In what way do you determine, doctor, whether or not the preparation which you use, or have used, to which reference has been made, kills the gonococcus or not? A.—Why, after using it, to make a smear and examine it under the microscope to see if the germ is still there.

Q.—Does that indicate that it has not killed any of the gonococci? A.—Well—practically speaking it does.

Q.—What is that? A.—Practically speaking, it does.

Q.—How is the gonococci located, and in what way is it held in the vagina, for instance? A.—It is usually within the mucous glands.

Q.—Yes. Now, is it in the folds of the vagina? A.—Well, the mucous membrane of the vagina is made up of folds.

Q.—Of folds? A.—Yes, sir.

Q.—And the gonococci work themselves into the folds, do they not? A.—Well, they even go deeper than the folds—they go right into the—into the uterus glands.

Q.—Can you tell the difference, doctor, between a gonococcus—when you look at it—one that is living and one that is dead? A.—Well, I can nearly—well, the gonococcus, I don't know whether it is living or dead, no.

Q.—Yes. Then how do you know that the agent has not killed the gonococcus? A.—Well, because they still keep on having gonococci, and the gonococcus is a short lived microbe, and if you find them a week or two after, there must be new ones, so that reproduction must have taken place, showing that the—there must have been remaining living gonococci.

Q.—Do you ever find any living gonococci in smears? A.—Well, I don't know whether they would be living or dead, but when we find them, we say that they are there.

Q.—Yes? A.—I am not a bacteriologist.

Q.—You say whenever you find them; you have found gonococcus, whether it is living or dead, you have found it? A.—Yes, sir.

Q.—And you cannot tell whether it is living or dead? A.—Well, you can in this way: A living—

Q.—I speak of your examination? A.—Yes. A living gonococcus retains its shape, and a dead one undergoes a disintegration very soon.

Q.—What did you mean a while ago, doctor, when you said you could not tell whether a gonococcus was living or dead, by such examination? A.—Well, I meant that I am not a bacteriologist.

Q.—Well, you mean you can't tell by looking at it? A.—Well, you can in the way I have already indicated. Perhaps a bacteriologist has some further means of telling; but that is the only way I could tell.

Q.—Now, may I inquire whether or not a living gonococcus will grow on a culture medium, any kind of a culture medium? A.—Whether it will?

Q.—Yes, sir. A.—I don't think they have been very successful in cultivating it on an artificial medium.

Q.—Well, have they found anything on which it can be propagated? A.—Well, I am not sure about it, but I believe it can be on the serum, on human serum.

Mr. Walker:—On what?

The Witness:—Serum.

Mr. Walker:—On human serum?

The Witness:—Yes.

Mr. T. J. Scofield: Q.—But you say you are not sure about that? A.—No, I am not sure about it.

Q.—And you are not a bacteriologist? A.—No, sir.

Dr. Breakstone testified that hygienic methods will cure gonorrhea and that is his method of treating it. He stated that alcohol in large quantities is harmful in gonorrhea, but he does not know of any liquid drug that does not contain alcohol. If he had a patient who was suffering with gonorrhea, he would tell the patient to stop drinking beer as the patient would certainly take more than two ounces of alcohol a day in beer.

He stated that beer contains approximately 10 per cent. alcohol. He does not know that it contains 4 per cent. alcohol. He stated that he is not an expert on beer. He tells all of his patients with gonorrhea to stop drinking beer, whisky, wine and gin, etc.

Mr. T. J. Scofield: Q.—Doctor, I understood you to say that gonorrhea was a self-limiting disease. What did you mean by that? A.—I meant that if left alone and not interfered with by local agents, and if the patient is otherwise in normal health, it will get well by merely general hygienic and dietetic care.

Q.—Do you recommend that as a proper way to treat gonorrhea? A.—I have treated three or four thousand patients that way.

Q.—And that is your recommendation for gonorrhea? A.—Absolutely.

Q.—Did you ever operate on a woman for salpingitis? A.—Yes, sir; many.

Q.—How many times? A.—Many times.

Q.—Well, approximately? A.—Well, I would say—

Q.—Well, I don't care, it does not matter—but in the percentage of cases—

Mr. Walker:—He does know. He will tell you.

Mr. T. J. Scofield:—All right.

The Witness:—What is the question?

Mr. T. J. Scofield:—I was going to ask you about the per cent. I will ask you how many cases—then I said it was not material, but Mr. Walker said you knew? A.—Well, quite a few, quite a number.

Q.—Quite a few. All right. How many of those cases were gonorrheal salpingitis? A.—Well, almost all cases of double salpingitis is due to gonorrhea.

Q.—They did not cure themselves, did they, doctor? A.—How is that?

Q.—I say those cases of gonorrhea did not cure themselves, did they? A.—No. A great many of these never knew they had gonorrhea; and a great many of those also were treated locally.

Dr. Breakstone then stated that the presence of gonorrhea in the urethra might produce urethritis, diseases of the bladder, or of the kidney. He described the method of examination of the presence of gonorrhea by a smear and stained specimen. He stated that in cases of gonorrheal urethritis, all that is necessary is to keep the urine bland, which he does by giving alkaline solutions, and lots of water; if it is in the womb, he tries to prevent the spread of the inflammation by keeping up the health of the patient.

Q.—Well, I know—I am not asking you that, doctor. My question was, when it is in the womb, how do you keep the womb clean, the inside of the womb? A.—How do you keep it clean?

Q.—I did not ask you how to treat it. I asked you how to keep it clean. You say cleanliness is the thing that makes it well? A.—Yes. But by cleanliness, we don't mean exactly local cleanliness. We mean keep the system clean, as well as locally. Now, if we try to inject anything up into the uterus, we will mechanically push the gonococcus further up, and then we will have salpingitis, and the history of almost all the salpingitis that have had treatment are that they had local treatment.

Q.—You know, doctor, I am not asking you how you don't do it; I am asking you how you do keep the uterus clean under those conditions? A.—Well, it will clean itself, by the menstrual blood, and—

Q.—Then, as far as the uterus is concerned, it does not need anything because it will clean itself from the gonococci? A.—It will clean itself—

Q.—Yes? A.—providing the health of the rest of the body is kept in the highest possible form.

Q.—Now, then, it has not been your experience, has it, doctor, that a man or woman who has strong health, in good normal condition, that the gonococcus germ grows and produces just as rapidly in her case, as it would in anybody else, a person who was anemic, or in poor health? A.—You mean, does it reproduce as quickly in a healthy person.

Q.—I mean just what I am saying. Doesn't it reproduce itself and spread and increase just as rapidly and as certainly in a strong, normal person as it does in anybody else? A.—Absolutely.

Q.—It does not? A.—No, sir.

Q.—That has been your experience? A.—Absolutely.

Q.—Then if a person is in perfect tone and in good condition, they don't need any sort of treatment for gonorrhea? A.—Well, very many people don't have any sort of treatment for gonorrhea.

Q.—I am not asking you what many people don't have. You are a physician here. I am asking you if a person's body is in good tone, and they happen to get gonorrhea, if they don't need any treatment at all? A.—Well, I would not say that. I would say that anyone afflicted with disease should go and see a doctor, for not only a treatment but advice.

Q.—Why should they go and see a doctor for treatment and advice? A.—Well, it is a contagious disease; they are going to spread it; and if they keep on eating all they want and drinking all they want, and get their system below par again, why, their resistance will be lowered. The idea of treatment is not only cure, but also prevention and—

Q.—Prevention of what? A.—Prevention of either the disease gaining a foothold, or its complications.

Q.—Well, but it is a self-limiting disease, and the person is up to normal tone, and it will not spread, will it, so far as the person is concerned? A.—Well, as long as measures are taken to keep it local, it will not spread. Measles is a self-limiting disease—

Q.—I understand that—

Mr. Walker:—Let him finish.

Mr. T. J. Scofield: Q.—Is there anything else you wanted to say? A.—Yes.

Q.—What was it? A.—Measles is a self-limiting disease, and many people get no treatment for measles at all, yet we have bronchopneumonia following measles in quite a few cases that could be prevented—

Q.—I am speaking of— A.—by treatment.

Q.—Yes. I am talking to you not about contagious diseases; I am talking to you about infectious diseases. A.—Every germ disease is contagious and infectious.

Q.—I am speaking of infectious diseases, doctor. A.—I have just answered that every disease caused by a germ is either contagious or infectious or both.

Q.—I did not ask you about the contagious end of it; we were talking about a condition of infection, gonorrheal infection. A.—Well, gonorrhea is not an infectious disease; it is a contagious one.

Q.—It spreads how? A.—By coming in contact with a germ, or the germ bearing agent?

Q.—But what is it that causes it to spread to the person who touches it or comes in contact with it, is it a germ? A.—A germ exactly.

Q.—It is a germ? A.—Yes, sir.

Q.—That is deposited there? A.—Certainly.

Q.—Is the disease then, as it is developed, an infectious condition? A.—It is called an infection, because that particular part is caused by a germ which infects, but it is a contagious disease, because it is contracted only by contact, and an infectious disease is one that we get through the air, water or food; whereas, a contagious disease is one that we get only coming in contact. We are exposed to contagious diseases all the time; but, if our health is good we are able to ward off that infection—that agent which is going to attack us. Not every one who is exposed to gonorrhea gets gonorrhea. You have to be in—

the tissues have to be in a favorable condition for the gonococcus to be able to attack it.

Q.—Now, gonorrhea which affects the eye; do you treat that in the same way? A.—Well, the eye is easily cleaned, and is cleaned mechanically. We can cure it by boric acid. We cure it by silver nitrate, 1 per cent.

Q.—What do you use the silver nitrate for, doctor? A.—Merely as a prevention, to render the field aseptic, render it unfavorable for the gonococcus to be able to attack it, and remain there.

Q.—Boric acid solution will do that, won't it? A.—How?

Q.—Boric acid solution will do that, will it not? A.—Why, of course it will.

Q.—Now, then, doctor, you may describe one examination which you made—

THE COURT:—Just one minute. Is gonorrhea that attacks the eye self-limiting, as well as in the genito-urinary organs?

THE WITNESS:—Well, that all depends. If it is caught early it is self-limiting.

MR. WALKER:—I cannot hear you doctor.

THE WITNESS:—I say this, if it is not—if you don't catch it early before the—you mean, of course—

THE COURT:—Why do you have to catch it, if it limits itself?

THE WITNESS:—You mean in infants?

THE COURT:—Yes; anywhere in the eye.

THE WITNESS:—It will limit itself only if the health of the patient is as it should be. If, however, the health is run down, it will certainly work just like one army attacking another army; if the army attacking is weak, it will take a small army to capture and to eat the other army up. And in an infant the sudden change from an intra-uterine to an extra-uterine life makes them very susceptible subjects to all infections whether it be gonorrhea, or any of the acute exanthemas, or pneumonia, or bronchitis or any of those things.

MR. T. J. SCOFIELD: Q.—Then if I understand you aright, doctor, a perfectly healthy person whose body, tone and condition is absolutely right, can expose themselves to gonorrhea without danger? A.—I don't mean to say anything of the kind.

Q.—All right. Now, you have told us about the manner in which you determine whether or not gonorrhea is present—whether the condition be a condition of gonorrhea? A.—Yes, sir.

Q.—And that is by examination? A.—Yes, sir.

Q.—Now then, doctor, you recognize the fact that an examination is necessary? A.—Absolutely.

Q.—Well, is it necessary in all cases, doctor? A.—Yes, sir.

Q.—In treating women? A.—Yes, sir.

Dr. Breakstone stated that examination is necessary to determine the cause of the condition and to direct the treatment; that in the diseases of women the examination of the pelvis is necessary to determine the cause and the treatment; that the treatment can only be determined from the knowledge obtained through examination of what the condition is; that in many of these conditions, the patient can only tell her feelings, symptoms and pain and that these might be referable to many conditions.

Q.—Now then, doctor, you would not then think it was a very good thing for anybody to make a suggestion to a woman who was suffering from pelvic conditions that she ought to avoid any examination by a doctor? A.—Why, I would say that not only the sick people but all the well people ought to go to a doctor occasionally and be examined.

Q.—For examination? A.—Yes, sir.

Q.—That is a preventive measure in the one instance— A.—Yes, sir.

Q.—And in the other for the purpose of remedial— A.—Yes, sir.

Q.—And anyhow, you think that all women who are sick—or rather, the well women as well as those that are sick, should submit to such an examination? A.—They should, yes.

Q.—And you would not think it was a very proper thing for anybody to suggest to a woman under a heading like "Avoid a surgical examination," and "it will probably be painful, it will surely shock your modesty even if performed by a woman, if your female organs are out of order, and you suffer from menstrual irregularity, scanty or profuse discharge, womb trouble, or any form of female complaint," taking the hypothetical—or the solution that Mr. Walker called your attention—without any examination—as a medicine which is a specific tonic, curative in its action upon all female organs. You would not advise that, would you, doctor? A.—Not as a doctor—I would not.

Q.—Well, you would not as a man either, would you? A.—Well, I don't know; men do lots of things; they go to Christian Science churches and all that.

Q.—Yes. But, as a doctor, you would—as a man whose life's study has been to find out—that is, find the condition, to know how to remedy or treat it, you would think then it was your duty, under such circumstances, to examine to know the cause, wouldn't you? A.—As a physician, I would not attempt to treat any patient without an examination—personal examination.

The witness stated that some causes of prolapse are temporary and recover when the tone of the body is built up. In order to determine the type of prolapse an examination is necessary. He does not take the patient's word for anything.

Q.—Now, doctor, assume a case of a married woman who has had a number of children, and that she had following her confinements a prolapse of her womb to the extent that it was down near the

external opening; also that it was turned wrong side up; and that she could feel it in that abnormal position; assume that this condition existed for approximately two years. Have you an opinion, doctor, as to whether taking six bottles of the medicine described to you by Mr. Walker, in doses of a tablespoonful three times a day, would turn the misplaced womb back the other way and restore it to its normal position? A.—Let me ask you, what do you mean by "wrong side up"?

Q.—Bottom side up, I suppose. A.—Do you mean an anteversion?

Q.—A complete turning upside down, doctor. A.—Well, I cannot imagine of a womb being completely upside down and the cervix being near the vaginal opening. I could imagine a retroflexion that could be that way, but I could not imagine it the other way.

Q.—Well, can you answer that question as to whether or not that medicine— A.—Do you mean presuming those things to be true?

Q.—Yes, sir; yes, sir. A.—How can I presume anything to be true which is impossible?

Q.—I am not going to argue that—what did you say.

MR. WALKER:—He says he could not imagine—

THE WITNESS:—I said I could not imagine anything to be true that is impossible.

MR. T. J. SCOFIELD: Q.—I am asking you whether or not if that condition exists. If this medicinal solution I have talked to you about would turn it over, put it back in its position? A.—Well, perhaps if such a thing could be, I presume anything else could be possible.

Q.—That is the way then in which you answer that question? A.—Yes, sir.

Q.—Well, if a woman stated—

THE COURT:—You mean the one is about as likely as the other?

THE WITNESS:—Yes, sir.

MR. T. J. SCOFIELD: Q.—Now then, doctor, did you hear me say anything about the cervix of the womb being down near the external opening, in that question? A.—Yes—

Q.—You did? A.—I think I heard you say near the external opening.

Q.—Now, listen, doctor, and see whether or not there was anything of the kind said. A.—Perhaps I misunderstood.

A.—Assume the case of a married woman who has had a number of children, and that she had, following her confinements, a prolapse of her womb to the extent that it was down near the external opening; also that it was turned wrong side up; and that she could feel it in this abnormal position; assume this condition existed approximately for two years. Have you an opinion, doctor, as to whether or not taking this medicine, or medicinal solution, in doses—three doses a day, until six bottles of it had been taken, that it would turn the misplaced womb back the other way and replace it in its normal position? A.—I could not even imagine anything like that to happen. The other day you had some charts here, and I could explain it by them—

Q.—I am not asking you about the other day.

MR. WALKER:—He said you had some charts here and he could explain—

THE WITNESS:—I cannot see how it could be wrong side up.

THE COURT:—Now eliminate that feature of it, and let us have the uterus—say it is nearly to the point of the external opening, have you an opinion as to whether this hypothetical medicine taken in the doses Mr. Scofield suggests would restore it to its normal condition?

THE WITNESS:—I have an opinion.

MR. T. J. SCOFIELD: Q.—What is that opinion doctor? A.—That is if the ligaments were not ruptured, and if it was due to the woman being run down, that the medicine, in connection with exercise or local treatment, might cure it.

Q.—You would not consider, then, that was an operative case? A.—Well, from the hypothetical question, no.

Q.—In what way would the medicine cure it?

THE COURT:—You had in mind that the condition had existed for two years?

THE WITNESS:—Yes, sir.

REDIRECT EXAMINATION BY MR. WALKER

Dr. Breakstone stated that in his experience a woman had told him that she felt as if her womb was upside down. The witness described gonorrheal urethritis. He stated that the United States Pharmacopeia and National Formulary contain drugs which are officially standardized. He mentioned as drugs which are used in genito-urinary diseases, and which contain as much alcohol as 48 drops to a dose, fluidextract of buchu, spirits of nitrous ether, and fluidextract of juniper. When these remedies are prescribed, he considers the alcohol negligible.

RECROSS-EXAMINATION BY MR. T. J. SCOFIELD

Dr. Breakstone stated that fluidextract of buchu contains about 75 per cent. of alcohol, a dose has from one-half dram to two drams. He looked up the dose the morning he testified. He stated that he has prescribed it three times a day, in one dram doses. Such a dose would contain 45 drops of alcohol. He stated that this medicine is given either for a couple of days or for two or three weeks. He stated that medicine should be taken promiscuously.

Adjournment was taken until Wednesday, May 31, 1916, at 10:30 p. m.

May 31, 1916, Morning

The Court met pursuant to adjournment. The following depositions were read: Dr. I. M. Hyde, Nashville; Dr. B. F. Loring, Nashville, and Dr. Tom McMillan.

TESTIMONY OF MRS. GEORGE R. FRANCE

Mrs. George R. France was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mrs. George R. France testified that she has been living in Maplesville, Ala., for over two years. She knows of no other France in the neighborhood. Maplesville is a saw mill town of about 500 people. Mrs. France stated that she has not moved to New York, but that last November she contemplated going to New York and it was generally known in the neighborhood. She did not tell Dr. Kay that she was going to New York. She gave birth to a child Nov. 14, 1914, and Dr. Kay attended her about two months previous to the birth of the child. At seven months she had trouble and was sick. Dr. Kay took care of her. When the child was born she had convulsions, beginning on Wednesday night and on Friday she was taken to the hospital in Selma, Ala. Dr. Kay accompanied her. Her baby was born after midnight on Friday night. Dr. Rogan also took care of her. The patient did not take any Cardui during that pregnancy that she knows of. She took some about two years before. She does not remember whether she told Dr. Kay that she had taken it. At that time she had an operation for tonsillitis.

Cross-examination was waived.

TESTIMONY OF MR. P. A. M'SWAIN

Mr. P. A. McSwain was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. McSwain testified that he lives in Andersonville, S. C. He knows Dr. Ashmore. He stated that his wife died five years ago. She was ill following the birth of a child. During that trouble Dr. Hughes of Laurence, S. C., attended her. Dr. Ashmore, of Anderson, S. C., was his family doctor for about eight years, and performed two operations on Mrs. McSwain.

The witness stated that he bought all the medicines for his wife. He attended her much of the time when she was sick. He stated that there never was a bottle of Wine of Cardui in his house, and that he does not know of Mrs. McSwain taking any Wine of Cardui.

Mr. T. J. Scofield moved that based on the record the testimony be stricken out on the ground that Dr. Ashmore testified not that the woman had taken Wine of Cardui, but that she told him she had taken it.

The Court ruled that it could stand for what it was worth.

The witness stated that he was present most of the time when Dr. Ashmore was talking to the witness' wife, and he did not hear her mention anything about Cardui.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that when he was not present he would not, of course, know what was said.

TESTIMONY OF MISS SALLIE BURDEN

Miss Sallie Burden was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Miss Sallie Burden testified that she resides in Anderson, S. C., where she has lived for about six years. She knows some people in the same town called "Burton."

The witness works in the cotton mills. She has never tasted Wine of Cardui. She stated that Dr. Ashmore treated her two years ago when she and her sister were rooming together. Her sister, so far as she knows, has never used any Wine of Cardui. She said that she never told Dr. Ashmore that she had taken any Wine of Cardui.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that she does not know what her sister may have told the doctor when she herself was not present.

REDIRECT EXAMINATION BY MR. FOWLER

The witness stated that neither she nor her sister had had any menstrual troubles.

TESTIMONY OF MR. A. B. BURDEN

Mr. A. B. Burden was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Burden testified that he is the father of Misses Sallie and Jennie Burden. He works in the mill. He pays for most of the things purchased in his family. Dr. Ashmore treated the two girls for hookworm. The witness has not seen a bottle of Wine of Cardui in his house, and he does not know that the girls have ever taken any Wine of Cardui.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that so far as he knows neither one of his daughters have had amenorrhea, and so far as he knows they have not taken Wine of Cardui.

TESTIMONY OF MR. W. H. HANNA

Mr. W. H. Hanna was called as witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Hanna testified that he lives in Anderson County, S. C., about 6½ miles from Anderson. He was born and raised in that county. He is pretty well acquainted with that county and does not know of any man named J. M. Hanna.

The witness has some boys. He read their names from a memorandum: J. T.; W. S.; E. M.; W. H., and O. D. Hanna. He had an uncle, J. T. Hanna, who has been dead for some three years. His father was named C. B. Hanna.

Mr. Hanna testified that Dr. Ashmore never attended his family, and so far as he knows has not attended his sons.

Objection was sustained to the question as to whether the witness had ever drunk Wine of Cardui.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that he read the names of his sons from a memorandum, as he wanted to get them right. His memory is as good as it ever was.

Q.—Was it ever good? A.—Yes, sir, I think it was.

Q.—Of course, if you cannot remember the names of your sons, you would probably not know what other Hannas might be scattered around through that country, would you? A.—No, sir, I don't know of any.

TESTIMONY OF MR. S. L. PRINCE

Mr. S. L. Prince was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Prince testified that he is an attorney practicing in Anderson, S. C., since 1911. Mr. P. L. Barr was his brother-in-law. Mr. Barr was thirty-one years old when he died. During the summer of 1910 Mr. Barr was much in the company of the witness. Mr. Barr and the witness both belonged to the Rose Hill Club. In 1911 the witness took Mr. Barr to Dr. Carroll's sanitarium in Asheville.

Mr. Prince stated that he has never seen Mr. Barr drunk. The witness knows Dr. Ashmore. Mr. Barr's physicians he stated were Drs. Walter Nordin and S. W. Page. He does not know that Dr. Ashmore ever treated Mr. Barr.

Objection was made to questions asking if the witness knew of Mr. Barr's taking Wine of Cardui. The Court sustained the objection. The Court also sustained objection to questions asking whether the witness had ever seen Wine of Cardui in Mr. Barr's room.

Cross-examination was waived.

Further hearing of the case was adjourned until 2 o'clock the same day.

May 31, 1916, Afternoon

TESTIMONY OF MRS. MAGGIE FREEMAN

Mrs. Maggie Freeman was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mrs. Maggie Freeman testified that she resides near Lander-ville, Ala. She is the mother of two children. Dr.

Fennell took care of her when the first child was born, at which time she had convulsions. The child was born alive and is still living. She had not taken Wine of Cardui during that pregnancy and had not told Dr. Fennell she had taken any. The second child was born nearly a year after the first one. During this time she took Wine of Cardui. She had an easy time with the second child. Dr. Jackson attended her.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness testified that she took three bottles of Wine of Cardui during her second pregnancy. She began to take it about three months after she became pregnant. She took it almost through the entire pregnancy—a teaspoonful at a time. She would not take it regularly nor as it was directed to be taken.

TESTIMONY OF MR. CHARLIE FREEMAN

Mr. Charlie Freeman was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Freeman testified that he is the husband of Mrs. Maggie Freeman, the previous witness. At the time her first baby was born Mrs. Freeman had convulsions. Drs. Fennel and Jackson attended her. Mrs. Freeman had not taken any Wine of Cardui during this pregnancy. She was unconscious for three days and was unable to talk. Dr. Fennel took care of her after the baby was born. Mrs. Freeman took some Wine of Cardui during her last pregnancy. She had an easy time.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that Mrs. Freeman took three bottles of Wine of Cardui. She would take a teaspoonful at a time.

REDIRECT EXAMINATION BY MR. FOWLER

The witness testified that he bought any medicine used by Mrs. Freeman.

TESTIMONY OF MISS MOLLIE SIMMONS

Miss Mollie Simmons was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Miss Simmons testified that she resides in Landersville, Ala. Dr. Fennel treated her about two years ago for brain trouble. She had never taken any Wine of Cardui before he treated her, nor did she take any during the time he was treating her, nor did she tell him that she had ever taken any Wine of Cardui. Miss Simmons stated that she has never had any female trouble.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

Q.—Miss Simmons, you say he treated you for brain trouble. What was the trouble? Do you know? A.—Sir?

Q.—What was the trouble for which Dr. Fennel treated you? A.—Just from the brains; that is all he ever said what was the—just in my head.

Q.—Were you down sick in bed? A.—Yes, sir.

Q.—Were you conscious or unconscious? A.—Yes, sir.

Q.—Which were you, conscious? A.—Yes, sir.

Q.—All the time? A.—Pretty well all the time.

Q.—You say pretty well all the time? A.—Yes, sir.

Q.—You are entirely clear, I suppose, as to what happened while you were sick? A.—Yes, sir.

Q.—You had conversations with Dr. Fennel, did you? A.—Yes, sir.

Q.—From time to time? A.—Yes, sir.

Q.—How many times was he there to see you, do you know? About? A.—He was there several times.

Q.—How are you now, Miss Simmons? A.—I do not know exactly how old I am.

Q.—Well, about how old do you think you are? A.—Well, I don't know exactly. We got our ages all tore up, and I don't know exactly how old I am.

Miss Simmons stated that Mrs. Wilson and Mrs. Smaile of the Chattanooga Medicine Co. saw her about coming to Chicago and took statements from her. She told them that she had taken two bottles of Wine of Cardui. They told her that they would pay her.

The witness stated that she had taken Wine of Cardui about two years ago—about the time Dr. Fennel was there to treat her. She took it after Dr. Fennel came, not before. She testified that she recovered from the sickness for which Dr. Fennel treated her. She began taking Wine of Cardui after she was well and has used two bottles. She became

acquainted with Wine of Cardui through the Birthday Almanac. She would take it a teaspoonful at a time three times a day. She stated that she had not had any female trouble

Q.—What did you take Wine of Cardui for at that time, after Dr. Fennel had cured you, as you say, and you got up—what did you take Wine of Cardui for?

(No response).

Q.—Aren't you mistaken about that, Miss Simmons? Wasn't it before you got up—before Dr. Simmons was treating you for your brain trouble—or Dr. Fennel I mean—that you took that Wine of Cardui? A.—Yes, sir.

Q.—It was before he treated you? A.—Yes, sir.

Q.—And not afterwards? A.—No, sir.

REDIRECT EXAMINATION BY MR. FOWLER

Miss Simmons stated that she took three bottles of Wine of Cardui after Dr. Fennel took care of her. She was suffering with a pain in the head and with pains at the monthly periods. She has taken headache medicines since that time. She stated that Dr. Fennel treated her first and then she took the Wine of Cardui. She stated that she is an orphan girl.

Miss Simmons testified that she does not know exactly how old she is. She does not know whether she is around 40 years of age, and she cannot say whether she is older than 16.

TESTIMONY OF MISS REBECCA COOPER

Miss Rebecca Cooper was called as witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Miss Cooper testified that she resides in Landersville, Ala. She has not been married. She has two children. Dr. Fennel attended her when the two children were born. At the time the first child was born she had convulsions. She has never taken Wine of Cardui. When the second child was born she had no convulsions.

Cross-examination was waived.

DEPOSITION

The following deposition was read: Dr. M. T. Ausbrook, Nashville, Tenn.

TESTIMONY OF MR. JAMES L. M'LEOD

Mr. James L. McLeod was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. James L. McLeod testified that he resides in St. John County, Fla., where he is in the timber business. He knows Dr. Worley. He was in the turpentine business with the same company in 1907-8. The camp was in Colee, Fla. He was connected with the commissary for about eight years. About half his time was devoted to commissary work. He did the buying for the commissary through an agent. Wine of Cardui was carried in the commissary. He stated that they would sell about four dozen bottles of Wine of Cardui a year. From 100 to 250 people worked in the camp. Between 40 and 50 were women. Most of the people were colored. He did not sell any Wine of Cardui, or see it sold to anybody that was drunk. He has never seen anyone about the camp drinking Wine of Cardui. The camp is now located about five miles north of Colee, and has been so located about five years.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that there were two people waiting on the customers in the commissary. He had entire charge of the commissary in 1911, and for two years following he had a helper or a clerk. Before he had entire charge he did not order the goods. In case of his absence the helper or clerk prepared the requisitions.

The witness cannot say definitely how much Wine of Cardui was ordered in 1906-10. He does not know how much was requisitioned in 1912. He would not say more than four dozen bottles, but he does not know how many. He does not know how many he ordered in 1913. The commissary does business with probably 20 or 25 families outside of the camp.

REDIRECT EXAMINATION BY MR. FOWLER

The witness stated that it has been no trouble to get wine or whisky around the camp if anybody wanted it.

RE-CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that there are no other concerns in that locality. He did not buy any wines or whisky nor did he sell it. He has seen it sold in the camp, some of it by employees. He would occasionally see a bottle sold. He knew where it was to be had and who was selling it. He saw the effects of it. There was considerable drunkenness in the camp among the colored people and this condition prevailed right along. He does not know what they got drunk on. For all he knows they may have drunk Wine of Cardui. He has seen them drink whisky, beer and wine. Most of the wine is domestic. It is not a dry country.

TESTIMONY OF MR. OGDEN J. OLMSTEAD

Mr. Ogden J. Olmstead was called as witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Olmstead testified that he has been in Florida in the turpentine business for about twelve years. At the busiest time he has had 100 men in the camp, and about 40 women, mostly colored. He ran the commissary and did the principal ordering himself. He was in the camp four fifths of the time. He sold perhaps one or two dozen bottles a year. He has not seen anyone drink Wine of Cardui. He was asked if he had ever heard of anyone drinking Wine of Cardui. Objection was made and sustained.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that he did the buying; a clerk did the selling. He would order Wine of Cardui one case at a time. He does not think he ever ordered more than one case. He has no distinct recollection of how much he sold in any one year.

REDIRECT EXAMINATION BY MR. FOWLER

Mr. Olmstead testified that Wine of Cardui was put up a dozen bottles in a box.

TESTIMONY OF MR. A. M. BENNETT

Mr. A. M. Bennett was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Bennett testified that he is a turpentine proprietor with a camp at Neoga, Fla. He has about 50 people at the camp, 12 or 15 of them women. He has never handled Wine of Cardui, to the best of his recollection, and has never seen any one drink it.

The witness knows Mr. A. V. Huff. He did not know him personally as he was a kind of a hard man to know. Mr. Huff was drunk all the time. So far as the witness knows Mr. Huff did not drink any Wine of Cardui in his camp. There were stores two miles away at Espanola.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that he does not know anything about what occurred in the camp at Espanola. The camp was abandoned about two years ago.

REDIRECT EXAMINATION BY MR. FOWLER

The witness gave the name of the man who conducted the camp at Espanola. He did not know how much they carried.

Mr. Scofield asked that the whole testimony be stricken out, as it was not in rebuttal to the testimony of Dr. Worley. The Court ruled that the man's testimony that he had not sold any Wine of Cardui in his camp might stand.

TESTIMONY OF MR. ED. W. BURNS

Mr. Ed. W. Burns was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Burns testified that he has been living in Espanola, Fla., for fifteen years. He conducts a general store. There was formerly a camp at Espanola conducted by a man named Mattox, who left there about three years ago. His people traded with Bohanan and Sons, who went out of business. The witness stated that he does not sell Wine of Cardui and never has.

Mr. Burns stated that Mr. A. V. Huff formerly ran the camp before Mr. Mattox. There was formerly a camp about a mile from Espanola, in which there was a store conducted by Mr. Hoover. The witness does not know that Mr. Hoover carried any Wine of Cardui. He did not see any sold for drinking purposes. He does not know that anyone drank Wine of Cardui.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that he knows Dr. Worley and Mr. Sabbity. They lived in St. Augustine, about 40 miles from Espanola. The witness knows every man who has lived in that neighborhood for the last 15 years. The witness has never sold any Wine of Cardui. He does not know whether any one carried Wine of Cardui prior to two years ago.

TESTIMONY OF MR. C. C. BROOKS

Mr. C. C. Brooks was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. C. C. Brooks testified that he resides in Covington, Ga. He knows Dr. Everett, who lives about five miles from Covington. He knew Will McWhorter, who died in October, 1915. He knew John Neely, who died Nov. 27, 1913. He knew Henry Harper, who died September, 1912.

Cross-examination was waived.

DEPOSITIONS

Two depositions were read and court adjourned until the following day, Thursday, June 1, 1916, at 10:30 o'clock a. m.

June 1, 1916, Morning

TESTIMONY OF MR. EVERETT R. OGILVIE

The Court met pursuant to adjournment. Mr. Everett R. Ogilvie was called as witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Everett R. Ogilvie testified that he resides in Jacksonville, Fla. He was formerly engaged in the turpentine business at Durbin Station, in St. Johns County. He was also postmaster. He was in this business from 1905 until 1913, and employed from 65 to 100 men in his camp, and there were usually from 15 to 25 women. There was a commissary which he conducted with the assistance of a clerk. He did not keep posted as to the stock of goods on hand. Wine of Cardui was kept in stock. He bought it direct from the Chattanooga Medicine Co. During the time he ran the business he thinks he purchased about four dozen bottles. This purchase was made about three years before he went out of business. Practically all of the stock was on hand at the time he went out of business. He does not remember that he sold a bottle, nor does he know of anyone drinking Wine of Cardui in the camp. He was also connected with other camps, and so far as he knows Wine of Cardui was not drunk as a beverage in those camps.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

Mr. Ogilvie stated that most of the help in his camp were colored. The clerk waited on the customers most of the time. He is not positive how many orders he gave for Wine of Cardui. If he was out of any particular line he would purchase more.

REDIRECT EXAMINATION BY MR. FOWLER

The witness stated that he did not run out of Wine of Cardui.

RE-CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that some of the time the clerk would order goods. He knew when it was necessary to order goods from what the clerk told him.

TESTIMONY OF MR. TOM HART

Mr. Tom Hart was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Tom Hart testified that he lives below Dothan, Ala. He knows of Frank Sellers, Joe Granger, and Jim Sellers, who ran a store at Cottonwood. He stated that he never

purchased any Wine of Cardui in Seller's store, nor did he drink any there, nor did he see anybody else drink any Wine of Cardui there. He testified that he has never drunk Wine of Cardui. He had a brother named Pat Hart who died last February, and does not think that Pat Hart ever drank Wine of Cardui.

The witness stated that he was never arrested for being drunk on Wine of Cardui. He does not know of Pat Hart or anyone else being arrested because they were drunk on Wine of Cardui.

Mr. Scofield moved to strike out the last evidence as there is no testimony that the witness was arrested. The Court stated that this could be verified from the record.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness testified that he sometimes drinks, but that he never was drunk in his life. He drinks whisky and beer. He can order two quarts of whisky at a time from Florida. He never bought any in the drug stores or of the bootleggers. Mr. Tom Ashby saw him about coming to Chicago. Mr. Ashby told him of the testimony that had been given in the trial. After he came to Chicago he did not talk with anyone about what he would say at the trial.

Mr. Hart had one drink on the morning of testifying—namely, "gin." He did not mention gin previously as he considers it is whisky.

TESTIMONY OF MR. GENE HUNT

Mr. Gene Hunt was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Gene Hunt testified that he lives in Dothan, Ala. He knew J. H. Sellers who ran the store at Cottonwood, but did not know Frank Sellers. He stated that he has never drunk Wine of Cardui, and that he has never bought any of it at Seller's store. He testified that he never tasted Wine of Cardui, and that he never saw anyone drinking it as a beverage. He never was in Sellers' store at a time when Tom and Pat Hart were there.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that he quit drinking about ten years ago. He knows Tom and Pat Hart, but is not intimate with them. He does not pretend to know what Tom or Pat Hart did. He simply speaks for himself.

TESTIMONY OF MR. WILLIAM RUCKER

Mr. William Rucker was called as witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Rucker testified that he lives about three miles from Cottonwood. He has known Mr. J. H. Sellers and Mr. Frank Sellers for about ten years. Frank Sellers never saw him drink Wine of Cardui. He stated that he never did drink Wine of Cardui. He tasted the first bottle which he bought for his wife back in 1899. His wife had irregular periods. He bought her one bottle and after she took it he took \$5 and bought her six bottles. She took all of that—a tablespoonful three times a day. She had taken doctor's medicine up to that time and it did not do her any good. Since that time she goes to the field and plows the same as he does.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that he is not a drinking man. When he was a boy he used to take a drink every morning. He stated that he did not take a drink of the Wine of Cardui; he put his tongue to the stopper. Since 1899 he has had no experience with Wine of Cardui, except as he gave it to his wife.

REDIRECT EXAMINATION BY MR. FOWLER

The witness stated that he tasted the Wine of Cardui about 15 years ago.

TESTIMONY OF MR. JOE HANLEY

Mr. Joe Hanley was called as witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Joe Hanley testified that he lives within nine miles of Athens, Texas. He has known Dr. J. K. Webster about 13 years. Mr. Hanley is a farmer. He stated that he never drank Wine of Cardui behind the drug store with two other persons. He once tasted Wine of Cardui in Athens in April, 1916. Tom Russel was with him on that day. Tom Russel works for Dr. Webster.

Q.—Did you know what it was you tasted when you tasted it at that time? A.—No, sir, I did not; he said he had something good to drink, and I took a little swallow of it, and I told him if they called that good, I did not know what he called bad.

Q.—When did you find out what you had drank? A.—I went back to the druggist and asked him—he asked me had I bought a bottle. He left the wrapper in this here drug store where we have been talking about, and he asked me had I bought any bottle that day, and I told him no sir, I had not, and he says that somebody had, and I says I know who got it, Tom Russel done it, and he says "Do you know it?" and I says, "I don't know what it is, but I will go back"—

Mr. T. J. Scofield:—That is objected to. What has this conversation got to do with it?

Mr. Fowler: Q.—Had you ever tasted it, put your tongue to it before that day? A.—No, sir.

Q.—Have you ever since that time? A.—No, sir, I have not.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that he has been drinking off and on for about twenty-five years. Athens is a dry country; it has been dry ten or twelve years. He drinks mostly whisky, he also has drunk a few bottles of Hostetter's Bitters and a few bottles of Manola. He has never tried Peruna. He may have drunk something behind the store, it was either whisky or Hostetter's Bitters. He has never drunk Wine of Cardui. He gets his bitters from the druggist, who carries a pretty good line of tonics.

The witness testified that Mr. Reynolds of Dallas, Texas, arranged for him to come to Chicago. Mr. Reynolds is the representative of the Chattanooga Medicine Co. for the state of Texas. Mr. Reynolds came to see him on April 15, took his evidence and made arrangements for him to come in case he should have to. The witness told Mr. Reynolds that he would come for \$3 a day, and payment of his expenses.

The next man who came to see him was Mr. George, of Athens, who works in a drug store. The witness does not know whether or not they sell Wine of Cardui. Mr. George bought his ticket and Mr. Reynolds came with him. Since he came to Chicago he has talked with Mr. Reynolds and Mr. Richter about his evidence. He has not talked with any of the attorneys. No one told him what they wanted him to testify about. They did not know what he was going to say until they heard him testify on the witness stand. He told them that he intended to tell the truth, and it would make no difference who it would hurt. He also told them that he was going to swear that he never got drunk on Wine of Cardui. He has been drunk at times.

REDIRECT EXAMINATION BY MR. FOWLER

The witness stated that he gave Mr. Reynolds a written statement as to what he would testify when Mr. Reynolds first came to see him. The gentleman to whom he referred was Mr. Wheatley.

TESTIMONY OF MR. MARCUS G. NOELL

Mr. Marcus G. Noell was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Noell testified that he resides in Waco, Texas. He knows Dr. G. M. Goddard. Mr. Noell is vice president of the McKnight Sundries Co., Waco, Texas. He has been engaged in this business about six years. He lived in Boyce for nearly two years. Dr. Goddard was practicing medicine in Boyce, and his office was next to the drug store owned by the witness. Boyce is a town of about 100 population. The witness furnished Dr. Goddard with his office and the drugs that he used in his medicine case. He considers Dr. Goddard's general reputation for truth and veracity as bad and he would not believe him on oath.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness testified that he is twenty-nine years old. He lived in Boyce in 1908 and 1909. He has not been in Boyce

for seven years. All he knows about Boyce he learned in the twenty months when he had a drug store there. He has heard Cary Wilson speak of the reputation of Dr. Goddard, in Boyce. Mr. Wilson is the only one whom he could remember having heard speak about Dr. Goddard. When he conducted the drug store he sold Wine of Cardui. He does not sell Wine of Cardui now. Before he lived in Boyce he worked for his brother in a drug store, in which Wine of Cardui was sold.

Mr. Noel is acquainted with Mr. Reynolds, state agent for the Chattanooga Medicine Co. in Texas. Mr. Jackson of the Chattanooga Medicine Co. arranged for the witness to come to Chicago. Mr. Jackson told the witness that he wanted him to impeach Dr. Goddard. The witness could not say what Cary Wilson said.

TESTIMONY OF MR. J. W. PEARSON

Mr. J. W. Pearson was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. J. W. Pearson testified that he lives at Leonard, Texas. He is Dean of the Faculty of the Cumberland College, which is connected with the Cumberland Presbyterian Church. He was ordained as a minister in 1882. He knew Dr. G. M. Goddard, in Boyce. He was in Boyce in 1905, 1906 and part of 1907, and engaged in the drug business. The witness stated that Dr. Goddard's office was inside of a building which the witness had rented. He considers Dr. Goddard's reputation for truth and veracity as bad and he would not believe him on oath.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that he has spent sixteen years of his life in the drug business. He sold Wine of Cardui, Lydia Pinkham's Compound, but not Manola or Hostetter's Bitters. He was a minister while he was selling Wine of Cardui. He did not charge Dr. Goddard any rent for the office in his building. He put up the prescriptions for Dr. Goddard. The witness has been dean of the college since 1910. The college has from 75 to 100 pupils a year. There are four teachers on the faculty, including himself.

The witness testified that he had no trouble with Dr. Goddard, although they conflicted a little sometimes in their views about things in the drug store. The witness has heard Lum Wilson, Cary Wilson, George Ledwell, J. M. Burford, John Borders and Grandfather Borders, Dr. Graham, Bert Smith, Elmer Smith, and Mr. Dahnke talk about Dr. Goddard. They stated that Dr. Goddard was a regular windy, and a braggart, and they would not rely on what he said. One of them said he was a rascal. The witness says he does not take stock in those things. He tries to say good about every man in the world if he can. Cary Wilson said that Dr. Goddard was windy, and Lum Wilson said Dr. Goddard was a braggart. He does not remember who said Dr. Goddard was a rascal because he does not want to remember that. He didn't want to believe it and tried to forget it.

REDIRECT EXAMINATION BY MR. FOWLER

It was brought out that the reason the witness considered Dr. Goddard a rascal was that the witness furnished the medicine for Dr. Goddard's emergency cases, and that the doctor took too much medicine for his emergency cases. The witness considered that Dr. Goddard did not give him enough prescriptions to pay for the medicines which he used in the emergency cases.

RE-CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that it is the custom among druggists to give physicians free the medicines which the doctors carry in their little hand case for emergency, and the druggist takes his chance of being repaid by the prescriptions which come in.

TESTIMONY OF MR. C. A. GARDINER

Mr. C. A. Gardiner was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. C. A. Gardiner testified that he is in the real estate and loan business in Dallas, Texas. Dr. Goddard had a sanatorium in Oak Cliff for the cure of drug habits. He con-

siders the reputation of Dr. Goddard for truth and veracity as bad, and he would not believe him on oath.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness has lived in Dallas twenty-five years. He was formerly on the road selling harness. For about nine years he has been in the loan and real estate business. The sanatorium was about two blocks from the witness' house. The witness was interested in real estate in the neighborhood of the sanatorium. He was not intimate with Dr. Goddard, but knew him when he saw him. He has never had business relations with Dr. Goddard. Oak Cliff is a town of 20,000 people. All he knows about the Goddards is what he has heard people say of them. He heard it said that they were a bunch of crooks. Dr. Ed. Means, George Fryson and Mr. Britton, manager of the Fulton Market in Dallas, are the ones he heard say this.

The witness is a friend of Mr. Reynolds, agent for the Chattanooga Medicine Co. in the state of Texas. Mr. Reynolds came to see him and took a statement from him.

TESTIMONY OF MR. BEN W. SMITH

Mr. Ben W. Smith was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Ben W. Smith testified that he is in the manufacturing business, a manufacturing pharmacist, residing at Oak Cliff. He has been in the drug business for nineteen years. He considers the reputation of Dr. Goddard for truth and veracity as bad and would not believe him on oath.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that he ran a drug store in Sulphur Springs. He has sold Wine of Cardui. He manufactures a patent medicine called "Eucaline," also Hall's Chill Tonic and sarsaparilla, a tonic and a liniment. Hall's Chill Tonic has no alcohol in it. Eucaline has two forms: one with 1 per cent. and another with 3 per cent. The tonic sarsaparilla has 10 per cent. of alcohol. Oak Cliff is in a dry territory.

The witness stated that he was reasonably acquainted with Dr. G. M. Goddard. Mr. Reynolds of the Chattanooga Medicine Co. lives six or seven blocks from Mr. Smith, and the witness is well acquainted with him. The witness signed a statement for Mr. Reynolds. Mr. Reynolds did not agree to recompense the witness. He did agree to pay his expenses.

Mr. Smith had an uncle who stated that Dr. Goddard's reputation for truth and veracity was bad. His uncle's name was E. G. Patten, who died six or eight months ago. He was no relation to the Pattens of the Chattanooga Medicine Company.

The witness has had business relations with the Pattens for fifteen or sixteen years. He stated that he also heard W. T. Dansby talk about Dr. G. M. Goddard. Mr. Dansby has moved to South Texas, but the witness does not know just where.

Adjournment was taken until 2 o'clock the same day, June 1, 1916.

June 1, 1916, Afternoon

TESTIMONY OF MR. W. H. CARSON

Court met pursuant to adjournment. Mr. W. H. Carson was called as witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Carson testified that he is a traveling salesman for the Columbia Conserve Co., of Indianapolis, Ind. He has lived in Dallas, Texas, for about twenty-eight years. He considers the general reputation of Dr. G. M. Goddard for truth and veracity as bad, and he would not believe him on oath.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness knew Dr. G. M. Goddard personally at the time when he (Mr. Carson) was a grocery clerk. The witness was well acquainted with Dr. Goddard's brother. He stated that on April 3 he received a telegram at Decatur, Ill., asking him to meet Mr. Richter of the Chattanooga Medicine Co. Mr. Richter asked him if he would come to Chicago to testify about Dr. Goddard. He told Mr. Richter he would not. Later Mr. Richter saw him in the Fort Dearborn Hotel and he asked him to come and testify.

TESTIMONY OF DR. CLAUDE L. MURPHREE

Dr. Claude L. Murphree was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Dr. Claude L. Murphree testified that he lives in Gadsden, Ala. He is a graduate of the Birmingham Medical College and is a member of his county and state society. He takes *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*. He knows Dr. H. L. Appleton and considers his reputation for truth and veracity as bad, and would not believe him on oath.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that he is a reasonably good friend of Dr. Appleton. An attorney named W. J. Boycan asked him to come to Chicago to testify. Dr. Boozer and Dr. Johnson also came. Mr. Richter of the Chattanooga Medicine Co. also saw him about coming to Chicago. He stated that he came up for expenses and per diem. The per diem was \$40 per day and expenses for every day that he is away from home. He stated that Dr. Appleton has called him in consultation. He named the following persons who said they would not believe Dr. Appleton on oath: Carl Whorton, E. T. Schueler, Dallas Payne and Charley Bell. All of them live in Gadsden, which is a town of about 12,000 people. Most of the talk followed some litigation in which the people mentioned were interested.

TESTIMONY OF DR. W. B. JOHNSON

Dr. W. B. Johnson was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Dr. Johnson testified that he lives in Gadsden, Ala. He is a member of his county and state society. He considers Dr. Appleton's general reputation for truth and veracity as bad, and would not believe him on oath.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness testified that he began to practice medicine at Munford, Ala. From there he went to Ashford, Ala., and from there he went to New York City, where he took a post-graduate course for one year, and then returned to Gadsden. He has never had any business relations or consultations with Dr. Appleton. He heard Mr. O. J. Stock and Mr. Carl Whorton speak of Dr. Appleton. He does not know what the litigation was that Dr. Murphree spoke about. Mr. Boycan spoke to him about coming to Chicago. He is to receive \$40 a day, with his expenses for the time that he is absent from home.

TESTIMONY OF DR. D. T. BOOZER

Dr. D. T. Boozer was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Dr. D. T. Boozer testified that he resides in Gadsden, Ala. He considers Dr. Goddard's reputation for truth and veracity as bad, and from his reputation would not believe him on oath.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that he was licensed in 1914. He was practicing with his brother before he finished school. At that time he did not know that this was in violation of the law.

Dr. Boozer has known Dr. Appleton about one year. Mr. Boycan saw the witness about coming to Chicago. He is to receive \$40 per day, with expenses, for the time that he is absent from Gadsden. There are seventeen doctors left in Gadsden during the absence of the three who are here to testify.

The witness has heard Mr. Carl Whorton, Mr. H. B. Myers, and Mr. Lokey, a druggist, who sells Wine of Cardui, talk about Dr. Appleton. He also heard Mr. Stock talk about Dr. Appleton. He heard Mr. Stock speak of Dr. Appleton when he first came to Gadsden. Dr. Boozer rented his office from Mr. Stock and Mr. Stock told him that Dr. Appleton was not reliable, very uncertain, and he would not have very much to do with him. Dr. Johnson and Dr. Murphree are also located in Stock's building, but Dr. Appleton

is not. Mr. Stock stated he did not care about renting Dr. Appleton office space.

REDIRECT EXAMINATION BY MR. FOWLER

The witness stated that he bases his opinion on the statement of the four men whom he mentioned and on the opinion of other people whom he could not remember.

RECROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that he understands what it is to swear that a man's general reputation for truth and veracity is bad and from what he heard said by other people he would doubt Dr. Appleton's word.

DEPOSITIONS

Several depositions were then read after which court adjourned until Friday, June 2, 1916, at 10 o'clock.

June 2, 1916, Morning

TESTIMONY OF MRS. LIZZIE GATES

Mrs. Lizzie Gates was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mrs. Lizzie Gates testified that she resides in Frankfort, Ala. She knows Dr. William Henry Greer who attended her a year ago. She married her second husband seven years ago. Her health was then good, and remained that way for four or five years, when she developed ovarian trouble. She took one bottle of Wine of Cardui and believes it did her good. After that she was treated by four physicians and had an operation for ovarian cyst, which was performed by Dr. Prince. She took no Wine of Cardui, but some whisky on recommendation of Dr. Farnham, who told her it would be a stimulant for her nerves. She took about a pint over a period of two or three months. She then went to see Dr. Greer at Tusculumbia. She had taken about a bottle of Wine of Cardui from the time the four physicians treated her until the time she saw Dr. Greer. This was before the operation. Mrs. Gates stated that she had never told Dr. Greer that she had taken Cardui and whisky together. She did not tell him she wanted to get off the habit, as she had no habit.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that she probably had ovarian trouble ten or twelve years before she was operated on. She went to see Dr. Greer after the operation because of nervousness. Dr. Greer did not examine her. She told him about the operation and the treatment which had been given her by different doctors. She also told him what she had been taking. She took the medicine which Dr. Greer gave her and became better. She is not well yet.

TESTIMONY OF MR. W. H. GATES

Mr. W. H. Gates was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Gates is the husband of Mrs. Gates, the previous witness. He stated that his wife became sick about two years after they were married. She took one or two bottles of Wine of Cardui. He does not know exactly which. He did not hear the conversation between Mrs. Gates and Dr. Greer, and was not present when Dr. Greer examined her.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that he does not know how much Wine of Cardui Mrs. Gates took before her operation. He doesn't know exactly how long it was after the operation that he took her to Dr. Greer—probably six or seven months. She was using whisky during that time. She is better now than before she went to see Dr. Greer.

TESTIMONY OF MR. STEPHEN JACKSON MONTGOMERY

Mr. Stephen Jackson Montgomery was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Montgomery testified that he lives in Franklin County and he has known Dr. Fennell for seventeen or eighteen years

He has never drunk any Wine of Cardui, and Dr. Fennell never saw him drink any of it with a man named Lipscomb or anybody else.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that he drinks beer and whisky sometimes. He has never drunk tonics. He drank some Jamaica Ginger, and some bitters called "Morning, Noon and Night," with a picture of an owl on the bottle. He has never drunk any Hostetter's Bitters. He believes that even when he is drunk he knows what he is drinking. He says he drinks pretty often—when he can get it. He does not know if Dr. Fennell ever saw him drink. He has no recollection of it.

TESTIMONY OF MRS. MARY SEIBERT

Mrs. Mary Seibert was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mrs. Mary Seibert testified that she resides in Summerdale, Ala. She became acquainted with Dr. Krohn, of Chicago, in 1912, at the Planter's Inn when she was housekeeper there. She met him in August and he left Summerdale in November. The inn was owned by a company and the proprietor was called "Highball" Morgan.

In a cottage just west of the hotel Mrs. Clemmons lived. The people used to help Mrs. Clemmons out. Among those who helped her were Mrs. Fancher and Mrs. Barnes. Dr. Krohn went to see Mrs. Clemmons twice in the latter part of October.

There was another hotel in the town known as the Ravone, which was owned by a man named Schmidt. There was also a boarding house known as McCurdy's boarding house, conducted by Mrs. Beasley. McCurdy had a reputation for killing dogs. He was a sheep raiser. Dr. Krohn was called to McCurdy's boarding house to see Mrs. Beasley's daughter in the latter part of October. The witness stated that Mrs. Clemmons had five children. The girl who was ten years old worked for her in the hotel.

CROSS EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that she knew Dr. Krohn did not see Mrs. Clemmons but twice because Mrs. Clemmons told her so. The Court ruled that all evidence relating to his having seen Mrs. Clemmons but twice should be stricken out.

The witness testified that Dr. Krohn went to McCurdy's boarding house only twice. She knows this because she remembers the number of times they came after him.

Mrs. Seibert testified that Mr. Richter saw her about coming to Chicago. Mr. Richter agreed to pay her expenses and \$5 per day. Mr. Richter told her that Dr. Krohn had said up there that Mrs. Clemmons had been drinking Wine of Cardui. Mr. Richter told her that instead she had been drinking laudanum. Mr. Richter did not tell her how much laudanum Mrs. Clemmons drank.

The witness stated that she made a memorandum in her mind of the visits made by Dr. Krohn. He did not visit anywhere except at the two places mentioned. He went to the stores and the postoffice. She does not know how many times he went to the postoffice. She was not out in the front part of the house all the time. Dr. Krohn might have been called out at times when she was in the kitchen.

REDIRECT EXAMINATION BY MR. FOWLER

Mr. Fowler asked the witness what Dr. Krohn was doing in Summerdale.

The Court ruled the question be stricken out on the ground that Dr. Krohn himself had stated on the stand that he was not down there practicing medicine but on business.

TESTIMONY OF MRS. EMMA CLEMMONS

Mrs. Emma Clemmons was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mrs. Clemmons testified that she lived in Summerdale, Ala., from April to December, 1912, near the Planter's Inn. She was sick most of the time she lived there. Dr. Krohn

came to see her once with Dr. Armistead, and once afterward. She had taken about a teaspoonful of laudanum, which she had been taking for two years. She stated that she had never taken a dose of Wine of Cardui in her life and had never tasted it. She stated further that she never told Dr. Krohn that she had ever taken Wine of Cardui. Her husband sent for Dr. Krohn at 11 o'clock at night. She was conscious when Dr. Krohn arrived. Dr. Krohn did not pump out her stomach. There was no rubber tube in the house. Dr. Krohn gave her husband some tablets and told Mr. Clemmons to give her one every two hours, until the pains were eased.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that she had taken a teaspoonful of laudanum at a dose on the day Dr. Krohn called. She was delirious when he arrived. She has stopped taking laudanum for over a year. She does not take anything in the place of it. She bought the laudanum from Mr. Cherry and some from Mr. Baldwin. She used to take laudanum in teaspoonful doses three times a day.

REDIRECT EXAMINATION BY MR. FOWLER

The witness stated she did not know what delirious means. She knew what was going on.

RECROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that she sent for Dr. Krohn because she was in misery. She had not taken any laudanum that day. She took some in the morning at 7 o'clock but not at night.

TESTIMONY OF MR. R. N. M'CURDY

Mr. R. N. McCurdy was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. McCurdy testified that he opened a boarding house in Summerdale in 1911. He raised sheep. Every time a dog died there was talk that somebody had poisoned it and it was generally laid on the sheep man. He ran the boarding house about five months; it was then conducted by Mrs. Beasley. He does not know Dr. Krohn, and, so far as he knows, he has never seen him.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that he is to receive his expenses and \$5 a day for coming to Chicago.

TESTIMONY OF MRS. C. C. BEASLEY

Mrs. C. C. Beasley was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mrs. Beasley testified that she lived in Summerdale, Ala., in 1912 and conducted McCurdy's boarding house. She met Dr. Krohn one night when her daughter was sick. Dr. Krohn called and stayed for an hour. The daughter had a high temperature and was delirious. It was said that she had pellagra. She told Dr. Krohn all she knew about her daughter. Nothing was said about Wine of Cardui. Her daughter had never taken a dose of Wine of Cardui. Dr. Krohn only came to see the daughter once.

RECROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that the above incident occurred in 1912.

TESTIMONY OF MR. WILLIAM P. BALDWIN

Mr. William P. Baldwin was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Baldwin testified that he had conducted a store in Summerdale in 1912 and carried laudanum. He also carried Wine of Cardui. He did not sell Mrs. Clemmons any Wine of Cardui. He did sell her laudanum. He knows Dr. Krohn. Dr. Krohn was in Summerdale in 1912.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness testified that in the State of Alabama, in 1912, it was not against the law to sell laudanum. It is now. He

has no license to sell laudanum at the present time. He still sells Wine of Cardui. He did not sell Mrs. Clemmons laudanum every time she came for it because he thought she was using too much of it. He knew she had the habit and still he was selling it to her.

TESTIMONY OF DR. SIDNEY D. ARMISTEAD

Dr. Sidney D. Armistead was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Dr. Armistead testified that he lives in Foley, Ala. He treated Mrs. Clemmons in 1912. She had nephritis and was pregnant. He called Dr. Krohn in to see Mrs. Clemmons one morning when she was suffering from uremia. This was the day after the child was born. Mrs. Clemmons was conscious. He told Dr. Krohn the nature of the case and was present when Dr. Krohn talked with Mrs. Clemmons. So far as he knows Mrs. Clemmons did not tell Dr. Krohn that she had been taking Wine of Cardui. He did not hear Wine of Cardui mentioned. Mrs. Clemmons had been taking laudanum. It was a charity case. Dr. Armistead was at that time a young practitioner and wanted Dr. Krohn's opinion, so he went over and called him. He did not know whether Dr. Krohn went back the same night or the next night. He did not see any Wine of Cardui bottles around the house, nor any stomach pump. He did not see Dr. Krohn pump Mrs. Clemmons' stomach out, nor did he know anything about it.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that he had no idea how much laudanum Mrs. Clemmons had been taking. He did not know that Dr. Krohn was there a second time, so he could not say whether or not Dr. Krohn pumped out the stomach. He gave her laudanum to take by mouth once or twice. He did not see any marks on the patient indicating that she used a hypodermic needle. He is familiar with laudanum. The dose is ten drops. He could not say whether Mrs. Clemmons had ever taken Wine of Cardui. He never saw her take any of it. She may have taken a lot of it for all he knows.

After the reading of several depositions an adjournment was taken until Monday, June 5, 1916.

June 5, 1916, Morning

TESTIMONY OF MRS. E. L. CORAM

The Court met pursuant to adjournment. Mrs. E. L. Coram was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mrs. E. L. Coram testified that she resides in Benevolence, Ga. She has known Dr. Tanner, of Benevolence, about eight years. Dr. Tanner treated her about a year ago for blood pressure. He also treated her for bladder trouble about two years ago. She did not tell Dr. Tanner that she had taken any Wine of Cardui. She took half a bottle of Wine of Cardui about two years ago, and about seven weeks ago she took a whole bottle. She took the half bottle in doses of a tablespoonful three times a day, on the advice of a negro woman. This was after the first time Dr. Tanner had treated her. Neither Dr. Tanner nor any other doctor had done her any good. Dr. Tanner gave her medicine for the bladder trouble—some of it by prescription and some that he brought himself. She took the whole bottle of Wine of Cardui about six weeks ago.

Q.—What did you take it for? A.—I had a hurting in my side, both sides, and almost everybody thought that it was appendicitis in both sides, and a lady friend of mine asked me to take some of her Cardui. She had been taking it for a number of years, and she said she would send me down some.

Mr. T. J. Scofield:—I object to what she said.

THE COURT:—Yes.

Mr. Fowler: Q.—What were you taking it for? A.—For this pain in my side.

Q.—What effect did it have? A.—It did not have any effect; the hurting stopped, that is all I know.

The witness stated that she took all of the first bottle of Cardui. She did not tell Dr. Tanner or anyone else that she took Cardui to brace her up.

Cross-examination was waived.

TESTIMONY OF MR. CARL WHORTON

Mr. Carl Whorton was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Whorton testified that he resides in Gadsden, Ala., where he is in the drug business. He is acquainted with Dr. Appleton and has known him for fifteen or twenty years. He also knew Dr. Appleton in Center, Ala., at which place Dr. Appleton had relatives. He considers the general reputation of Dr. Appleton for truth and veracity in Gadsden as bad, and from that reputation he would not believe him on oath.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that he is a licensed druggist. Dr. Appleton's prescriptions are not generally sent to his store, but some of them are. The witness is a married man. His brother is also a married man and is associated with him in business. Dr. Appleton is not the family physician of either the witness or his brother.

The witness stated that Mr. E. H. Cross and Mr. E. T. Schuler had made statements regarding the reputation of Dr. Appleton. The city health officer is Dr. Murphree, and the county health officer is Dr. Camp. Mr. Whorton stated that he had made statements to Dr. Murphree, following some litigation, to the effect that Dr. Appleton's reputation for truth and veracity was bad. He does not remember that he made such statements to Dr. Boozer. He may have told Dr. Boozer that Dr. Appleton was unreliable from a business standpoint. He does not know that he ever made such statements to Dr. Johnson.

The witness sells Wine of Cardui in his drug store. Mr. Metcalf, agent for the Chattanooga Medicine Co., and Mr. Boycan arranged for the witness to come to Chicago. He is to receive payment of expenses and \$5 a day. He stated that he had a conversation with Dr. Appleton lately. He told Dr. Appleton that he did not make the exact statement that he would not believe him on oath, but he did say that he would not believe the evidence he had given in this case.

Mr. Boycan told the witness that Dr. Appleton swore that Cardui was drunk throughout that neighborhood as a beverage and it made habitués of some of its users, and that it had made laudanum fiends out of some. The witness does not know whether Mr. Boycan told the truth about the names that had been given, nor does he know that the names were given in confidence. Mr. Boycan mentioned the names.

REDIRECT EXAMINATION BY MR. FOWLER

Attorneys for the plaintiff endeavored to introduce the content of a statement which Dr. Appleton read to the witness. The Court refused to admit the witness' memory of the statement but allowed the introduction of the remembrance of the witness' conversation with Dr. Appleton. The witness stated that Dr. Appleton stated that in this statement were words to the effect that Mr. Whorton did not say that he would not believe Dr. Appleton on oath.

TESTIMONY OF MR. WILLIAM ACKER COBB

Mr. William Acker Cobb was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. FOWLER

Mr. Cobb testified that he resides in Center, Ala. He has known Dr. Appleton for twenty years or longer. Dr. Appleton lives in Gadsden, Ala., which is about 25 miles from Center. The witness is frequently in Gadsden. He considers Dr. Appleton's general reputation for truth and veracity as bad and he would not believe him on oath.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness testified that he ran a general merchandising store for two years. They fill prescriptions and run a drug store now; they sell some patent medicines, among them Wine

of Cardui and Black Draught. He goes to Gadsden about once every thirty days and to Chattanooga two or three times a year. He buys most of his goods in Gadsden and in Rome. He has a nephew in Gadsden and a number of friends there, with whom he talked about Dr. Appleton.

Q.—Whom did you hear what you heard from? A.—Every man whom I talked to.

Q.—Well, whom did you talk to? Did you talk to your nephew? A.—I don't believe I have discussed the question with my nephew.

Q.—Who did you touch the question with? A.—John Doc, Bill Jones and another—

Q.—John Doc. Now, where does John Doe live? A.—He lives in Gadsden.

Q.—What is John Doe's address? A.—Gadsden will get him, I guess.

Q.—What is his business? A.—Well, we were talking—

Q.—No, no; what is his business? John Doe's business? A.—I don't know where John Doe lives there—there is not such a man, but—

Q.—Then you are mistaken when you say you talked to John Doe. What did you mean telling me, under oath, saying that you talked to John Doe, and then saying there is no such person? A.—I mean to say I talked to those people that were there—

Q.—I am asking you why you told me that. A.—That part is not in it.

Q.—There is no such man as John Doe, then? A.—No, sir.

Q.—Then when you said you talked with John Doe, you told a thing that is not true; is that true? A.—That is not in it, I would say.

Q.—You told a thing that was not so? A.—Yes, but—

Q.—When you told me that addressing him at Gadsden would catch him? A.—Yes—

Q.—That was not so, was it? A.—No. That is not so.

Mr. T. J. Scofield:—Well, that is all.

REDIRECT EXAMINATION BY MR. FOWLER

Q.—What did you mean when you say John Doe and Bill Jones?

Mr. T. J. Scofield:—I object to that.

THE COURT:—I would like to know. We may not stop here. Go ahead, Mr. Fowler.

Q.—Please tell what you mean when you said you had talked with John Doe and Bill Jones? A.—He wanted to know how—who it was—

THE COURT:—No, no. You don't know what he wanted to know. He asked you a question, and asked you who you had talked with, and you said John Doe and Bill Jones.

The Witness:—Yes. Well, what I had reference to was the men who I visited there, you know, different men—no interest to me at all; men who were—I was visiting there—friends of mine there in Gadsden.

THE COURT:—Well, how long have you known this John Doe.

The Witness:—There ain't no John Doe. I just added that in there. There is no John Doe—

Mr. Fowler:—You have heard the legal term—

Mr. T. J. Scofield: Q.—What did you mean when I asked you what John Doe's address was, and you told me to address him at Gadsden and that would get him? A.—I mean the way you are asking me, who all I did talk to down there—that kind of irritated me, because there is so many different men down there—

Q.—Yes? A.—friends of mine, and the inference was—

Q.—You did not want to give the names, then? A.—Oh, I don't care nothing about the names, no.

Q.—How did you expect me to reach John Doe, who you say told you—talked to you about Dr. Appleton's reputation by addressing him at Gadsden? You knew there was no such address, didn't you—to such person? A.—Yes.

Mr. T. J. Scofield:—Well, that is all.

After some depositions had been read an adjournment was taken until 2 o'clock p. m. the same day, Monday, June 5, 1916.

June 5, 1916, Afternoon

The Court met pursuant to adjournment and three depositions were read.

TESTIMONY OF MR. FRANCIS P. DUNNINGTON

Mr. Francis P. Dunnington was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. HOUGH

Mr. Dunnington testified that he resides near Charlottesville, Va. He teaches in the University of Virginia. He began teaching in 1870 and has taught there continuously. He knew Dr. J. W. Mallett, who came to the university in 1868. Dr. Mallett died in November, 1912. Dr. Mallett came to the university as professor of analytic and industrial chemistry. He then became professor of general chemistry.

He taught in the University of Virginia from 1868 to 1912, excepting two years—one when he went to Texas as professor of chemistry, and the next year when he went to the University of Pennsylvania. The witness changed this to a medical college in the city of Philadelphia.

The witness stated that in his opinion Dr. Mallett was one of the leading chemists in the United States as well as in Europe. He was also Doctor of Medicine. The witness named various scientific societies to which Dr. Mallett belonged. He stated that Dr. Mallett received LL.D. degrees from four universities—the Johns Hopkins and the William and Mary. During 1906 and 1907 Dr. Mallett did work for the Chattanooga Medicine Co. He endeavored to diminish the amount of alcohol which was put in Wine of Cardui. The witness stated that this work ran over several months.

Cross-examination was waived.

After the reading of some depositions an adjournment was taken until Tuesday, June 6, 1916.

(To be continued)

Correspondence

The Ever Present Question of Dispensary Abuse

To the Editor:—Dr. J. Whitridge Williams, in his address published in THE JOURNAL, June 17, 1916, p. 1902, dwelt at some length on the question of dispensary abuse. He advocated the "socialization of medicine" for the cure of many evils now connected with the practice of medicine. Some such system as the *Krankenkassen* of Germany, or the national health insurance law of England, which requires employer and employee, as well as the state to contribute, ought to be adopted in this country. Under this system the patient contributes toward the doctors' and hospital fees, with the result that it raises the man of moderate means above the level of a charity recipient, and does not place all the burden of the medical care of the indigent sick on the physician, who is often compelled to earn a living for himself and dependents. That there is a possibility of the desired social reforms becoming a reality in the course of time we may well assume from the fact that over thirty states have already adopted the workmen's compensation laws, and that a tentative health insurance bill has recently been enacted in New York (THE JOURNAL, June 17, 1916, p. 1951).

However, we must bear in mind that it is "a long way to Tipperary." It may take a generation before the wished for reforms come about; we may or may not live to see the day of the "socialization of medicine." As it is, the practice of medicine at present is in a state of transition, and the evils of which many of us complain are apt to be on the increase, as Dr. Williams himself admits. And yet he thinks that the abuses complained of are less general than is commonly believed. The majority of Baltimore practitioners with whom I have spoken feel convinced that many people who are able to pay receive free treatment at the dispensaries. These abuses do exist, in spite of the fact that some fortunately situated members of our profession would make us believe that it is all a delusion. Whoever read my paper on "Dispensary Abuse," which was published in the *Maryland Medical Journal* in June, 1915, and who is not prejudiced on this question, will agree that this abuse is a serious problem, the solution of which ought not to be deferred. In Dr. B. S. Veeder's article on "Standards for Determining the Suitability of Patients for Admission to a Free Dispensary" (THE JOURNAL, July 8, 1916, p. 85), I find among the replies, sent by the dispensary authorities to his inquiry as to the methods used in Baltimore to determine the worthiness of the applicant for free treatment, the following statement: "There is no standard, nor is there any attempt at financial investigation," a fact too well known by many of us in this city. The patient who, notwithstanding his ability to pay, resorts to the public dispensaries for purely selfish reasons, encroaches on the legitimate economic interest of

the practitioner, and the profession should feel no hesitancy in combating this invasion.

Dr. Williams maintains that many patients resort to dispensaries to get better treatment, either because they could not be examined properly, on account of the lack of equipment in the office of the average general practitioner, or because the doctors whom they happened to consult were not efficient. The inefficiency of medical men should be a diminishing factor in driving patients to dispensaries, since medical colleges are turning out better educated and more competent men from year to year. When it comes to our specialties, there is no justification for a person in good circumstances to frequent a dispensary, for he will usually find the same physician conducting the free clinics. Now this physician could surely treat him just as well, if not better, at his private office, where he has more time at his disposal. If the patient does resort to the dispensary, it is merely to avoid parting with his cash. On the other hand, if one medical man treats him carelessly, he is at liberty to go to another who will treat him properly, but he has no moral right to go to a free clinic. As I have stated in the paper above referred to, the bestowal of free treatment on those who can afford to pay exerts an evil effect in many ways. Not only does it stunt the moral sense of the applicant, and weaken his self-reliance by making him a recipient of charity, but it also robs the deserving physician of part of an income.

Dr. Williams justly asserts that a private practitioner cannot compete with a well equipped dispensary, which has a number of trained nurses and a well organized social service department at its disposal. But why should members of an honorable profession be permitted to become victims of circumstances over which they have no control?

Socialization of medicine would probably be the best solution for many of the difficulties we are up against, but shall we, when so much can be done in the meanwhile to mitigate the evil, fold our arms and do nothing until this question adjusts itself in a remote future?

The dispensary abuse should be mitigated, and if the remedy is only temporary, it should, nevertheless, be applied until the relation of medical practice to society is properly adjusted. Dispensaries of the better type in this city have social service departments, and the one attached to the Johns Hopkins Dispensary is a model of its kind. However, it would add to its laurels by becoming a potent agency in wiping out an abuse which does great harm to a goodly part of our professional brothers. All that the dispensary authorities would have to do would be to refer every applicant whose personal appearance does not indicate that he is poor or needy, for investigation. It is an old axiom, "Where there is a will, there is a way."

Another means of overcoming dispensary abuse would be the adoption of medical partnerships, or the group plan, already in vogue in many communities. By means of this plan, men of various specialties would combine, e. g., a roentgenologist, the laboratory man, the internist, the eye, ear, nose and throat specialist, etc. Consequently there would be no excuse for a patient to frequent the public dispensary for a diagnosis requiring either the use of different apparatus, not to be found in the office of the average practitioner, or the consultation of different specialists.

M. M. SAVAGE, M.D., Baltimore.

Statistics on Hay-Fever Plants Wanted

To the Editor:—As the fall hay-fever season commences in most localities in August, the American Hay-Fever Prevention Association requests interested observers in each state to report on any or all of the following points:

(1) Beginning of the florescence of the (a) common rag-weed (*Ambrosia elatior*), (b) giant rag-weed (*Ambrosia trifida*), (c) the western rag-weed (*Ambrosia psilostachya*), (d) the cockle bur (*Xanthium pennsylvanicum*), (e) marsh elder (*Iva ciliata*), (f) the western marsh elder (*Iva axillaris*),

and (g) the gaetnerias. These plants bloom in most sections in August and September, and are all wind-pollinated and potentially hay-fever plants.

(2) The date of the beginning of fall hay-fever in these sections, and the coincidence of its development with the florescence of one or more of these plants.

A large number of replies will increase the statistical value of the reports. Any other statistical information will be appreciated. Address American Hay-Fever Prevention Association, Audubon Building, New Orleans, La.

W. SCHEPPEGRELL, M.D., President.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

CITY AND RURAL HEALTH

To the Editor:—Within the past several years, I have noticed some articles relative to country life conditions, and that the rural sections were less sanitary than the city. I think I have also seen somewhere the statement or opinion given that most of the epidemics in the city came from the country, and that the death rate in the country was greater than in the city. I cannot recall the article or writers. Have careful investigations been made in the last several years, and do they bear out the foregoing statements? I have seen some statistics, but some of these are thought inaccurate, as those of the city often include deaths of persons brought in for better care and treatment; there are usually no regulations requiring accurate records in the rural sections, and so on.

Any information regarding the foregoing will be greatly appreciated.
D. T. KIZER, M.D., Springfield, Mo.

ANSWER.—There can be no doubt that the average sanitary conditions are worse in the rural districts than in the large urban centers except so far as overcrowding and its direct effects are concerned. It is notorious that the means for the disposal of excreta are more generally bad in the country than in the town, although it is true that in some parts of some cities wretched conditions in this respect are still to be found. The chances of contamination of the water supply by such insanitary dispositions are evidently far less in the town tenement with its piped supply than in the village communities or farms where the water is taken from an open stream or from a shallow well. Animals which are liable to serve as distributors of parasitic diseases constitute a greater danger in the country than in the town. Breeding places for flies are the commonplace of farm conditions, the exception in the town. Finally, the administrative sanitary control of the towns is better. The statement that most of the epidemics in the city come from the country is evidently too general. The majority of epidemics commence with pre-existing cases, and those cases may as well exist in the town as in the country; and in the former, owing to the congestion of population, there is larger opportunity for infection by contact. On the other hand, certain diseases lend themselves peculiarly to propagation by means of products—notably milk—of the rural districts which are sold in the towns. It is therefore to be expected, and it has been proved, that a large number of urban epidemics of such diseases as typhoid fever, germs of which may lie latent in carriers and be propagated by products like milk, are traceable to a rural source. The insanitary conditions which prevail in the country are, however, largely outweighed by the overcrowding in the towns, as is proved by the relative death rates. The life tables just published by the Bureau of Census (United States Life Tables, 1910, Bureau of the Census, Department of Commerce; copy sent free to every medical man on application to Director of the Census, Washington) give a series of tables of the vital statistics for the white population in the cities and in the rural part, respectively, of the original registration states. These tables are based on the estimated population, 1910, and on the reported deaths in 1909, 1910 and 1911. We quote from pages 38 to 45, column 7. This column shows the numbers of the population living in age interval, to one death in the same age interval (calculated for a hypothetical stationary population). The higher the figure the lower the mortality.

These figures definitely dispose of the allegation that the mortality in the country is higher than in the town. It is nevertheless certain that there is in the rural districts a great deal of preventable disease, and there is some indication that the young rural population has a higher morbidity than the young people of urban districts. This state of affairs is in part attributable to the notoriously defective condition of the rural schools from the point of view of sanitation. It is not surprising, therefore, to find the great advantage of rural environment shown by mortality returns for other periods

POPULATION LIVING IN AGE INTERVAL TO ONE DEATH IN THE SAME AGE INTERVAL

Age Interval	Cities		Rural Parts	
	White Males	White Females	White Males	White Females
0-1	6.77	8.30	8.94	11.04
11-12	410.63	476.24	484.46	550.61
21-22	189.93	228.99	191.73	209.44
25-26	174.10	191.06	194.57	191.04
45-46	65.31	88.78	115.00	127.59
60-61	25.47	32.12	43.16	49.34

of life markedly diminished for white males between the ages of puberty and 25, and reversed for white females during the same age periods.. The urban females show a lower mortality than their rural sisters between the ages of 18 and 25. Accurate statistics are not available, but such as exist indicate that the relatively increased mortality among adolescents and young adults in rural districts is largely due to communicable diseases, and especially tuberculosis.

USE OF TUBERCULIN AS A DIAGNOSTIC AGENT

To the Editor:—Please give me a bibliography on tuberculin as a diagnostic agent.

E. R. VAN DER SLICE, M.D., Marquette, Mich.

ANSWER.—The following is a partial list of references on the subject for the last two years:

Brown, E. M.: Diagnostic Value of Cutaneous Tuberculin Test in Recruiting, *U. S. Naval Med. Bull.*, July, 1914.
Kinghorn, H. M.: Comparative Value of von Pirquet and Subcutaneous Tuberculin Tests in Diagnosis of Tuberculosis in Adult, *abstr., THE JOURNAL*, July 25, 1914, p. 349.
Frehn, W.: Sensitization Index with Tuberculin Skin Reaction, *Beitr. z. klin. d. Tuberk.*, July 30, 1914; *abstr., THE JOURNAL*, Jan. 2, 1915, p. 90.
Kraemer, C.: Subcutaneous Tuberculin Reaction in Diagnosis, *München. med. Wchnschr.*, Jan. 12, 1915.
Vos, B. H.: Tuberculin in Diagnosis and Treatment of Pulmonary Tuberculosis, *Nederl. Tijdschr. v. Geneesk.*, Jan. 23, 1915.
Rogers, O. F., Jr.: Study of Children with Positive Skin Tuberculin Reactions, *Boston Med. and Surg. Jour.*, Feb. 4, 1915; *abstr., THE JOURNAL*, Feb. 20, 1915, p. 695.
Cattermole, G. H.: Tuberculin Tests in Children of Colorado, *THE JOURNAL*, Aug. 28, 1915, p. 782.
Von Litzner, M.: Detection of Focal Reaction after Tuberculin Test, *München. med. Wchnschr.*, Aug. 10, 1916; *abstr., THE JOURNAL*, Sept. 25, 1915, p. 1148.
Glover, E. G.: Subcutaneous Tuberculin Injections and Diagnosis of Pulmonary Tuberculosis, *Brit. Jour. Tuberc.*, October, 1913.
Clovis, E. E.: Use of Tuberculin in Diagnosis of Pulmonary Tuberculosis, *West Virginia Med. Jour.*, February, 1916.
Selter, H.: Intradermal Tuberculin Reaction in Diagnosis of Tuberculosis in Guinea-Pigs, *Deutsch. med. Wchnschr.*, Jan. 20, 1916; *abstr., THE JOURNAL*, March 11, 1916, p. 845.
Zitronblatt, A. Y.: Skin Tuberculin Test in Surgical Practice, *Russk. I rach*, 1915, xiv, No. 30; *abstr., THE JOURNAL*, March 11, 1916, p. 850.

ROENTGEN-RAY DERMATITIS

To the Editor:—Can you make any suggestion for the relief, or possible eradication, of a dermatitis of the hands, following repeated Roentgen-ray exposures, several years ago? The patient is a surgical nurse, and has not been exposed for several years, but the condition returns from time to time. It is characterized by burning and itching, and sometimes by pain, and the eruption of numerous small vesicles, lasting often for several days.

E. L. C., M.D.

ANSWER.—The patient evidently has a chronic Roentgen-ray atrophy of the hands, which become irritated at times—probably from external irritation. When these attacks of acute dermatitis occur they may be reduced by the use of wet dressings of solution of aluminum acetate, N. F., Fourth Edition (Burow's solution), 1 part, to water, 15 parts. Solution of aluminum acetate, N. F., is an 8 per cent. solution, which should be made according to the directions furnished in the National Formulary.

A few days' use of these wet dressings would very likely get rid of the acute attacks. Between the acute attacks the

hands should be protected from irritation as far as possible. It would be desirable to soften them up every night by greasing with a bland ointment like cold cream. When keratoses on the hands show evidence of chronic irritation or of increase in size, they should be destroyed. This can be done by skilful applications of radium or Roentgen rays, by freezing with carbon dioxid snow, or by excision and putting on small grafts. Of course the danger of epithelioma in these hands is great, and suspicious lesions should not be neglected but promptly destroyed.

Medical Education and State Boards of Registration

New Mexico April Report

Dr. W. E. Kaser, secretary of the New Mexico Board of Health and Medical Examiners, reports the written examination held at Santa Fé, April 10-11, 1916. The total number of subjects examined in was 13; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 3, of whom 2 passed and 1 failed. Three candidates were licensed through reciprocity, and 13 were licensed on satisfactory credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Memphis Hospital Medical College.....	(1904)		75
Marquette University	(1914)		85

College	FAILED	Year Grad.	Per Cent.
Mississippi Medical College.....	(1912)		64

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Ensworth Central Medical College.....	(1905)		Oklahoma
University of Tennessee.....	(1892)		Oklahoma; Tennessee

College	LICENSED ON SATISFACTORY CREDENTIALS	Year Grad.	Total No. Licensed
Hahnemann Medical College and Hospital, Chicago....	(1897)		1
Central College of Physicians and Surgeons.....	(1902)		1
College of Physicians and Surgeons, Keokuk.....	(1895)		1
University of Maryland.....	(1912)		1
University of Michigan Medical School.....	(1912)		1
Barnes Medical College.....	(1900)		1
St. Louis College of Physicians and Surgeons.....	(1899)		1
Missouri Medical College.....	(1886)		1
Bellevue Hospital Medical College.....	(1896)		1
University of Wooster.....	(1890)		1
Jefferson Medical College.....	(1911)		1
Medical College of the State of South Carolina.....	(1905)		1
Memphis Hospital Medical College.....	(1893)		1

Massachusetts May Report

Dr. Walter P. Bowers, secretary of the Massachusetts Board of Registration in Medicine, reports the oral, practical and written examination held at Boston, May 9-11, 1916. The total number of subjects examined in was 14; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 22, of whom 8 passed and 14 failed, including 4 osteopaths. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Bowdoin Medical School.....	(1915)		78.6
University of Maryland.....	(1913)		75
College of Phys. and Surgs., Boston.....	(1911)		75.4
Harvard University	(1914)		82.2
University of Pennsylvania.....	(1899)		79
Queen's University	(1915)		75.9
McGill University	(1910)		80.3

College	FAILED	Year Grad.	Per Cent.
Georgetown University	(1910)		67.5; (1913) 72.9
Kentucky School of Medicine.....	(1905)		*
Baltimore Medical College.....	(1913)		63.9
Maryland College of Eclectic Medicine and Surgery....	(1914)		71
Maryland Medical College.....	(1913)		71.4
College of Physicians and Surgeons, Boston.....	(1913)		63.5
Tufts College Medical School.....	(1913)		72.2
University of Berlin.....	(1903)		58
University of St. Joseph's, Beirut.....	(1894)		67.8

* Did not complete examination.

Preventable Deaths.—Half the deaths under one year are preventable. For every baby who dies, ten endure unnecessary sickness and many are handicapped for life as a result. In localities where a campaign of education has been carried on the death rate among babies has been reduced from 10 to 50 per cent.—*Bull. Lincoln (Neb.) Health Dept.*

Book Notices

TREATISE ON FRACTURES. By John B. Roberts, A.M., M.D., F.A.C.S., Professor of Surgery in the Philadelphia Polyclinic and College for Graduates in Medicine, and James A. Kelly, A.M., M.D., Attending Surgeon to St. Joseph's Hospital. Cloth. Price, \$6. Pp. 677, with 909 illustrations. Philadelphia: J. B. Lippincott Company, 1916.

The book opens with a chapter on general considerations. Some of the subjects are not given so thoroughly as they might be in view of the added light which has been shed by the Roentgen ray in recent years. For example, the time of appearance of the various centers of ossification in the epiphysis is not stated with sufficient accuracy. An excellent discussion on general treatment is given, both non-operative and operative, of recent and old simple and compound fractures. Fractures of the skull and face are illustrated by drawings, diagrams and photographs. In the chapter on the spinal column the symptomatology of fractures with cord symptoms at different levels is described and illustrated. Some of the fifteen rules for operative treatment are too finely drawn and somewhat confusing. The valuable ones are: Do not operate when there is complete transverse paralysis. Operate if later symptoms of returning function appear. Operate if there is evidence of partial destruction of the cord, compression from a blood clot or fragment of bone. Photographs of well applied dressings illustrate the article on fractures of the clavicle. Separation of the lower epiphysis of the humerus is not so common as the statistics quoted would indicate. Partial separation in the region of the external condyle combined with juxta-epiphyseal fracture and separation of the internal epicondylar portion are common, but separation of the entire epiphysis along the epiphyseal line is rare except in birth injuries. Fractures of the bones of the forearm are discussed. The reasons for poor results are stated, and the insistence on complete reduction immediately after the injury is timely. Lesions of the carpal bones are discussed too briefly, considering their relative importance, the recent advances in our knowledge and the comparative ignorance of most of the profession on the subject. In fractures of the lower extremity the newer operative measures are considered at length. Epiphyseal separations, especially of the femur, are given consideration. Os calcis and astragalus fractures are described along with their operative treatment. Separate chapters are devoted to fractures of the small and sesamoid bones, birth fractures and gunshot fractures. The book is well written and supplemented by numerous and excellent illustrations.

STEREOROENTGENOGRAPHY OF THE ALIMENTARY TRACT. By James T. Case, M.D. Four Sections. Price, \$9 per section. (Dr. Howard A. Kelly's Stereo-Clinic) Troy, N. Y.: The Southworth Company, 1915.

Since the introduction of the stereoscopic study of operations by Dr. Howard A. Kelly more than thirty volumes of the series have appeared. The four volumes here discussed are devoted to stereoroentgenographic studies by Dr. James T. Case, whose name has been connected with this work from its inception. The material included in the series is divided into four sections: Two cover the methods of examination, the interpretation of the plates and the diseases of the esophagus, stomach and gallbladder; the other two concern the intestines. About 100 stereoroentgenograms are included in the four volumes. By the stereoscopic method the observer is able to appreciate not only the diagnostic points in the fields shown, but also the space relations of the various organs involved. Particularly interesting are those showing cases of cholelithiasis, carcinoma of the stomach and the gastro-enterostomized stomach. Several pictures are illustrative of normal conditions. The text accompanying the stereoroentgenograms is direct and simple and easily understood even by those who have not kept abreast with advances in roentgenology. Dr. Case also considers the fluoroscopic method and its applicability. The method of teaching is chiefly the presentation and analysis of cases; these the author has evidently selected with discrimination from a mass of material. The work is excellently and artistically printed.

Medicolegal

Sufficiency of Information Charging Practicing Without a Certificate

(*State vs. Sanford (Wash.)*, 154 Pac. R. 1114)

The Supreme Court of Washington, in affirming a conviction of practicing medicine without a license, says that the questions suggested for reversal were all based on the information. The statute of the state of Washington regulating the practice of treating the sick or afflicted creates a board of medical examiners, and gives such board authority to issue certificates to persons entitled to practice any of the lawful systems or modes of so doing. Three forms of certificates are provided for: first, a certificate authorizing the holder thereof to practice medicine and surgery; second, a certificate authorizing the holder thereof to practice osteopathy, and, third, "a certificate authorizing the holder thereof to practice any other system or mode of treating the sick or afflicted not referred to in this section." It was contended that the information was fatally defective in that it did not state which one of the three certificates provided for by statute the defendant should have had to enable him to do what the state undertook to charge him with having done, and also in not showing which of the three classifications provided for by the statute he came under. But it seems to the court that an information may charge an offense under the statute without including either of these matters. The statute, while it may or may not prohibit a person holding one form of certificate from practicing a system or mode of treatment authorized by another, clearly prohibits a person holding no certificate at all from practicing, attempting to practice, or holding himself out to practice, any system or mode of treatment. An information, therefore, which charges a person with practicing a form of treatment of the sick and afflicted without having a certificate in any form authorizing him to treat the sick or afflicted states an offense under the statute, even though it does not state the particular form of certificate he should have possessed in order to entitle him to practice the particular system or mode of treatment he actually practiced. In the court's opinion the information in the present case, while somewhat crude, was thus definite. In effect it charged the defendant with wilfully and unlawfully practicing, attempting to practice, and holding himself out as practicing, in the county of King, state of Washington, a system and mode of treating the sick and afflicted known as the "chiropractic method," and with actually treating one Mary B. Fox as sick and afflicted by such chiropractic method, all without having at the time of so doing a valid unrevoked certificate from the state board of medical examiners authorizing him to treat the sick and afflicted in such county and state. Clearly it would not aid the understanding to include therein a statement of the character of certificate the defendant should have possessed in order to entitle him to practice the system or mode of treatment he attempted to practice, or to state under which of the three classifications provided for by statute a person would fall who practiced the system or mode of treatment employed by the defendant. Again, it was argued that the information was fatally defective because it did not allege that the defendant was a resident of King County. In support of this it was urged that it is sufficient for the holder of a certificate to record it in the county of his residence in order to entitle him to practice his profession in any county of the state, and that the information, inasmuch as it failed to allege the residence of the defendant, did not negative the idea that his practice in King County was lawful. But the allegation was that he practiced in King County without having a certificate authorizing him to practice in that county. It might be that, in order to convict him of unlawfully practicing in King County without a certificate, the state would be obliged to show that he had no certificate entitling him to practice in any county of the state; but this fact did not render the allegation insufficient.

Class of Errors for Which Physicians and Surgeons Are Liable*(Coffey vs. Tiffany et al. (Mo.), 182 S. W. R. 495)*

The Kansas City (Mo.) Court of Appeals, in affirming a judgment for \$7,500 damages in favor of the plaintiff for alleged malpractice rendering her blind in her left eye, says that the case turned on the question of whether or not a competent, experienced and skilful oculist inadvertently and negligently used a virulent poison when he intended to use a harmless drug. The gist of the action being negligence, the burden was on the plaintiff to establish by proof, first, that a negligent error was made in the treatment of her eye, and, secondly, that such negligence was the direct cause of her injury. A physician or surgeon is not an insurer that he will effect a cure, or that his diagnosis or treatment of the case will be free from honest errors of judgment. He is not required to come up to the highest standard of skill known to the profession, and when he accepts employment is bound only to exercise such reasonable care and skill as usually is exercised by physicians and surgeons in good standing. As to matters of science, an honest error of a legally qualified physician or surgeon cannot afford a cause of action, no matter how injurious it may be to the patient; while in matters of art, that is, in the performance of surgery, or in the application of remedies, his negligent errors are held to be governed by the ordinary rules of negligence. Thus, a physician should not be held liable for erroneously, but honestly, deciding to perform a surgical operation on a patient, for that would be an error in a matter of science, and the law would be too harsh and severe should practitioners of medicine or surgery be held to know at their peril what were best to be done in a given case. But a surgeon who uses an unclean or rusty knife in an operation, or a physician who administers a dose of medicine without knowing what it is, would be guilty of failing to exercise reasonable care, since an ordinarily careful surgeon or physician would not use an unclean knife, or administer a medicine without knowing what it is. The court agrees with counsel for the defendants that mere proof of a failure to cure, or that a bad result appeared to follow the physician's treatment, of itself, would raise no presumption of absence of proper skill and attention, or of negligence in giving the treatment. The practice of healing, throughout the ages, has been esteemed one of the noblest and most useful of human activities. It is to the interest of mankind that it should engage the attention of the highest ability, skill, and devotion to the conservation and development of the race, and the law will not array itself against this manifest interest by allowing the stamp of guilt or recreancy to be placed on an honest failure to cure, since every physician, no matter how careful and skilful he may be, must fail in many cases to benefit his patients. As a whole, the evidence in this case would support the hypothesis that the plaintiff went to the defendant's office with a comparatively well eye, received a treatment that immediately put out its sight, and that the application to her eye of a 1 per cent. solution of atropin sulphate or of an 8 per cent. solution of ethyl-morphin hydrochlorid could not and would not have produced an injury. Under such hypothesis, which was well supported by reasonable and creditable evidence, the inference followed, not as one built on other inferences or conclusions, but as one forced by its evidentiary elements, that the defendant who treated the plaintiff, despite his assertions to the contrary, put some other liquid into her eye than that he thought he was using. Of course, he did this unintentionally, and in the mistaken belief that he was using the proper solution; but such a mistake cannot be considered in any other light than as one not of science, but as the result of a lack of reasonable care, and therefore one for which an action will lie in favor of the injured patient. It did not devolve on the plaintiff to prove the kind of poison the defendant put into her eye. Nor did her burden of proof require the introduction of expert evidence to support her charge of negligent poisoning.

Society Proceedings**COMING MEETINGS**

Colorado State Medical Society, Glenwood Springs, Sept. 5-7.
Michigan State Medical Society, Houghton, Aug. 15-17.
Oregon State Medical Association, Portland, Sept. 9-10.
Utah State Medical Association, Salt Lake City, Sept. 12-13.

MEDICAL SOCIETY OF THE STATE OF NEW JERSEY

One Hundred and Fiftieth Annual Meeting, held in Asbury Park, June 20-22, 1916

The President, DR. WILLIAM J. CHANDLER, South Orange, in the Chair

Indications for Surgery

DR. EDWARD J. ILL, Newark: Operation should be considered only when it is necessary to save the patient's life from a real or impending danger, or when it is necessary to restore him to health. In the former instance the indication is absolute; in the latter the choice should be left to the patient. Indications for operation must never be based solely on laboratory or Roentgen-ray findings, though these may be of incalculable value as corroborative evidence. Simple adherent or displaced ovaries should not be removed. All ovarian neoplasms should be thoroughly removed; fibroids of the uterus should be removed only for good and sufficient reasons. In over 550 operations for fibroids, I have never seen malignant degeneration, or a recurrence of malignancy after operation. Acute, simple inflammatory or suppurating diseases of the genital tract rarely need operation. More poor work is done in obstetric surgery than in any other branch save abdominal surgery. In many instances of abnormal labor, cesarean section has become the least mutilating and the safest of any obstetric operation. Labor should not be induced before term for the convenience of the patient, the nurse or the physician, but only with all the indications and care of a major operation.

Education of the Nurse

DR. GORDON K. DICKINSON, Jersey City: The question comes up whether it is fair to the applicant, who comes to the hospital to be trained, to use her as much as she is used for the convenience of the institution and to neglect so largely bedside training. Too often this training is left to a subordinate while the nurse paid for this service is seldom seen at the bedside.

Early History of the New Jersey Medical Society

DR. WILLIAM J. CHANDLER, South Orange: In 1766, the year in which this society was founded, New Jersey was a province in the continental possessions of the British government. The Rev. Robert McKean of Amboy, the first president of this society, was a missionary sent from the Society for the Propagation of the Gospel in Foreign Parts. In order to do this they inserted an advertisement in the New York *Mercury* calling a meeting at New Brunswick, June 27, 1766. One of the important matters that came before the society was the arrangement of a fee table for medical and surgical services. The fee for an ordinary visit was 1 shilling 6 pence, and about 1 shilling a mile for mileage. While the fees were small, the doctor furnished medicines, blisters, cups, bleeding, enemas, etc., for all of which he charged, and frequently the bill for these items far exceeded the actual fee. Some of these charges were as follows: Consultations, 15 shillings; plebotomy, 1 shilling 6 pence; amputation of an arm, 3 pounds; delivery in natural labor, 1½ pounds. Local or "inferior" societies were established at once in conformity with the constitution. It was designated that they were to meet every two months and were to report their proceedings to the general society at its semiannual meetings. The second meeting of the society was held at Elizabethtown, Nov. 4, 1766. In the constitution of the society it was stated that its purpose was "the advancement of medical science, the elevation of professional character, and the rendering of efficient service to mankind." The society early

took cognizance of the importance of medical education and agreed that "for the advantage of the youth and the honor of the art of medicine" no man should be taken as an apprentice who was not competent in Latin and did not have some knowledge of Greek, and no man could take less than four years as an apprentice and one year in some school of medicine in this country or in Europe.

Cancer

DR. JOHN G. CLARK, Philadelphia: Any ulcer that does not heal has cancer potentialities. Childs of England has well pointed out the danger signals in cancer. These are as follows:

1. A small lump of any kind in the breast of a woman over 35 years of age is a starting point of cancer in 90 per cent. of the cases; the findings of a lump in the breast should be followed by its immediate removal.

2. The danger signal in cancer of the uterus is irregular bleeding, especially after the menopause, or a change in the character of the discharge.

3. The danger signal in cancer of the lip, mouth, tongue or skin is a wart or sore that will not heal.

4. In cancer of the stomach and intestines the danger signal is not so apparent; obstinate, persistent diarrhea, vomiting, or the passage of blood are danger signals that should be heeded at once.

During the last two years we have treated forty-nine cases of inoperable cancer of the uterus with radium. Our experience has shown that during the last ten years, for every fifty cases subjected to operation, 250 have been abandoned as hopeless. Although radical operation has given the best ultimate statistics, the primary death rate has been unavoidably high, and serious postoperative sequelae have occurred. The abandonment of extensive glandular dissection is justifiable because it adds to the hazards of operation but does not increase the number of permanent cures. There is no middle course in cancer of the cervix. The surgeon had better perform a simple vaginal hysterectomy or a high amputation of the cervix with extensive cauterization than to attempt the radical operation if he is not prepared to execute details. If the growth has invaded the parametrium to a point beyond the outer limits of the ureters, or has found lodgment in the iliac glands, the case must with rare exceptions be regarded as hopeless so far as surgical extirpation is concerned. In cancer confined to the fundus, recurrence does not take place in more than 50 per cent. of the cases, while in cancer of the cervix only about 30 per cent. of the cases escape recurrence. Surgical extirpation should be attempted only in clearly operable cases, leaving the large remainder to seek relief through therapeutic measures. During the last two years, forty-four inoperable cases of cancer of the uterus, vagina and urethra have been treated by the application of from 85 to 100 gm. of radium in a platinum capsule shielded by rubber for twenty-four hours. This treatment was repeated at the end of six weeks. With two exceptions there were no disagreeable effects from the radium. We have adhered to the rule never to operate in any case that was healed locally by radium. This series shows that radium is no universal panacea for cancer, even when the growth is strictly localized, but it possesses certain advantages. The stay in a hospital required in operative cases averages three weeks; when radium is used, three days. The postoperative results of the Percy method fall far short of the results obtained by radium. Removal of the uterus in cancer of the fundus has given such good results that one is not justified in taking chances with radium. In cervical growths the opposite is true. In the borderline cases of cancer of the cervix we employ radium.

The Morbidity of Childhood and the Mortality of the Second and Following Decades

DR. THOMAS N. GRAY, East Orange: My object is the prevention of those deaths which occur in later years which may be due to the diseases of childhood which are preventable through the prophylaxis of noncommunicable diseases, through foreknowledge and thorough examination of

the patient, and immunization against communicable diseases. There is a possible etiologic relationship between rheumatism, diphtheria, scarlet fever, measles and whooping cough in the first decade of life, and heart disease, chronic nephritis and pulmonary tuberculosis in the second and third decades of life. We know that scarlatinal rheumatism may cause many cases of endocarditis and damaged heart valves. In a child, typical polyarthritic manifestations of rheumatic infection are a common occurrence, and the cardiac complications of rheumatic infection are not only more common in the child than in the adult, but, as a rule, are more severe. I believe that a large percentage of the deaths in later years from organic heart disease and nephritis are due to the preventable diseases of childhood. In diphtheria many physicians wait for the report from the laboratory before giving antitoxin, and too many discard their suspicions of diphtheria on the receipt of a negative report. Epidemics of scarlet fever, diphtheria, measles and whooping cough should be controlled as effectively as we now control epidemics of smallpox. Health officers have the same authority to control other communicable diseases as they have to control smallpox, but they do not exercise it because they fear public opinion. Tuberculosis can be controlled only by the removal of patients with open cases to sanatoriums and by placing infected children in preventoriums. To do this would require an adequate sanatorium and preventorium in every county. There is only one reason for the inadequate sanatoriums in this state, and that is the failure to appropriate enough money. This failure is due partly to a lack of appreciation of the need for sanatoriums and partly to the deterring fear of a rise in the tax rate. Sanatoriums without preventoriums will lead to an endless chain of expenditure with no hope of ultimately controlling the disease. The fact that tuberculous cows remain in our herds is not the fault of health boards, but is due to the injustice of the law which allows the dairyman but a nominal price for his slaughtered cow and takes from him the value resident in hide, hoofs, fat and meat if it is salable.

DISCUSSION

DR. HERBERT W. JOHNSON, Haddonfield: Dr. Louis I. Dublin published an article in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, May 27, 1916, in which he made an analysis of 1,153 cases of scarlet fever in reference to their sequelae. In this series there were ninety deaths, eleven of which showed distinct kidney involvement. Heart conditions were recorded in seven fatal cases. Of 1,063 cases in which the patient survived, it seemed that the mortality of the survivors as a group showed apparently no increase. It was of interest, however, to find that of eighteen deaths which occurred within four years, three showed a record of endocarditis. These cases might reflect the impairment caused by the scarlet fever. There were five deaths from respiratory diseases and four from tuberculosis. Apparently among the survivors of the primary disease, the kidneys were not sufficiently impaired to cause early death. It is quite possible, however, that ultimately there may be an increase in the expected number of deaths from kidney lesions, although such a consequence may not manifest itself until ten or more years have elapsed after the initial incidence of the scarlet fever. Communicable diseases cannot be controlled effectively until we have well trained, full time health officers and good nurses to assist these health officers. Parochial schools should have medical inspection just as the public schools have. The truant officer can be of great assistance in reporting communicable diseases. All communicable diseases should be quarantined as rigidly as smallpox; by such stringent measures they might be as effectively controlled.

DR. HENRY H. DAVIS, Camden: We want local boards of health to do better work, but the people do not want the tax rate raised. The problem is how to get the money. The people should be educated to demand that these diseases be controlled. When the community makes this demand, the money will be forthcoming.

DR. ALFRED F. HESS, New York: We now recognize that most of the ills of adult life are contracted in childhood and

infancy. Tuberculosis is one of the most important of these. I happen to be in charge of the first preventorium for infants in this country. This preventorium is located at Farmingdale, about 10 miles inland from Asbury Park. This institution accommodates from 180 to 200 children of tuberculous parents. We have been trying the experiment of taking the infants of tuberculous mothers before they have become infected. We have thus far taken twenty-five such babies, all giving negative von Pirquet reactions. Many of these babies were taken from mothers who were in tuberculosis sanatoriums. In about one half of our cases the mothers died within a year or so, and the children could then be returned to safe homes. In some instances the mothers were cured and it was safe to send the babies home. This is an important way to attack the tuberculosis problem.

DR. JULIUS LEVY, Newark: Real prevention will not come through preventoriums but through bettering living conditions. The effort to control tuberculosis by placing its victims in sanatoriums only presents the problem of constantly increasing accommodations in institutions. In my opinion the infant should be left with the tuberculous mother if she is able to nurse it and can be instructed as to how to protect the infant from infection. Breast fed babies are less liable to contract infections and possess a higher degree of resistance than bottle fed babies. Every child with an infectious disease, no matter how mild in form, should be kept in bed for a week.

DR. ALEXANDER MARCY, Riverton: Public health work is entirely different from the practice of medicine. If we want men to do efficient public health work they must be trained to do that work. In New Jersey, every health organization must have a licensed health officer, and the state health board provides for these examinations. Many of the men who have practiced medicine and take these examinations, judging from the results of the examination, know less about public health work than some men who have never studied medicine. A man who wants to do public health work should go to some institution and take a course in public health and sanitation, and graduate as he did in medicine. Our need is for trained sanitarians, trained health officers and trained medical inspectors. As to our medical men becoming organized and becoming a unit, if that could be realized it would be impossible for any body politic to stand before a united profession.

DR. LINN EMERSON, Orange: The opinion has been expressed that what is most needed to control tuberculosis is sanatoriums for advanced cases. Sanatoriums are conducted with the idea that the one thing to be considered is the percentage of cures, and if a patient is in the last stages and cannot be cured he is sent home in order to keep down the death rate in the institution. He then infects some one else in the home. In a couple of years this individual goes to the sanatorium and the same thing is repeated, and in the end the entire family is probably infected. All the money spent on preventoriums is as good as wasted so long as persons with communicable cases are turned loose on the community.

DR. HERMAN GROSS, Metuchen: Working conditions in factories are responsible for a great deal of tuberculosis. Both sanatoriums and preventoriums will fail to control tuberculosis so long as working and living conditions of the working people are not what they should be. I know of one factory where 50 per cent. of the women come down with tuberculosis three years after they begin work. More should be done to control the conditions under which employees work in factories.

DR. B. D. EVANS, Morris Plains: If anything practical is to be done we must begin with a campaign of education. People should be taught the dangers of measles, and the children in the public schools should be instructed in reference to these dangers just as they are now told of the dangers of alcohol, tobacco, smallpox and tuberculosis. If people are taught the gravity of the sequelae of communicable diseases, a public sentiment can be created, and when there is a request from state or local boards of health for money for the control of communicable diseases, it will be forth-

coming. This society should be behind such a campaign of education.

DR. THOMAS N. GRAY, East Orange: I agree that the underlying problem is one of economics, but we must deal with conditions at the present time and as we cannot do anything to remedy economic conditions we must have sanatoriums and better isolation and better protection must be enforced by health boards. Tuberculosis is not contracted in the open air but is essentially a home disease. We should have sanatoriums in every county with sufficient accommodations to provide for every open case of tuberculosis, but sanatoriums without preventoriums will not stop the spread of tuberculosis.

Classification, Prognosis and Treatment in the Nephritides

DR. MARTIN H. FISCHER, Cincinnati: The effect of water and sodium chlorid in nephritis can be authoritatively settled only on the basis of the cause of the clinical entity called nephritis. We have found that a protein colloid in the presence of a weak acid solution absorbs water and swells up, and that the more acid which is added to the solution, the greater is the swelling; we have found, further, that when we neutralize the acid solution we get a shrinking of the protein colloid. Sodium chlorid has less activity in this respect than other salts. The most powerful salts are sodium tartrate, sodium citrate and sodium sulphate. Magnesium sulphate is many times more powerful than the same concentration of sodium or potassium. Tissues suffer changes accordingly as they hold more or less water, and the amount of water sucked up is determined by the cells themselves and not by something outside of the cells. Nephritis is an edema of the kidney, but it is also a composite of a number of chemical changes occurring in the whole or a part of the kidney. These changes are due to a common cause, namely, the abnormal accumulation of acids and other substances which act like acids. If with the abnormal accumulation of acids water is ingested, it is retained and edema results and we get a parenchymatous nephritis. After violent exercise that causes an abnormal accumulation of acid in the blood because the blood cannot oxidize the acid as fast as it is formed, we may also find albumin and casts in the urine, even as much as several grams to the liter. The same thing may occur in warm blooded animals exposed to the cold. The indication is, first, for the administration of alkali; second, for the administration of salt, not only in physiologic but in more than physiologic concentration; third, sugar should be given, since a high concentration of sugar also dehydrates; water should be given, but this is not an unmixed blessing, and there should be enough alkali and salt to counteract the effect of the water. The idea has been prevalent that to administer salt to the nephritic is to kill him. This is incorrect, and furthermore, sodium sulphate possesses advantages over sodium chlorid. There is only one form of nephritis, and that is the parenchymatous. There may be two varieties of parenchymatous nephritis, general and "spotty." The "spotty" type may be due to infections or the result of an anesthetic or the result of intoxication during pregnancy. In this type, if the patient is brought through the acute attack, the prognosis is good. In general parenchymatous nephritis the prognosis is much less favorable, as the kidney condition is dependent on arteriosclerosis and one is dealing with a necrosis which is irremovable and irremediable. When a patient with parenchymatous nephritis develops general edema, the idea has been that the edema is the result of a cessation of kidney function. This is incorrect, since the removal of the kidneys in animals does not produce edema. The edema is due to the same cause that produces the disease, to a general toxemia affecting all the tissues, including the cells of the kidneys. The symptoms which have been attributed to kidney disease are the signs and symptoms of edema of the brain. The headache of so-called uremia tells you that the brain is swollen to the danger point. It is not true that high blood pressure is a consequence of kidney disease; high blood pressure is dependent on the cardiovascular system and is a compensatory mechanism.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

July, LXXIV, No. 1, pp. 1-176

- 1 Surgical Replacement of Retroposed Uterus. D. Bissell, New York.
- 2 *Case of Carcinoma Uteri Treated According to Percy Method, With Necropsy Findings. F. W. Bancroft, New York.
- 3 Significance of Syphilis in Obstetrics. W. D. Fullerton, Cleveland.
- 4 Vaginal Supravaginal Hysterectomy. A. Reich, New York.
- 5 Acidosis Complicating Pregnancy; Report of Case Cured by Transfusion. A. H. Ely and E. Lindeman, New York.
- 6 Three Cases of Labor Following Ventral Suspension. W. E. Caldwell, New York.
- 7 Training in Obstetrics That State Should Demand Before Licensing Physician to Practice. B. C. Hirst, Philadelphia.
- 8 Treatment of Eclampsia. N. L. Knipe and J. Donnelly, Philadelphia.
- 9 Teaching of Gynecology to Advanced Pupil. A. Sturmdorf, New York.
- 10 Transperitoneal Celiohysterotomy. J. O. Polak, Brooklyn.
- 11 Exercise on All Four as Means of Preventing Subinvolution and Retroversion. A. C. Beck, Brooklyn.
- 12 Dysmenorrhea. J. W. Kennedy, Philadelphia.

2. **Heat in Carcinoma Uteri.**—Bancroft's patient died with symptoms pointing toward a severe toxemia, and as the necropsy revealed no lesions due to error in technic, the cause of death is attributed to the operation. The main facts concerning the findings from the microscopic examination are summarized as follows: Certain islands of cancer cells show advanced degenerative changes, reaching in many instances stages of necrosis and dissolution. Others show milder grades of degeneration, and still others have apparently not been affected by the treatment. The latter cells have all the appearances of viable carcinomatous structures. The intervening structures (the musculature and connective tissue surrounding the island of cancer cells), have not wholly escaped injury.

American Journal of Orthopedic Surgery, Boston

July, XIV, No. 7, pp. 381-442

- 13 *Operative Treatment of Infantile Paralysis. M. H. Rogers, Boston.
- 14 Methods of Stabilizing Flail Foot in Infantile Paralysis. E. W. Ryerson, Chicago.
- 15 Stability of Lower Extremity in Paralytics. G. G. Davis, Philadelphia.
- 16 *Operative Treatment of Infantile Paralysis. R. T. Taylor, Baltimore.
- 17 Operative Treatment for Disabilities and Deformities Following Anterior Poliomyelitis. C. Wallace, New York.
- 18 Spring Balance Muscle Test. R. W. Lovett and E. G. Martin, Boston.

13. **Operative Treatment of Infantile Paralysis.**—Rogers says that it is better to do as small an amount of operating as possible in children, as long as there is no development of deformities. The various methods have proved of value, the matter of chief importance being a careful study of the needs of the individual case. In adults, the results of tendon transplantation, alone or combined with resection of portions of the bony structure, have given good results. The Forbes operation, in the author's opinion, is of definite value. Astraglectomy has given better results than arthrodesis of the ankle joint in those cases which present very marked deformity.

16. **Operative Treatment of Infantile Paralysis.**—The various procedures which have been suggested for the relief of paralytic deformities are discussed by Taylor. He says: Tenotomy, justifiable if a tendon transplantation or transference cannot be done, which will restore the loss of balance of power, and if a brace is worn for a sufficient period to prevent recontraction, plus massage, stretching and muscle training of the antagonistic group or groups faithfully employed. Of myotomy the same may be said. Tendon shortening has been tried and found wanting. Tendon lengthening is making the simple operation of tenotomy into more of an operation, without any commensurate gain.

Tenodesis is justifiable only when the parent muscle has so far undergone fatty and fibrous degeneration that no possible functional use can be hoped for from it, if its tendon is transplanted to some other ataxic region. Extra-articular and intra-articular silk ligaments are chiefly indicated in flail joints in which impotent tendons are not to be had for tenodesis.

Arthrodesis is not to be recommended except for flail ankle joints in adolescents and adults. Articular transposition for calcaneus destroys no joint, throws the weight forward on the os calcis and corrects the deformity without mutilation, but with no increase in power of extension of the foot on the leg unless accompanied by appropriate tendon transplantations into the heel. Marked distortions in the long bones, such as knock-knees and bow legs must be corrected before tendon transference is done. Removal of portions of small bones of the foot in paralyzed children is unnecessary and may dwarf development. "Nerve anastomosis" and the "neurotization of muscles" have not shown anything really practical yet. The sheet anchor in the majority of partially paralyzed cases is to be found in tendon transplantation if the case is scientifically studied, and certain fundamental principles are carried out.

Annals of Otolaryngology and Laryngology, St. Louis

March, XXV, No. 1, pp. 1-250

- 19 Diagnosis of Otitic Cerebellar Abscess. A. Braun, New York.
- 20 Some Reminiscences, Reflections and Confessions of Laryngologist. J. N. Mackenzie, Baltimore.
- 21 Etiology and Pathology of Otitic Cerebellar Abscess. I. Friesner, New York.
- 22 Tuberculosis of Middle Ear. H. B. Graham, San Francisco.
- 23 Bilateral Peripheral Paralysis of Musculi Cricoarytenoidei Postici. H. E. Miller, St. Louis.
- 24 Correlated Action of Pharynx and Soft Palate, and Its Effects on Postnasal Diagnosis. G. Sluder, St. Louis.
- 25 Treatment of Hemorrhage With Normal Blood Serum. H. H. Forbes, New York.
- 26 Simulation of Paranasal Suppurations for Teaching Purposes. G. Sluder, St. Louis.
- 27 Closure of Postaural Opening Following Schwartz-Stacke Operation by Modification of Mosetig-Moorhof Method. H. B. Blackwell, New York.

Annals of Surgery, Philadelphia

July, LXIV, No. 1, pp. 1-128

- 28 *Branchiogenic Carcinoma. F. Warner, Columbus.
- 29 *Therapeutics of Chronic Nontuberculous Suppurative Bronchiectasis. H. Lilienthal, New York.
- 30 *Handling of Children With Tuberculosis of Spine While They Are Under Influence of Anesthetic. W. G. Elmer, Philadelphia.
- 31 Element of Error in Abdominal Diagnosis. H. L. Foss, Danville.
- 32 Surgery of Gallbladder. C. U. Collins and G. H. Weber, Peoria, Ill.
- 33 Cysts of Urachus; Report of Case. J. W. Means, Columbus.
- 34 *Transplantable Chondro-Osteosarcoma in Dog. J. E. McWhorter and F. Prime, Jr., New York.
- 35 Traction Bandage for Reduction of Fracture of Leg. H. D. Collins, New York.
- 36 Sliding Graft and Kangaroo Suture in Fresh Fractures; Albee Technic. W. Lathrop, Hazleton.
- 37 Fractures of Femur. W. L. Estes, South Bethlehem.

28. **Branchiogenic Carcinoma.**—A case of epidermoid carcinoma, seemingly taking its origin from epithelial embryonic inclusions of the second gill cleft is cited by Warner. The tumor was removed. It showed microscopic evidence of very rapid growth, in that the epithelium presented many mitotic figures, and the cancer cells having very little supporting connective tissue. It reoccurred within three weeks, and another surgeon operated less than three months after the first operation, and a little over three months since the first manifestation of the disease. He died on the operating table. No secondary manifestations had declared themselves. No postmortem was obtained. Warner says that any hard swelling in the region of the branchiogenic clefts should immediately arouse suspicion of branchiogenic carcinoma, especially if associated with pain as a prominent symptom.

29. **Therapeutics of Suppurative Bronchiectasis.**—After an experience with twenty-six cases since 1910, Lilienthal is convinced that palliative treatment should be reserved for actually hopeless cases, such as those of bilateral involvement or those in which the condition in one lung is so

extensive and complicated by adhesions that extirpation is clearly impossible. A single focus, or multiple foci in one lobe, should be removed surgically. Even when an abscess has extended so as to implicate neighboring lobes in one single infected mass, extirpation may be performed successfully. Lilienthal reports seven cases in which extirpation was performed or attempted. Of the six cases in which the operation could be completed there were four cures. One patient, whose case was badly chosen for extirpation, died as the result of an exploratory operation.

30. Tuberculosis of Spine.—Elmer cautions against careless and unnecessary manipulation of the child. He says that a child suffering with tuberculosis of the spine, and while conscious and in full control of its voluntary muscles, is a very different object from the one which lies unconscious and relaxed under an anesthetic. The power of voluntary control and self-protection is entirely lost under an anesthetic. The spine sags and bends when the child is lifted, and torsion at one end of the spinal column is carried segment by segment the length of the spine, one vertebra rotating on the next one, to the limit of motion, and so on down. There is another factor to be considered. The intimate relationship of the great, the lesser and the smallest splanchnic nerves to the thoracic vertebrae is important. Stretching and tearing of these delicate nerve structures so close to the spinal axis may produce sudden and severe shock. Likewise compression or pinching of the nerve tissue may produce shock. Elmer cites cases and describes his method of procedure of avoiding such traumas. At the time of the operation the child is placed supine on the table, the front of the plaster jacket is then removed and the anesthetic started. A few minutes later the front of the jacket is replaced and held firmly in place by two assistants, while the child is turned over into the prone position. The back of the plaster jacket is removed, the operation performed on the spine, a light gauze dressing put on, and the back of the jacket with its cotton replaced, fastened firmly with girdles of adhesive plaster, and the child returned to its bed. In this way all twisting and unnecessary movements of the spine are avoided.

34. Transplantable Chondro-Osteosarcoma in Dog.—McWhorter and Prime record the successful transplantation, through three generations, of a mammary chondro-osteosarcoma of a dog, in which development of bone was observed in the first generation of transplants. By far the most successful growths took place in very young puppies and particularly in those of nearly the same breed as that in which the original tumor grew. The tumor showing bone as found in the puppies of the first generation more nearly resembled the original tumor than did the growths in adult dogs.

Archives of Internal Medicine, Chicago

July, XVIII, No. 1, pp. 1-136

- 38 Introduction to Third Report of Robert M. Thompson Pellagra Commission of New York Post-Graduate Medical School and Hospital. J. F. Siler, U. S. Army; P. E. Garrison, U. S. Navy, and W. J. MacNeal, New York.
- 39 *Hereditary Factor in Pellagra. C. B. Davenport, Long Island, N. Y.
- 40 *Hereditary Pellagra in Spartanburg County, S. C. E. B. Muncey, Long Island, N. Y.
- 41 *Studies in Cerebral Fat Embolism. H. Gauss, Chicago.
- 42 *Systemic Blastomycosis; Report of Five Cases. H. W. Wade and G. S. Bel, New Orleans.
- 43 *Metabolism Studies Before and After Splenectomy in Case of Pernicious Anemia. O. H. P. Pepper and J. H. Austin, Philadelphia.

39. Hereditary Factor in Pellagra.—While pellagra is not an inheritable disease in the sense in which brown eye color is inheritable, the course of the disease, according to Davenport, depends on certain constitutional, inheritable traits of the affected individual. When both parents are susceptible to the disease, at least 40 per cent., probably not far from 50 per cent., of their children are susceptible; an enormous rate of incidence in a disease that affects less than 1 per cent. of the population on the average. While the high incidence is doubtless due to infection, it is also doubtless due to susceptibility, for right among the affected children grow up brothers and sisters who have never shown

the symptoms of pellagra. The importance of the constitutional factors is evinced by the difference in the reactions to the toxin of the disease shown by different families. Many families never show mental symptoms, while others usually do. In some families the intestinal symptoms are slight or negligible; in others severe and associated with early death. In some families the skin eruptions amount to little; other families are characterized by severe ulceration and desquamation of the derma. These family differences have all the characteristics of biotypes or blood lines and, Davenport believes, afford the best proof that there is a hereditary factor in pellagra.

40. Hereditary Pellagra in South Carolina.—An analysis of the data collected by Muncey shows no evidence of direct heredity. There may, however, be a hereditary predisposition to the disease in those families in which chronic gastrointestinal symptoms have existed for several generations. The relatively high proportion of gastric and intestinal diseases among pellagrous families would seem to substantiate this hypothesis. Of 105 families in which there is only one case of pellagra, only three give history of intestinal or skin diseases in the ancestors, and only one gives history of antecedent insanity. With this predisposition to the disease, Muncey suggests that direct contact or life in endemic sections might be the exciting factor necessary for its development.

41. Studies in Cerebral Fat Embolism.—In view of the profound disturbance in the central nervous system produced by the secondary changes of fat embolism, Gauss says, it is reasonably safe to conclude that these multiple lesions are intimately associated with the clinical manifestations of delirium and coma. The author made a very careful study of the brain of one such case. His findings are cited.

42. Systemic Blastomycosis.—Several features were noted by Wade and Bel which are unusual to generalized blastomycosis from the pathologic point of view. In one case there were extensive lesions of the spleen and liver, apparently due to the blastomyces, in which very few yeast cells could be found. In a second case there was an apparent secondary invasion by the blastomyces of a pellagrin suffering from pulmonary tuberculosis. In the skin lesion very interesting minute forms were found and specially studied. In a third case the heart was extensively involved, the condition being apparently unique. Widespread secondary bacterial invasion was noted in the liver, brain and bones. In a fourth case there was involvement of the lungs, liver, kidneys and lymph nodes, cutaneous and subcutaneous. In the fifth case the lungs, ribs, vertebrae and spinal cord were involved with cutaneous and subcutaneous nodules.

43. Metabolism Studies in Case of Pernicious Anemia.—In an adult with pernicious anemia of a moderately hemolytic type, splenectomy was followed by disappearance of the discoloration of the skin and by prompt and persistent improvement in the condition of the blood and general health. Metabolism studies made by Pepper and Austin before and after splenectomy gave the following results: A slight positive nitrogen balance before splenectomy was followed by an increased nitrogen retention fourteen days after operation and a return to the preoperative balance after one month. The output of uric acid, although never exceeding normal limits, showed a decrease of 22 per cent. after operation. The output of iron through the feces, although never above normal, showed a decrease of 40 per cent. after operation. The excretion of urobilinogen and urobilin in the feces before splenectomy was about three times the normal; two months after operation the output was about one seventh of that before splenectomy.

Archives of Ophthalmology, New Rochelle, N. Y.

July, XLV, No. 4, pp. 307-405

- 44 Some Newer Principles in Dealing With Uncomplicated Cataract. D. T. Vail, Cincinnati.
- 45 Studies on Action of Toxins and Protein Degeneration Products on Eye. A. C. Woods, Philadelphia, and J. L. Stoddard, Boston.
- 46 Three Years' Experience in Sclerocorneal Trephining in Glaucoma. W. H. Wilmer, Washington, D. C.
- 47 Report of Cases of Quinin Amblyopia. J. E. Weeks, New York.

- 48 Case of Syphilitic Retinochoroiditis Juxtapapillaris, With Microscopic Examination. F. H. Verhoeff, Boston.
- 49 Operative Treatment of Partial Staphyloma of Cornea and of Fistula of Cornea With Conjunctival Flap, Conjunctivo-Keratoplasty (Kuhnt). A. Knapp, New York.

Boston Medical and Surgical Journal

July 13, CLXXV, No. 2, pp. 35-70

- 50 Certain Occupations as Contributing Factors to Diseases of Skin. C. J. White, Boston.
- 51 Leonardo Da Vinci's Scientific Research of Vascular System. A. C. Klebs, Washington, D. C.
- 52 Hematocele of Tunica Vaginalis; Report of Cases. C. M. Whitney, Boston.
- 53 *Statistical Study of Mortality From Diabetes Mellitus in Boston From 1895 to 1913, With Special Reference to Its Occurrence Among Jews. H. Morrison, Boston.
- 54 Treatment of Chronic Disease is Problem of Applied Physiology. F. H. McCrudden, Boston.
- 55 *Acute Arthritis Experimentally Produced by Intravenous Injection of Staphylococcus Pyogenes. E. C. Steinharter, Cincinnati.

53. Study of Mortality from Diabetes Mellitus.—Morrison's investigation covers a period of nineteen years, during which there were reported 1,775 deaths due to diabetes mellitus. Of these, 127 were among Jews out of a total of 6,936 deaths from all causes, and 1,648 were among non Jews out of a total of 222,532 deaths. The ratio of the number of deaths due to this disease to the total number of deaths from all causes is 0.018 among Jews and 0.007 among non Jews. The largest number of deaths from diabetes occurred among those of Irish parentage, 656 out of 1,775, or more than one-third of the total. There were only eleven deaths from diabetes among negroes in Boston from 1895 to 1913. In Boston, as elsewhere, there has been a steady rise in the death rate from this disease; it was 7.1 per 100,000 inhabitants in 1895 and 21.3 in 1913, or 3.1 per 1,000 total deaths in 1895, and 13.3 in 1913.

55. Acute Arthritis Produced by Injection of Staphylococcus Pyogenes.—The results shown by Steinharter's work indicate that the staphylococcus is apt to localize in the joints and to produce typical lesions of arthritis, if the strain is of proper virulence. The organism recovered from the arthritic lesions has a decided tendency to again localize in joints. In some cases the arthritis was the only lesion found at necropsy, but in other cases it was associated with one or more other lesions, namely, duodenal ulcer, appendicitis, cholecystitis, myocarditis, pericarditis, endocarditis, nephritis, colitis and myositis. According to these experiments, it seems to be true that while the organism used (a staphylococcus) may show a predilection for a particular region of the body, it will not always produce a gross lesion at the expected point of attack. In order to produce a gross lesion, it is necessary either for the staphylococcus to be of a certain grade of virulence, or for the tissue in which it has lodged to be suitably altered for the growth and action of the organism. This principle demonstrated itself repeatedly in the course of experimental production of gastric ulcer, and again in experimental production of acute arthritis.

California State Journal of Medicine, San Francisco

July, XIV, No. 7, pp. 259-304

- 56 Second Thoughts About Salvarsan Therapy. W. E. Stevens, San Francisco.
- 57 Chronic Appendicitis Complicating Pulmonary Tuberculosis. J. C. King, Banning.
- 58 Syphilis of Central Nervous System. T. G. Inman, San Francisco.
- 59 Routes of Infection in Tuberculosis. W. Ophuls, San Francisco.
- 60 *Statistical Study of Rabies in California. J. C. Geiger, Berkeley.
- 61 Danger of Baths in Patients Suffering From Arteriosclerosis. W. W. Kerr, San Francisco.
- 62 *Tuberculin Therapy; Its Principles, Limitations and Indications. W. C. Klotz, Los Angeles.
- 63 *Simple Treatment of Fracture of Inferior Maxilla. E. Butler, San Francisco.
- 64 Fracture of Base of Skull Presentation of Patient. P. R. Walters, Dinuba.
- 65 Roentgen Treatment of Goiter. H. E. Ruggles, San Francisco.
- 66 Conservative Treatment of Fractures of Long Bones and of Wounds Complicating Them. J. T. Watkins, San Francisco.

60. Rabies in California.—Beginning April 1, 1913, and ending March 31, 1914, 427 examinations of the brains of animals for rabies have been made in the state laboratory.

Of these specimens, nine were in such a state of decomposition as to make examination impossible. Seventy brains gave negative results and 348 were found positive. Three hundred and thirty-nine of the positive cases were diagnosed by the finding of Negri bodies and the balance by inoculation into rabbits and guinea-pigs. The animals affected were as follows: 317 dogs, fourteen cows, eleven cats, four horses, one goat, one coyote.

Four hundred and thirty-six persons were treated with virus. The infection came from the bites of dogs in 403 instances, in nine cases from the bites of cats, and in four cases from the bites of coyotes. Six people were exposed to rabid cows and three to horses. Nine persons took the treatment as a precaution against exposure while doing laboratory examinations for rabies. The two remaining cases were inoculated with virus from human cases, one because of a bite and one because the saliva contaminated a fresh open burn.

Of the cases of rabies in human beings, three were true failures of the Pasteur treatment, all being severely bitten, two near the central nervous system. Eliminating all persons treated who were not bitten, the percentage of failures with virus supplied by this bureau was 0.491, less than $\frac{1}{2}$ of 1 per cent. These statistics are extremely important and unique because of the fact that in over 98 per cent. of the persons bitten, the animals doing the biting were checked by laboratory examinations, with positive results. There were few ill effects following the Pasteur treatment during the period under consideration. In one patient some weeks after treatment there was a peculiar twitching of the muscles of the right side of the neck. In another patient eleven days following the completion of the treatment there was severe pains in the left eye, later affecting the side of the face. This was present at intervals for about a week. In one of the patients there was vomiting. This occurred every day for a short period of time and stopped after the completion of the Pasteur treatment. In another patient the local reactions that usually appear on certain days of the treatment from different strength virus occurred after each injection. In four instances subcutaneous abscesses developed. The only serious complication reported was a slight paralysis of the lower limbs, with prodromal symptoms of nausea and diarrhea, which occurred several days after the completion of the Pasteur treatment.

62. Tuberculin Therapy.—Klotz emphasizes some very important points: He says that the basis for indications and contraindications for tuberculin therapy is an estimation of the degree of reactivity of the tissues at the site of tuberculous lesions. This can be determined only by a careful clinical study of each case. The principal object of tuberculin therapy is to establish tuberculin tolerance. Tuberculin tolerance is not permanent and the protection offered by it is limited. The various biologic tests are too variable to serve as safe guides for dosage in tuberculin therapy. The dosage in tuberculin therapy is not and cannot be absolute, but must be determined for each individual case, according to the clinical picture. Different preparations of tuberculin differ only as to their tuberculin content.

63. Treatment of Fracture of Inferior Maxilla.—Butler recommends the simple wiring of teeth of the inferior maxilla to corresponding teeth of the superior maxilla as a practical, efficient procedure which is easy of application and requires no special instruments or training. He says that it is suitable in practically all cases in which the teeth are present. Anesthesia is not as a rule required. External dressings are unnecessary. Any pliable tenacious wire of appropriate size may be used (iron, copper, bronze or silver). Angle's bands are often used by dentists, but are not as easily applied as wire. The corresponding teeth of three corresponding positions at least should be included.

Kentucky Medical Journal, Bowling Green

July, XIV, No. 7, pp. 355-400

- 67 Uremia. H. K. Orsburn, Owensboro.
- 68 Abdominal Pain. O. E. Bloch, Louisville.
- 69 Some of Uses and Abuses of Obstetric Forceps. I. J. Hoover, Owensboro.

- 70 Report of Carcinomas of Breast With Metastasis to Liver. A. J. Davidson, Lakeland.
- 71 Some Cardiovascular Stimulants and Their Uses. F. C. Askenstedt, Louisville.
- 72 Anuria. J. M. Morris, Louisville.
- 73 Management of Normal Labor. N. M. Garrett, Frankfort.
- 74 Pyorrhea and Its Relation to Systemic Disturbances. B. P. Rivers, Jr., Louisville.
- 75 Remote Infections Which Have Their Origin in Mouth. R. H. Davis, Louisville.
- 76 Dental Malocclusion. H. B. Tileston, Louisville.
- 77 Intravenous Use of Radium in High Blood Pressure. R. R. Elmore, Louisville.
- 78 Analysis of Anaphylactic Reaction. V. E. Simpson, Louisville.

Maine Medical Association Journal, Portland

June, VI, No. 11, pp. 389-420

- 79 Allen Treatment of Diabetes. H. V. Bickmore, Portland.

Michigan State Medical Society Journal, Grand Rapids

July, XV, No. 7, pp. 327-364

- 80 Toxemias in Pregnancy. F. C. Goldsborough, Buffalo.
- 81 Treatment of Fractures and Joint Injuries. W. T. Dodge, Big Rapids.
- 82 Treatment of Burns. C. N. Sowers, Benton Harbor.
- 83 Urinary Diagnosis of Pregnancy. H. A. Sharpe, L'Anse.
- 84 Ocular Evidences of Vicarious Menstruation. J. E. Gleason, Detroit.
- 85 Dermoid Cyst of Spermatie Cord. R. E. Fox, Ancon, C. Z.

New Jersey Medical Society Journal, Orange

July, XIII, No. 7, pp. 339-394

- 86 Treatment of Diabetes Mellitus. H. O. Mosenthal, Baltimore.
- 87 Hodgkin's Disease. I. Markowitz, Jersey City.

New York Medical Journal

July 8, CIV, No. 2, pp. 49-96

- 88 Exophthalmic Goiter. W. H. B. Aikins, Toronto, Ont.
- 89 Vaginal Hysterectomy. J. C. Taylor, New York.
- 90 Radium. S. Tousey, New York.
- 91 *Syphilitic Aortic Disease. G. W. McCaskey, Fort Wayne, Ind.
- 92 Transmissible Diseases in War. P. W. Huntington, New York.
- 93 Syncope Immediately After Administration of Diarsenol. S. H. Likes and H. Schoenrich, Baltimore.
- 94 Chronic Interstitial Nephritis. F. E. Park, Stoneham, Mass.
- 95 Trustworthy Nonpoisonous Antiseptic (*Calendula Officinalis*). W. M. Gregory, Berea, Ohio.

91. **Syphilitic Aortic Disease.**—A case with an anomalous electrocardiogram suggesting ventricular asynchronism is reported by McCaskey. A woman, aged 33 years, complained of paroxysmal pain in upper left chest and dyspnea. She had had acute articular rheumatism when 13 years of age. Eleven years later (nine years ago) she began to have some symptoms of heart disorder. The attacks were severe, lasting an hour or longer. She had a marked Corrigan and distinct capillary pulse. Temperature 99.2 F., pulse 100. Blood pressure (auscultatory method) systolic 170, diastolic 60 mm. Hg. Pulse pressure 110; at subsequent examination, systolic 160, diastolic 50. Heart: Left border 3 cm. to left of mid-clavicular line. Auscultation showed double aortic bruits, not very loud. No arrhythmia. Otherwise normal. No reduplication of either first or second sound could be detected at any time. The patient was placed on mercury and iodids. She objected to the pain of intramuscular injections, which were followed by protiodid of mercury in doses as large as could be tolerated, about one quarter to one half grain three times a day. After about three months' treatment the symptoms are very much improved, although there are still occasional attacks. The physical signs are changed. The diagnosis made by McCaskey is syphilis of the heart and aorta, with evident involvement of the aortic valves.

Northwest Medicine, Seattle

July, XV, No. 7, pp. 217-248

- 96 Clinical Consideration and Classification of Diarrhea and Constipation. F. Epplen, Spokane.
- 97 Nerve Blocking as Practical Method of Anesthesia for Abdominal Operations. E. O. Jones, Seattle.
- 98 Surgical Consideration of Uterine Prolapse. J. A. Pettit, Portland, Ore.
- 99 Treatment of Uterine Hemorrhage. H. P. Marshall, Spokane.
- 100 Some Points of Interest in Cerebral Localization to General Practitioner. J. T. Mason, Seattle.
- 101 Rational Treatment of Tuberculosis. A. M. Kinney, Astoria, Ore.

- 102 Treatment of Abscesses in Course of Tuberculous Disease of Joints and Bones. E. A. Rich, Tacoma.
- 103 Governmental Control of Medicine and Prevention of Quackery. E. L. White, Lewiston, Ida.
- 104 Case of Obstruction of Superior Vena Cava Due to Aneurysm of Arch of Aorta. R. L. Waugh, Seattle.

Oklahoma State Medical Association Journal, Muskogee

July, IX, No. 7, pp. 185-223

- 105 Early Diagnosis of Pulmonary Tuberculosis. W. W. Rucks, Guthrie.
- 106 Tuberculosis. H. Reed, Oklahoma City.
- 107 Layman's Views on Tuberculosis. E. K. Gaylord, Oklahoma City.
- 108 Inspiration From Chapter in History of Tuberculosis. L. J. Moorman, Oklahoma City.
- 109 Role of Heredity in Cause and Treatment of Disease. C. W. Heitzman, Muskogee.
- 110 *Case of Nephrectomy During Pregnancy; Report of Case. F. Y. Cronk, Guthrie.

110. **Nephrectomy During Pregnancy.**—Cronk cites the case of a woman, aged 27 years. Ten days before he saw her she experienced an acute sudden pain in the right flank just under lower border of the ribs. It was controlled by morphin. The fever ranged from 99 to 105 degrees. Urine was dark red and cloudy at first; then became light color with heavy white sediment. Blood pressure normal. Abdomen full, not rigid. Tenderness and rigidity in the left upper quadrant, extending around to the costal margin in front. A mass, smooth, tender on pressure, suggests the lower pole on the right kidney. Operation disclosed a large right kidney, 2½ by 3 by 6½ inches, firm and very adherent. Nephrectomy was done and wound closed with small tube drainage. On section of kidney, longitudinally, the pelvis is large (signs of distention) and two pockets, only slightly roughened, containing about 1 c.c. each of pus and a few shreds of necrotic material (strings of pus cells). Cortex red and swollen.

Ophthalmic Record, Chicago

July, XXV, No. 7, pp. 325-378

- 111 Mode of Extracting Lens in Its Capsule. E. E. Maddox, England.
- 112 Congenital Coloboma of Lens. W. B. Weidler, New York.
- 113 Rare Tubercular Condition of Eye. H. R. Wright, Columbus, Ohio.
- 114 Palpebral Syphilis. J. Rosenbaum, Montreal.
- 115 Method of Operation in Extensive Symblepharon. F. Krauss, Philadelphia.
- 116 Biologic Theory of Sympathetic Ophthalmia. H. Gifford, Omaha.
- 117 Nonoperative Treatment of Incipient Cataract. E. J. Bissell, Rochester, N. Y.
- 118 Foreign Body Lodged, for Years in Superficial Layers of Eyeball; Report of Case. F. R. Spencer, Boulder, Colo.
- 119 Eye Speculum for Cataract Operation. W. H. Wilder, Chicago.
- 120 Case of Palsy of External Rectus Muscle with Operation. C. M. Harris, Johnstown, Pa.

Providence Medical Journal

July, XVII, No. 4, pp. 174-224

- 121 Some Random Thoughts on Law and Medicine. A. D. Hill, Boston.
- 122 Anesthetics of Future. A. H. Miller, Providence.
- 123 Nitrous Oxid Anesthesia and Analgesia in Obstetrics. P. P. Chase, Providence.
- 124 Report on Two Thousand Wassermann Tests Made at Providence City Hospital During Years 1914 and 1915, with Study of Comparative Value of Antigens Used. H. E. Smiley, Providence.
- 125 Report on Result of Antisyphilitic Treatment at City Hospital. H. P. B. Jordan, Providence.

Southern Medical Journal, Birmingham, Ala.

July, IX, No. 7, pp. 579-668

- 126 Dosage of Digitalis. J. T. Halsey, New Orleans.
- 127 *Influence of Injection of Blood on Anemia and Infections in Children. J. S. Davis, Dallas, Texas.
- 128 Common Sense and Fever Thermometer vs. Stethoscope and Microscope in Diagnosis of Early Pulmonary Tuberculosis. S. E. Thompson, Carlsbad, Texas.
- 129 Rest and Exercise in Tuberculosis. T. Frazer, Asheville, N. C.
- 130 Bronchial Gland Tuberculosis. M. E. Lapham, Highlands, N. C.
- 131 Recognition and Treatment of Occult Tuberculosis. S. Von Ruck, Asheville, N. C.
- 132 *Health Conservation Through Life Insurance Companies. J. L. Davis, Waco, Texas.
- 133 What Life Insurance Companies Can Do for Betterment of Public Health. M. M. Smith, Dallas, Texas.
- 134 Relation of Insurance Medicine and Periodical Health Tests to General Practice. W. O. Pauli, Cincinnati.

- 135 *Hay-Fever in Southern States. W. Scheppegegrell, New Orleans.
- 136 Treatment of Urethral Stricture with Special Reference to Retrograde Dilatation. G. L. Hunner, Baltimore.
- 137 Treatment of Scoliosis. E. S. Hatch, New Orleans.
- 138 Acute Infections of Kidney. J. Hume and S. Logan, New Orleans.
- 139 First Aid Package. R. W. Knox, Houston, Texas.
- 140 First Aid to Injured. D. Eve, Nashville, Tenn.
- 141 Treatment of Compound Fractures. S. Leigh, Norfolk, Va.
- 142 Primary Treatment of Accidental Wounds. J. C. Bloodgood, Baltimore.
- 143 Syphilis of Eye, Ear, Nose and Throat. S. Kirkpatrick, Selma.
- 144 Injection of Ganglion of Gasser Through Foramen Ovale. H. H. Martin, Savannah, Ga.
- 145 Case of Dermoid of Corneoscleral Margin. A. O. Pfingst, Louisville, Ky.

127 and 132. Abstracted in THE JOURNAL, Dec. 11, 1915, pp. 2118 and 2119.

135. **Hay-Fever in Southern States.**—As no form of treatment has given satisfactory results in hay-fever, Scheppegegrell says, especial attention should be given to its prevention. This is simplified by the fact that practically all the plants that cause hay-fever are worthless weeds, already a source of expense to the farmer. As the elimination of these weeds means the eradication of hay-fever, every effort should be made to exterminate them. When this has been done, it will result in the proportionate decrease of hay-fever cases. When the public is thoroughly educated in the causative relation of these weeds to hay-fever, and suitable laws are enacted and enforced to assist in their extermination, hay-fever will cease to be on the list of common diseases.

West Virginia Medical Journal, Huntington

July, XI, No. 1, pp. 1-36

- 146 Acute Surgical Lesions of Abdomen Complicating Pregnancy. C. R. Ogden, Clarksburg.
- 147 Position of Placenta in Utero. H. G. Steele, Bluefield.
- 148 Fracture Dislocations of Spine. B. B. Wheeler, McKendree.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

June 24, I, No. 2895, pp. 873-904

- 1 Right Side of Heart and Its Relation to Overstrain. W. Russell.
- 2 *Theory of Blood Pressure Measurement. L. Hill and J. M. McQueen.
- 3 *Systolic Pressure in Acute Nephritis. R. G. Abercrombie.
- 4 Congenital Cystic Kidney with Local Diffuse Peritonitis; Surgical Destruction of Part of Kidney; Recovery. J. D. Malcolm.
- 5 *Prevention of Amebic Dysentery. J. G. Thomson and D. Thomson.
- 6 *Causation and Cure of Certain Forms of Lunacy. R. Farrant.
- 7 Treatment of Backward Displacements of Uterus. (To be continued.) F. J. McCann.

2. **Theory of Blood Pressure Measurement.**—The authors point out that to give accurate information on the factors concerned in blood pressure measurement, a scheme must permit of compression being applied to an artery in a pulsable and not rigid manner, and a rise of peripheral resistance *pari passu* with increasing compression must be arranged for. When an armlet or bag of a pocket sphygmometer is made to compress an artery where it lies on bone with little tissue round it—for example, temporal, dorsalis pedis, aberrant radial—it deforms the artery and prevents the passage of the pulse at a pressure less than diastolic. The finger of the physician acts in the same way, and therefore cannot estimate the systolic pressure accurately. Compression of the tissues surrounding the artery so as to block the venous outlets is essential to accurate blood pressure measurement. This congests the blood beneath and beyond the armlet or bag. The pulsing of the congested mass of tissues renders armlet or bag capable of delivering a circular compression to the artery, and one which yields to the pulse and prevents deformation of the artery until the systolic pressure is overtopped. Sufficient area of veins must be blocked if the blood pressure instrument is to be an accurate one, consequently the bag or armlet must be broad. The bag, together with the observer's hand, enclose the forearm, and so makes the

bag a pocket instrument equivalent to the armlet. Failure to make the bag broad accounts for many inconsistencies in the literature of blood pressure measurement.

3. **Systolic Pressure in Acute Nephritis.**—Several hundred cases of nephritis occurring among soldiers have been examined by Abercrombie. In cases of average severity the pressure was usually raised for a period of from five to ten days after the patient's admission to the hospital; not infrequently, however, the elevation persisted for several weeks, so that the patients were transferred home with the pressure still high. During the early stages the systolic pressure usually ranged between 135 and 180 mm. Hg; exceptionally, and particularly in association with convulsions, it reached 200 or 210. The pressure was thus lower than that usually seen in chronic nephritis; indeed, a pressure of over 200 was found to be presumptive evidence that the disease was really of long standing. A striking feature was the wide diurnal variation which often occurred between the morning and evening blood pressures, as much as 60 mm. Hg. When the blood pressure was falling from day to day, it usually did so in a series of morning remissions and evening rises, thus forming a descending "staircase." Exceptionally, when the pressure fell unusually rapidly, the evening pressure was lower than that recorded on the preceding morning; such a chart may be compared to that of a case of pneumonia terminating by crisis. During the early phase of the disease the pressure rises and falls irregularly; a stage is then reached of morning, remissions and evening rises forming a descending "staircase"; subsequently the pressure becomes subnormal, rising later to the normal.

In association with uremic convulsions [fourteen cases] the pressure was found to be always raised, but to a variable extent; in some cases it was 200, in others considerably lower; in one severe case the systolic pressure taken a few hours before the fit was 135. Immediately after the fit the pressure was often over 200, probably owing to the great muscular exertion. Two symptoms, usually nocturnal in incidence, appear to be specially associated with the great evening rises of pressure—namely, paroxysmal dyspnea and headache. Usually the amount of albumin diminished *pari passu* with the fall in pressure, although residual albuminuria often persisted after the pressure had fallen to the normal. Sometimes, however, the two curves bore no relation to one another. During convalescence transient elevations in the blood pressure occasionally occurred; sometimes they followed an advance of diet, but often they formed a part of a general recrudescence of symptoms for which no cause could be assigned.

5. **Prevention of Amebic Dysentery.**—The Thomsons insist that all cases of suspected dysentery should receive at once 1 grain of emetin daily at the advanced dressing station, field ambulance, hospital ship, or base hospital. This treatment must not be stopped during the transit toward the base until at least 7 grains have been given. It is bad practice to omit one single dose. The 7 grains should be received in seven days. The usual sanitary and hygienic measures are also to be carried out.

6. See *The Lancet*, abstract No. 13.

Lancet, London

June 24, I, No. 4843, pp. 1245-1286

- 8 Injuries of Eye and Orbit. A. D. Griffith.
- 9 Diseases of Throat, Nose and Ear and Their Treatment in Hunter's Time. W. H. Kelson.
- 10 Removal of Adenoid Growths. J. L. Aymard.
- 11 Operative Treatment of Osteo-Arthritis. W. I. de C. Wheeler.
- 12 *Agglutination Reaction of Bacilli of Typhoid Dysentery Group with Normal Serum. T. R. Ritchie.
- 13 *Causation and Cure of Certain Lunacies. R. Farrant.
- 14 Three Interesting Cases of Gunshot Wounds. P. C. Woollatt.
- 15 Case of Edematous Laryngitis. A. Kidd.

12. **Agglutination Reaction with Normal Serum.**—Speaking of the *B. typhosus*, Ritchie says: (a) complete agglutination in a dilution of 1:16 should be looked on with considerable suspicion; (b) complete agglutination in a higher dilution (1:32 or above) should be looked on as diagnostic. *B. para-*

typhosus A and B. Complete agglutination in a dilution 1:16 is suspicious, and in 1:32 or higher may be looked on as diagnostic. *B. dysenteriae* (Shiga). Complete agglutination in a dilution of 1:64 and above should be regarded as diagnostic. *B. dysenteriae* (Flexner). Complete agglutination in a higher dilution than 1:128 should be looked on as diagnostic, but in a dilution of 1:128 or lower it cannot be relied on for diagnostic purposes. In the case of medical students, laboratory workers and the hospital class of the population, a larger percentage respond to the test in higher dilutions than do "normal" members of the population.

13. Causation and Cure of Certain Lunacies.—Farrant made a microscopic examination of sections taken from the pineal, pituitary, thyroid and sexual glands, first, at different ages and periods of life; second, the effect induced in these glands by acute and chronic toxemias; and third, the changes found in cases of lunacy. Clinical examinations were carried out of cases exhibiting signs of enlargement or atrophy of these glands and symptoms of excess or diminution of secretion. Similar examinations have been made on all classes of lunacy for the presence of signs and symptoms. Mental cases and others have been examined for the presence of toxemias inducing the alteration in the glands and the consequent induction of symptoms of excess and deficiency. Bacteriologic examinations have been made of the feces of lunatics and the colons examined postmortem. From some 3,000 sections it was found that these glands vary at different ages and periods of life; with advance of life they tend to atrophy; that the pineal reacts to certain toxemias, the ultimate result of which is fibrosis. The pituitary reacts in a similar manner, the terminal result of which is fibrosis, intermediate stages of hyperactivity are seen and the formation of cysts and adenomas.

In primary and secondary amentia atrophy of the pineal, pituitary and thyroid were found in three main groups of cases. In dementia praecox an alteration was found in the glands which varied with the duration of the case. Alteration and degeneration were also found in other cases of dementia. In some cases of acute confusional mania, melancholia, manic depressive and other forms of insanity changes were found in the thyroid, pituitary and sexual glands. The changes varied from hypertrophy to atrophy. The thyroid gland was frequently found to be abnormal in children, adolescents and adult lunatics. The pituitary gland was found sometimes to have given rise to symptoms of hyperpituitarism, to apituitarism in idiocy, dementia praecox and other forms of insanity. Signs of alteration in the pineal were found especially in children and adolescents with consequent symptoms of hyperpinealism and apinealism. Alteration was found in the size of the testicles associated with ductless gland changes. Hypertrophy of the prostate was often found to be associated with altered mentality, and after complete removal cases were frequently associated with depression or melancholia. Pyorrhea and carious teeth were found to be frequent accompaniment of lunacy in adults; in certain cases signs of chronic intestinal stasis and toxemia were well marked.

It is deduced that many cases of lunacy may be classified according to the toxemia present and the change that it has induced in the ductless glands. The lines on which beneficial treatment may be carried out, based on the above pathology, become obvious; it may be summed up by saying that toxemias, if present, should be removed by medicinal or surgical measures and the glands allowed to involute if they are hypertrophied, or if they are degenerated with deficient secretions these secretions should be supplied. Good results may be expected before cortical brain lesions have taken place.

Annales de Gynécologie et d'Obstétrique, Paris

May-June, XLII, pp. 129-192

- 16 Puericulture and Obstetrics in France and in Germany. (Puericulture; obstétricie française et obstétricie allemande.) A. Pinard. To be continued.
- 17 *Spontaneous Protection Against Infection From the Small Pelvis. (La périonisation spontanée du bassin de la femme. F. Chatillon.

17. **Spontaneous Protection of the Abdominal Cavity Against Infection in the Small Pelvis.**—Chatillon relates that at the gynecologic clinic at Geneva it has long been the routine practice to study conditions found on opening the abdomen and record them, hoping thus to get better insight into Nature's methods of protecting against infection from below. His present article is based on 100 cases. The small intestine is utilized to wall off the pelvis most frequently, next in order of frequency the sigmoid loop, the omentum, bladder, parietal peritoneum, rectum, uterus, pouch of Douglas, cecum and the serosa of the broad ligaments. The small intestine often serves to help wall off a pus pocket or, with a series of loops and adhesions, roofs over the small pelvis. When the diseased uterine adnexa sag down into the pouch of Douglas, they get walled off from the abdominal cavity by adhesions which form between the organs in the small pelvis; otherwise the organs above cooperate, or the organs in the small pelvis and the intestines may all aid in the task.

Archives de Médecine des Enfants, Paris

May, XIX, No. 5, pp. 225-280

- 18 *Variations in the Glycuronic Acid in the Urine of Infants. (Recherches sur les variations de l'acide glycuronique dans l'urine des atrophiques.) H. Barbier.
- 19 *Lengthening of the Bones of the Hands and Feet as the Bones Grow Thinner, Accompanied by Severe Pains. (Dolichosténomélie et dolichosténomélie.) L. Calvo; (Id.) J. Comby.
- June, No. 6, pp. 281-336
- 20 Treatment of Chronic Urticaria With Sodium Nucleinate. E. Weill.
- 21 *Defective Development and Debility in Infants. (Des hypotrophies et des cachexies des nourrissons.) P. Nobécourt. Commenced in No. 3.
- 22 *Interlobar Empyema in Two Infants Cured by Simple Puncture. E. Gorter.
- 23 *Attacks of Suffocation as Manifestation of Disturbance From Dentition. (Cas de dyspnée orthopnéique symptôme d'une poussée dentaire chez un enfant de 15 mois.) V. N. d'Oliveira.

18. **Glycuronic Acid in Infants' Urine.**—Barbier gives the simple quantitative test for glycuronic acid in the urine, and the findings in infants before and after a dose of camphor. The children are grouped according as the findings are zero or near it, those showing a marked increase after the provocative dose of camphor, and those showing no change under the camphor. Weakly infants that are not thriving give the lowest response, but as their condition returns to normal the glycuronic acid content of the urine increases. It is thus a reliable index of what is going on in the body, as is illustrated by a number of charts. One child had an ascending curve until it was given cow's milk, when the glycuronuria abruptly declined. The milk was then stopped and the glycuronuria climbed up again, but dropped anew when cow's milk was resumed, demonstrating that this child is unable to digest cow's milk. It modified at once the glycuronic acid output, and this in itself throws light on the symptoms of intolerance or of intoxication observed under such conditions. As long as the glycuronic acid output is low, we can assume that the liver is not functioning normally, and we must refrain from making demands on it. Camphor seems to have a stimulating action on the liver functioning. Many of the atrophic infants improved materially under daily doses of camphor. The camphor thus serves both diagnostic and therapeutic purposes. Among the five cases cited in detail is that of a 6 weeks' babe who gained only 9 gm. a day for over five months, and the glycuronic acid output was very low. Then it was given camphorated oil daily and in fifty days it averaged 17 gm. a day. When the glycuronic reaction has become normal, the infant may be able to digest cow's milk, for which it has been entirely intolerant hitherto.

19. **Dolichostenomelia.**—In the few cases on record of this extreme lengthening and growing thinner of the bones of the hands and feet, the condition was congenital and caused no pain. It has been called "spider fingers," arachnodactylia. In Calvo's new case the child was apparently normal until the age of 10. Then after a period of severe pains the bones of the fingers and toes began to grow long and spindling. The child suffered from intense pains in the head, arms and

legs, with some swelling of joints but no pains in the joints. The painful regions were cool and cyanotic, with protruding veins. The father had rheumatism, the mother was healthy. The child had measles and whooping cough between 9 and 11. The skin and muscles have not kept pace with the rapid growth of the bones, which is one factor in the pains, but otherwise the pains became attenuated as the bones grew spindling. Radioscopy shows overdevelopment of the epiphyseal cartilages.

21. Causes of Defective Development and Malnutrition in Infants.—Nobécourt refers to those cases in which no cause is apparent. Artificial feeding is one of the principal factors, and defective digestion of fats is common. He reviews the various theories that have been advanced and says that none are conclusive. The noxious influence is more harmful the younger the child. The growth function is most readily upset then, and indigestion and malnutrition check the natural development. Each element of the food must be studied to determine which is at fault. By careful study of each individual case we may be able to remove the obstacles to natural development. Left to itself, the child ceases to grow normally, then it stops growing altogether; then the proteic tissues and the fats in the infant's body are consumed. The child consumes itself, and the term of its existence is the limit of this autophagy unless we can arrest it in time.

22. Interlobar Empyema in Two Infants.—Both children had had whooping cough during the last few months. One was 15 and one 5 months old, and both had fever and signs of interlobar empyema. The condition seemed extremely grave in each case, but in each recovery was soon complete after a simple puncture in the sixth interspace, releasing green but not fetid pus. Pneumococci were found in one and staphylococci in the other case. The pus was probably walled in by multiple adhesions with no chance for escape, and the pressure was too great to permit absorption. Even if all the pus had not been evacuated at the puncture, the pressure was reduced so that the balance was then easily absorbed.

23. Dyspnea from Teething.—The child of 15 months had great difficulty in breathing, increased every time it tried to lie down. D'Oliveira ordered the gums rubbed with an anesthetic, assuming that the dyspnea was a nervous trouble connected with teething. He has encountered a few cases of spasm of the glottis or convulsions in teething infants presenting indications of rachitis, and this dyspnea was evidently of the same nature. He gave the child daily sedative hot baths, with calcium chlorid internally, in addition to the anesthetic for the gums, with promptly favorable results.

Bulletin de l'Académie de Médecine, Paris

June 13, LXXV, No. 24, pp. 697-728

- 24 *Refusal of Consent by the Wounded to Operations and Diagnostic Measures. (Le droit, pour le blessé, de refuser des interventions ou opérations reconnues nécessaires pour le diagnostic ou le traitement.) J. Grasset.
- 25 Treatment of Constriction of the Jaws. (Traitement de la constriction des mâchoires.) L. Imbert and P. Réal.
- 26 Frequency of Pleuropulmonary Complications With Extensive Wounds of Nerves and Their Influence on the Outcome. (Sur la fréquence des complications pleuro-pulmonaires et leur rôle comme facteur de gravité chez les grands blessés nerveux.) G. Roussy.
- 27 *Favorable Results With Vaccine Therapy of Typhoid in Serbia. (Recherches sur la bactériothérapie de la fièvre typhoïde, au cours de la campagne récente en Serbie.) Petrovitch.

24. Refusal of Consent to Operations or Diagnostic Measures.—Grasset relates that in the hospital for nervous affections among the wounded of Region XVI, the patients often decline to permit general anesthesia for diagnostic purposes, and fifty absolutely refused to let lumbar puncture be done, according to the routine procedure for all the patients. Lumbar puncture has been very useful in many cases in the diagnosis of actual lesions; changes in the spinal cord cannot be simulated by the psychoneurotic. One patient refused to allow his dropsy to be tapped, and four refused to let blood be drawn for the Wassermann test. Others refused to permit the application of a plaster cast.

Those with actual physical injuries usually accepted these procedures readily. The refusals came mostly from those Grasset calls the psychoneurotics. Their example spreads until there have been actual epidemics of refusals. Some of the men shrink from anything liable to cause pain. Others rejoice in their good luck in getting wounded, as it keeps them away from the firing line, and they do not care to have their recovery hastened and their claim for a pension reduced. He urges the authorities to define the limits of the military physician's authority. (See also Paris Letter, p. 217.)

27. Vaccine Therapy of Typhoid.—Petrovitch states that the mortality dropped to 2.7 per cent. under the vaccine therapy as applied in 2,270 cases of typhoid. His impression is decidedly favorable, as no cold baths were given with it. The doses were small, not over from 5,000,000 to 50,000,000 microbes, killed by heat, and these doses were reduced as the patient's strength declined. The dosage should be calculated to avoid any pronounced local or general reaction. A little caffeine is given with the second injection usually, to stimulate the pulse.

Correspondenz-Blatt für Schweizer Aerzte, Basel

June 10, XLVI, No. 24, pp. 737-768

- 28 Clinical Study of Symptoms, Diagnosis and Prognosis of Different Varieties of Irregular Pulse. (Unregelmässige Herzstätigkeit.) H. Ryser. To be continued.
- 29 *Disproportionate Growth of the Legs in Length as Tardy Manifestation of Inherited Syphilis. (Ueber die Verlängerung der Unterschenkel bei Syphilis congenita tarda.) R. E. Chable.

29. Disproportionate Length of the Legs with Congenital Syphilis.—Chable cites Fournier's statement that he found some syphilitic bone affection in 38.7 per cent. of 212 cases of inherited syphilis in children over 2. The tibia was the bone affected in 46.6 per cent. of the cases. The trouble may be an osteoperiostitis or a gummatous affection. The bone curves and seems to grow thicker, and Chable has encountered two cases in which, after puberty, the bones grew abnormally long, the tibias being 10 cm. longer than the femurs in one case. This excessive growth had begun at the age of 17. In the other case only one leg had grown to excessive length. The distance from the iliac spine to the malleolus was 86 cm. on this side and 83 cm. on the other. The tibia on this side and in one leg in the other patient was of the typical saber shape, with the characteristic thickening and periosteal exostoses. In the older man (22) the bone substance has encroached on the marrow cavity and already shows signs of eburnification at some points. In the other case the bone shows the characteristic softening, the stage of periostitis with hyperostosis being followed by an inflammatory new growth, which likewise encroaches on the marrow cavity. The whole bone is thicker than normal. The pains and functional disturbances from these changes in the leg bone are liable to be misinterpreted, especially as they may not develop until early adult life. Disproportionate length of the leg below the knee should always suggest possible tardy inherited syphilis.

Gazzetta degli Ospedali e delle Cliniche, Milan

June 11, XXXVII, No. 47, pp. 737-752

- 30 *Fluctuations of the Temperature of the Newly Born. (Sulle oscillazioni della temperatura nei neonati.) R. Costa.

30. Fluctuations of Temperature of Newly Born.—Costa relates that in 100 infants, less than a week old, examination of the temperature every four hours showed in a number a briefly transient rise without any apparently appreciable cause. Closer study of the infants, however, disclosed a tendency to slight meteorism as the temperature rose, or there was a slight and fleeting eruption. In one the buccal mucosa was noticed to be unusually red as the temperature rose. These findings show that the briefly transient fever in these cases has a pathologic basis, even if it is merely the lack of coordinate functioning between the organs with an internal secretion. The rise in temperature in this latter group can be regarded as an extension of the limits of physiologic variation.

Policlinico, Rome

June 18, XXIII, No. 25, pp. 773-804

- 31 *Spasm of the Muscles Used in Respiration; Five Cases. (Contributo alla clinica delle neurosi respiratorie.) A. Fara.
- 32 Uterine Hemorrhage From Leech Entering Cervix During Bathing. (Metrorragia causata da una sanguisuga penetrata spontaneamente nel collo uterino e simulante un polipo cervicale.) P. Gaifami.

31. **Spasm of the Muscles Involved in Respiration.**—Fara describes five cases of what he calls respiratory neuroses. The clinical aspect at first glance seemed to resemble nervous asthma, but examination showed the margin of the lungs higher than normal, while the stethoscopic findings were negative, and there was no cough. The noisy inspiration and expiration sounded like the panting of a dog. The respiration rate was from 150 to 180 during an attack, but the breathing was excessively shallow—the play of the muscles being reduced to almost nothing, the spasm contracting all the muscles concerned in the breathing act. The diaphragm in the most extreme case seemed to be paralyzed. It persisted immovable in the expiration position while all the other muscles were in the inspiration position. The spasm subsided during sleep and also at intervals during the waking hours. This patient was a mountaineer of 32, apparently robust except for this neurosis. It did not interfere with his work as custodian of a church, but he was unable to do any fatiguing work. Emotional factors seemed to aid in bringing on the attacks. In the intervals respiration was abnormally slow, and during an attack the respiration sometimes returned to the usual rate when the attention was diverted, as in the course of shaving. The four other cases were in soldiers, and the emotional factor was also evident in each.

Brazil Medico, Rio de Janeiro

May 27, XXX, No. 22, pp. 169-176

- 33 Simplified Technic for the Romanowsky Stain. (Coloração de Romanowsky: Um novo processo para obter-a.) M. França.

Siglo Medico, Madrid

May 27, LXIII, No. 3,259, pp. 337-352

- 34 Psychic Impotency. J. De Azua.
- 35 Immunity and Hypersusceptibility on the Part of the Skin. (Inmunidad e hipersensibilidad de la piel.) E. de Oyarzabal.

Prakticheskiy Vrach, Petrograd

XV, No. 16-17, pp. 146-156

- 36 Efficacy of French Substitute for Salvarsan. (Nieskolko slov o frantsuzskom preparatie Arsenobenzol-Billon'a.) J. Grünberg.

Russkiy Vrach, Petrograd

XV, No. 15, pp. 337-360

- 37 *Diagnosis of Incipient Spondylitis. G. I. Turner.
- 38 Action of Caucasus Benzines on Living Organisms. (O dieistvii Kavkazskikh benzinov na zhivotnoi organizm.) N. P. Kravkoff.
- 39 *War Wounds of the Tongue. A. M. Nikolsky.
- 40 Therapeutic Value in Cholelithiasis of New Russian Mineral Spring Water. D. A. Burmin.
- 41 Treatment of Gunshot Fractures of Long Bones. I. A. Tikhomiroff. Concluded.
- 42 *Case of Congenital Union of Eyelids: Cryptophthalmos. K. G. Turovsky.

No. 16, pp. 361-384

- 43 Individual Metabolism. (Individualnyi obmien.) B. I. Slovtsoff.
- 44 Assimilation of Proteids by the Animal Body as Viewed by the Polypeptoid Theory of the Proteid Molecule. (Assimiliatsiya bielkovikh tiel zhivotnim organizmom v osvieshtshenii polypeptidnoi teorie stroeniya bielkovoe molekuli.) P. A. Glagoleff.
- 45 War Wounds of the Eyes and Their Operative Treatment. A. V. Lotin.
- 46 The Principles of Functional Treatment of Lesions and Diseases of the Extremities. K. T. Vegner.
- 47 Some Observations Regarding the Action of a Russian Mineral Water. L. B. Kavenokiy.

No. 17, pp. 385-408

- 48 Organization of Surgical Aid for the Wounded in the Near and Remote Base of the Army. V. A. Oppel.
- 49 *Neuralgia of Tympanic Branch of Glossopharyngeal Nerve. (Neuralgiya Jacobson'ova nerva.) A. E. Shtsherbak.
- 50 Mixed Vaccination. (O smieshannoi vaccinatsii.) G. D. Bielonovsky.
- 51 Organization of Ophthalmologic Aid for Sick and Wounded Soldiers. R. A. Katz.
- 52 *Treatment of Gunshot Wounds of Long Bones and Large Vessels Complicated With Suppuration. N. A. Krotkina.

No. 18, pp. 409-432

- 53 *Observations on Typhus Fever. (Iz nablindenii nad sipnim tiphom.) D. K. Zabolotny.
- 54 The Role of Anacrobic Microbes in Complications of Wounds. M. N. M. Aitova and R. A. Brailovskaia.
- 55 *Mixed Vaccinations Against Typhoid and Cholera. A. I. Bielousova.
- 56 The Best Method of Preparation of Cholera Vaccine. P. P. Maslakovetz.
- 57 The Use of Chlorin Tablets in the Army for Disinfection of Drinking Water. X. D. Archipiants.
- 58 *Regeneration of Bones and Growth of Bone Tissue in the Test Tube. (K voprosu o vozrozhdenii kosti v svyazi s virashtshivaniem in vitro kostnoi tkani.) N. A. Dobrovolskaia.
- 59 *Value of Ambard's Formula in Estimation of Kidney Functioning. A. M. Zukoff.
- 60 Quinin Hydriodid in Treatment of Cancer. (Iodistii khinin—Chininum hydrojodidum—pri liechenii rakovikh novooobrazovaniy.) G. A. Garnak.

37. **Diagnosis of Incipient Spondylitis.**—Turner examines the region of the spine by placing the entire hand flat on the suspected area and moving it along the spine. The spinous process of the affected vertebrae can be felt then by the little finger as a slight prominence. The abnormal prominence can be usually confirmed by the tenderness which can be elicited by pressure. He found this method very useful and of decided value in a great many initial cases where the diagnosis was very difficult and doubtful.

39. **War Wounds of the Tongue.**—According to Nikolsky, gunshot wounds of the tongue have occurred only in the proportion of 0.2 per cent. of all other wounds in war time. The tongue wounds are accompanied by severe hemorrhages which may be fatal. The hemorrhage can be checked sometimes only by ligation of the vessel in the wound, or at some distance. Tamponing gives merely temporary relief, and is as a rule hard to carry out. In deep wounds of the tongue the bleeding vessel can be found by enlarging the wound, when the vessel can be more readily ligated. In case this does not succeed, the artery should be ligated at some distance on the neck in Pirogoff's triangle.

42. **Cryptophthalmos.**—Turovsky claims that his case of cryptophthalmos is the fourteenth described in the literature. His patient was a 3-months-old infant. The skin of the brow was almost continuous over both orbits. The palpebral fissures were absent on both eyes. The skin over the ocular region was thin, easily folded, without any inflammatory phenomena. A horizontal small furrow was present in the region corresponding to the palpebral fissure, but there was no trace of cartilages, lids or eyelashes. Below the horizontal furrow the skin was somewhat protruding and covered a round tumor the size of an olive. The brows were faintly developed. No heredity could be established; the two other children are normal. The operation did not reveal the presence of any cornea, though the tumor resembled an eyeball with a thin sclera through which the choroid could be seen. Enucleation was refused and the incision was sewed together. No attempt was made to operate on the other eye.

49. **Neuralgia of Jacobson's Nerve.**—The symptoms of neuralgia of Jacobson's nerve, the tympanic branch of the ninth cerebral nerve (glossopharyngeus) were paroxysmal attacks of acute shooting pains in the depth of the left ear, radiating into the pharynx, lower half of the face and temporal region. The pain was particularly severe in front of the ear, in the left temporal and anterior portion of the parietal region. The teeth, eyes and forehead were normal. During the attacks there was a bitter taste in the mouth, but no disorders of secretion of saliva. Movements of the head or deglutition did not increase the pains. Painful points were found in front of the ear, at the emerging point of the facial nerve, and on the neck between the middle of the lower edge of the jaw and the inner border of the sternocleidomastoid. Shtsherbak thinks that these symptoms confirm the connection of the ninth nerve with the auriculotemporal branch of the fifth nerve. On the other hand, his observation shows that the fibers of the ninth nerve, in human beings, do not conduct secretory impulses for the parotid glands, as has been experimentally established for animals. In the case reported treatment consisted in galvanization of the painful points, diathermia treatment of

the parotids, hypodermic injections of arsenic, supplemented by correction of retroversion of the uterus, parametritis and salpingo-oophoritis. The patient was greatly improved.

52. Suppurating Wounds of Bones.—From the experiences with the wounded in a large Petrograd hospital, Krotkina draws the following conclusions: Many gunshot fractures and lesions of the joints heal without any surgical interference. In cases of inflammatory exudates in the joints, Bier's hyperemia treatment must be resorted to, followed if necessary by puncture of the joint. Bier's treatment gives good results, even in pyemic states, provided the local process is limited to the joint. When Bier's treatment is used on the knee joint, the popliteal fossa must be carefully guarded. In case cellulitis sets in, the hyperemia treatment must be preceded by large incisions. If continuous and persistent Bier treatment does not prevent or stop suppuration from the joint, the temperature keeping high, good results are often obtained from partial excision of the joint. In case of malignant edema, the general condition being grave, the earliest possible amputation of the limb is indicated.

53. Typhus.—Zabolotny summarizes in brief form his conclusions from extensive experience with typhus. The endemic occurrence of typhus fever is caused by the density of population and unhygienic mode of life. The prodromal stage lasts about twelve days, and the disease starts with a violent rise of temperature up to 103 or 104 during the first twenty-four hours, and it falls by lysis. In seventeen out of 100 patients with a typical clinical picture of typhus fever, there was marked agglutination reaction with typhoid bacilli. In the plasma and the white blood cells of typhus patients there may be found small round bodies, sometimes in pairs. In cultures from the blood there frequently can be found micro-organisms representing a complicating infection, and which may produce specific antibodies in the blood of patients.

55. Mixed Vaccination Against Typhoid and Cholera.—Bielousova found in her experiments on rabbits that with mixed vaccination the body's reaction was not more intense than with a separate or single vaccination. In mixed immunization there is formation of antibodies against both typhoid and cholera. Mixed vaccination ought to be done more frequently for practical reasons.

58. Regeneration of Bone Tissue.—Dobrovolskaia's experiments with proliferation of bone tissue in the test tube showed that it is possible to obtain an abundant growth in vitro, including the endostium, haversian canals, bone cells, etc. The proliferation of osteogenous elements of the cortical substance of the transplanted bone deprived of periosteum gives rise to formation of osteogenous tissue, but this occurs with greater energy when the transplanted bone is not deprived of its periosteum. The newly formed bone becomes solid only when it grows to blend with the basal bony tissue. The proliferation and further growth of osteogenous elements are facilitated by the presence of a fibrinous blood clot. The practical conclusion is to carefully guard the smallest fragments, in case of a fracture noncomplicated by suppuration, and in case of the latter, to remove them as late as possible in order to give the body a chance to utilize them as construction material.

59. Ambard's "Uremic Constant."—According to Zukoff's studies, in cases of pronounced azotemia with high urea content in the blood (above 0.98 per thousand), the Ambard coefficient is high. In less pronounced forms of azotemia there is no distinct parallelism between the coefficient and the amount of urea. The rise of the coefficient indicates renal insufficiency even when the urea content in the blood is normal, and its figure corresponds with the gravity of the clinical symptoms. In mild forms of nephritis or in the initial stages of severe nephritis, Ambard's method permits of determining the secretory function of the kidneys in regard to nitrogen before there is pronounced retention in the blood of nitrogenous substances, and when other methods of examining the renal function still give indefinite results. The technic is quite simple and can be easily carried out not only on hospital but also on office or dispensary patients.

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- 61 Development of Refraction of the Human Eye. (De ontwikkeling der refractie van het menscheijk oog.) W. Koster.
- 62 *The Importance of Statistics in Medicine. (Het goede recht der geneeskundige statistiek.) J. A. Korteweg.
- 63 *Bradycardia With Pulsus Bigeminus. P. H. Enthoven.
- 64 Absorption of Roentgen Rays. P. M. van der Haer and H. Verploegh.
- 65 Mechanism of Swallowing. (Slikbeweging en slikgeruisch.) L. Kaiser.

62. Importance of Statistics in Medicine.—Korteweg declares that statistics in medical matters may be of the greatest aid to physicians as they are able to appreciate the attending circumstances. But to the layman they are liable to prove confusing and misleading. When there is a difference of opinion between physicians as to the importance to be ascribed to certain statistics, the verdict should be in favor of the man with the better medical training, wider experience and sound reasoning. As an instance of the possibly misleading import of medical statistics he mentions the figures that apparently prove the heredity of cancer. What is inherited, he says, is the tendency to long life; this brings the individual into the cancer age which others may not reach. Korteweg reviews the experiences of the leading life and accident insurance company, with which he is connected, and cites numerous sets of statistics, discussing the conclusions to be drawn from them. For example, in a certain district, up to 1906 there were twenty-two cases of industrial dislocation of the shoulder with favorable functional outcome, and seven with unfavorable outcome. Since that date the figures have been respectively eighteen favorable and thirty-three unfavorable. This led to a collective investigation which revealed that, in the attempt to improve matters, the parts had been immobilized longer in recent years, with disastrous results.

63. Bradycardia with Pulsus Bigeminus.—Enthoven describes two cases in which seemingly healthy young men presented extreme bradycardia with extrasystoles. In the first case the electrocardiogram showed extremely irregular heart action, extrasystoles occurring without any regularity, sometimes alternating and sometimes arbitrarily between the normal groups. Except for an attack of malaria six years before there were no pathologic antecedents. Under the influence of bed rest the pulse became entirely regular, 36 beats to the minute, the sphygmogram showing continuous bigeminus. Not the slightest influence was apparent from subcutaneous injection of 5 or 10 mg. morphin, and 0.5 and 1 mg. atropin caused no disturbance. The electrocardiogram under atropin was like that under bed rest, unless possibly the pulse was a mere trifle accelerated. No effect was evident either from digitalis by the mouth. On the other hand, subcutaneous injection of 1 c.c. of 1 per 1,000 solution of epinephrin arrested the extrasystoles completely and brought the pulse rate up to 62. The sphygmogram seemed quite normal for an hour and a half, the epinephrin having thus transformed a pulsus bigeminus et rarus into a normal pulse of normal frequency. If the bigeminus is due to vagotony, why was there no effect from atropin? Is there hypotony of the vagus? Or is the sympathetic system abnormally excitable? Be this as it may, Enthoven's conclusion in regard to the case is that the young man need not fear that the Damocles' sword of heart disease is hanging over his head, even although the extrasystoles and the bigeminus in the otherwise entirely healthy young man may entail extra work on the heart so that there is not enough reserve force to prevent his panting somewhat with extra physical exertion. In the second case a man of 23 has an uneven and irregular pulse with bradycardia of 40 and irregular extrasystoles eliciting the pulsus bigeminus. The thyroid is enlarged, the right lobe seems to be cystic, and there is a fine tremor. Nothing pathologic can be discovered in the heart, and the thyroid is probably responsible for the extrasystoles, the cardiomotor center being thus rendered overexcitable and the automatism magnified until a spontaneous extrasystole occurs between the normal contractions of the heart. The bradycardia thus induced is a manifestation not of depressed but of increased excitability of the heart.

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ADENOMYOMA OF THE RECTOVAGINAL SEPTUM*

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In 1914, I referred¹ to two cases of adenomyoma of the rectovaginal septum recently reported by Cuthbert Lockyer,² and mentioned observations made by Macnaughton-Jones, Clifford White and Herbert Spencer. I also briefly mentioned two cases that Dr. D. S. D. Jessup of New York had observed and which he was about to publish.

Since then Jessup³ has reported his cases in full. I have reported another case.⁴ Stevens⁵ reports five cases of adenomyoma that he observed in the course of eighteen months. He also refers to a case which he had accurately described in 1910.

Pierre Nadal,⁶ of Bordeaux, reported a case of adenomyoma of the posterior vaginal wall in 1911. Other cases may have been recorded, but a careful survey of the literature in the *Index Medicus* for the last years failed to yield me more data on this subject.

I shall briefly refer to two other cases that have come under my personal observation and shall then try to sketch the course of adenomyoma of the rectovaginal septum as evidenced by the cases thus far reported. I shall also endeavor to indicate the appropriate methods of treating such tumors.

CASE 4.—Adenomyoma of the rectovaginal septum extending out to the right pelvic wall and constricting some of the pelvic nerves; hysterectomy; recovery.

Dec. 28, 1914, Dr. John Calvin Huckins of Ashland, N. H., wrote me as follows: "In THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION under date of March 14, 1914, I saw a report of a few cases of adenomyoma of the rectovaginal septum. On May 10, 1913, I had a patient with a small tumor in the rectovaginal septum. The mucous membrane of the right vaginal fornix had a bluish color and the mucosa was puckered. High up in the right vaginal fornix a small hard mass could be felt. Upon rectal examination, there was some bulging of the anterior rectal wall, and the mass could be made out more distinctly by a finger in the rectum. What the mass was I do not know. I had two surgeons in

consultation, neither of whom knew what the growth was, or where it had originated. Dr. A. H. Harriman and I did an exploratory operation through the posterior vaginal wall and removed two thirds of the tumor, but we were of the opinion that it was malignant and did not complete the operation. When I read your article ten months later, I then knew what this tumor must have been. I took pains to keep track of this woman and for over a year I could not detect any lump upon digital examination. Only a few days ago, on rectal examination, was I able to find a small lump which seemed to be nearly as large as the one found at the time of our exploratory operation (about the size of a small hen's egg)."

Under date of Dec. 31, 1914, Dr. Huckins says: "This case seems to me to be identical with Lockyer's Case 2, only not quite as marked. I am of the opinion that the growth is connected with the uterus and broad ligament."

The patient, Mrs. O. P. S., aged 43, was admitted to the Johns Hopkins Hospital, Jan. 18, 1915. She had had no children. Her chief complaint was pelvic pain. The present illness had begun about three years before. At that time she had been for a long ride in a buggy over a rough country road. On her return home she had been taken with severe pain in the lower part of the pelvis and a feeling of pressure in the rectum. These symptoms had persisted for a few days and then disappeared. The following month, just after the menstrual flow had ceased, she had again experienced this peculiar grinding pain in the lower part of the pelvis. It had lasted for four or five days and then suddenly had disappeared. This pain had continued each month after the cessation of the menstrual flow. The discomfort would last from four to five days, and then until the following month she would be perfectly well. She said that the character of these pains was unusual. They were difficult to describe. They were more like a dull aching or grinding which, although not severe, was very annoying and when present made her very nervous. The pain was most severe at night and seemed more pronounced when she was on her feet. It was usually localized in one spot, but at times would radiate down the right leg.

The menstrual history was unimportant except for the fact that on two occasions during the past summer the flow had been profuse and prolonged to from eight to ten days. The bowels had been somewhat constipated; there had been no pain on defecation, and no history of bloody stools at any time.

On pelvic examination under anesthesia I found the uterus normal in size, slightly retroverted. No thickening could be made out on either side.

In the right vaginal vault and almost glued down to the lateral pelvic wall was a hard indurated mass, apparently about 3 cm. long and 2 cm. broad (Fig. 1). It felt distinctly nodular, and reminded one somewhat of an adenomyoma. I made a median incision and did a complete hysterectomy, but saved both tubes and ovaries. On the left side I kept close to the cervix. On the right side we dissected out the ureter and, after removal of the uterus, separated the rectum from the vagina for a distance of several centimeters, and then cleared the right broad ligament. The mass in question was about 3 cm. long and densely adherent to the side of the rectum, to the posterior vaginal wall, and also to the lateral

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* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery, at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Cullen, Thomas S.: Adenomyoma of the Rectovaginal Septum, THE JOURNAL A. M. A., March 14, 1914, p. 835.

2. Lockyer, Cuthbert: Proc. Roy. Soc. Med., 1913, vi, No. 4.

3. Jessup, D. S. D.: Adenomyoma of the Rectovaginal Septum, THE JOURNAL A. M. A., Aug. 1, 1914, p. 385.

4. Cullen, T. S.: Surg., Gynec. and Obst., March, 1915, p. 263.

5. Stevens, T. G.: Adenomyoma of the Rectovaginal Septum, Proc. Soc. Med., 1916, ix, Obst. and Gynec. Section, p. 1.

6. Nadal, Pierre: Bull. de l'Assn. franç. pour l'étude du cancer, 1911, iv, 338.

wall of the pelvis. It really had to be dug out. When loosened, it was still found attached to the rectum. It was removed. The pelvic peritoneum was brought together; a cigaret drain was laid in the pelvis and carried out through the vagina. The abdomen was closed. The patient made a perfectly satisfactory recovery.

Gyn.-Path. No. 20828: Sections from the nodule show that it is composed of bundles of nonstriated muscle, of fibrous tissue, and of a moderate amount of adipose tissue. Scattered throughout the tumor is uterine mucosa. Sometimes glands can be seen lying in direct contact with the muscle. At other points two or three glands are embedded in a characteristic stroma (Figure 2). Here and there is a slight tendency toward the formation of a miniature uterine cavity. The glands are lined with one layer of cylindric epithelium. The stroma is identical with that usually found surrounding the glands of the endometrium. Here and there the stroma is rarefied. At other points it shows a moderate degree of hemorrhage. Scattered here and there throughout the tumor are brownish or yellowish-brown masses of pigment, the remains of old hemorrhage. The outlying portions of the tumor are particularly instructive. The adipose tissue of the broad ligament is being gradually replaced first of all by small round cells, the fat cells looking like vacuoles in a mass of small round cells. In other places the tissue is in part or in its entirety replaced by connective tissue and here and there, as indicated in Figure 3, muscle and connective tissues are enveloping the nerves, thus in a measure accounting for the pain that the patient has had on the right side and which had extended down the right leg. The tumor is an adenomyoma of the type usually found in the rectovaginal septum, and in parts cannot be differentiated from an adenomyoma of the uterine wall.

CASE 5.—*Adenomyoma of the rectovaginal septum.*

Miss J., aged 38, was referred to me by Dr. Alfred Whitehead, Jan. 8, 1910. For several months she had been complaining of pain in the lower abdomen, chiefly in the region of the rectum. For three months she had been growing weaker and for the last three weeks had been confined to bed. Her periods were excessive.

On pelvic examination I found, behind the uterus, a somewhat irregular mass, apparently 5 or 6 cm. in diameter. The thickening could be much more easily outlined through the rectum than through the vagina. Her pain at the menstrual period was so severe that I advised her removal to the Johns Hopkins Hospital.

Operation was performed Jan. 10, 1910. On opening the abdomen I found a myoma, 1 cm. in diameter, on the left side of the fundus. This was removed. The mass very low down behind the uterus seemed to be due to an inflammatory thickening between the cervix posteriorly and the rectum (Figure 4). The rectum at this point was drawn up and adherent to the back of the cervix. After the cervix had been separated from the rectum, the area of thickening was found to extend backward and to implicate part of the left uterosacral ligament. Although the surface of the rectum was thickened over an area 2 by 3 cm., the lumen of the bowel was in no way encroached on.

To have removed satisfactorily the area of thickening in the rectum would have necessitated, as a preliminary, a complete hysterectomy. This we were very anxious to avoid, as the patient was engaged, and hoped soon to be married. As the growth in no way suggested cancer or tuberculosis, we laid a drain in the pelvis, bringing it out through the vagina in such a manner that it separated the raw area of the bowel from the raw area on the back of the cervix.

The patient made a good recovery. I saw her again at her home, Feb. 28, 1910. At the menstrual period following her dismissal from the hospital she had terrific rectal pain. This persisted, and I again examined her under anesthesia and found the supposed inflammatory thickening in the vaginal vault just as marked as before the abdominal operation. I opened up the old drainage tract in the vaginal vault and found that the area of thickening in the bowel had folded over on itself. After straightening out the fold I again drained through the vagina. We thought the kinking of the rectum might possibly have caused the severe pain. Complete removal of the uterus followed by removal of the rectal thickening was again considered but, on account of the contemplated marriage, it was thought wiser to continue palliative measures for a time at least. During my absence, in the summer of 1910, she came under the care of Dr. E. H. Richardson, and to him I am indebted for the further clinical notes on the case. As her symptoms still persisted, in October, 1910, Dr. Richardson dilated and curetted, removing a large amount of endometrium. After this the patient improved for several months, although she was never free from menstrual pains, which were referred to the left hip and to the left iliac fossa. She was practically an invalid

for three weeks out of every month. Nov. 1, 1911, Dr. Richardson did a supravaginal hysterectomy, releasing extensive pelvic adhesions, removing at the same time the left tube and ovary, and resecting the right ovary. Enough of the uterus was left to allow the patient to menstruate. Then the operator encountered dense pelvic adhesions. The cervix was firmly fixed to the rectum, and a mass, several centimeters in diameter, was found at this point. The patient's condition was such that resection of the rectum could not be undertaken. Her convalescence was a stormy one and she was afterward kept on a rest cure for four weeks. She improved markedly so far as her general condition was concerned, but from the first menstrual period after operation she complained of the same pain as before; it was, however, less severe. Finally, she again became an invalid for three weeks out of each month. Her condition remained about the same.

In July, 1912, the patient was suffering so intensely and so constantly that another thorough pelvic examination was made. At this time there was a marked increase in the size of the "inflammatory mass" in the rectovaginal septum. She was admitted to the Johns Hopkins Hospital Aug. 7, 1912. At that time she was poorly nourished. The abdomen was opened, and numerous omental adhesions were found everywhere. After dissecting out the right ovary, the stump of the cervix was reached with a great deal of difficulty. The rectum was now gradually dissected free and the "inflammatory mass" was exposed. This, Dr. Richardson tells me, was situated about 4 cm. from the anus; it implicated the anterior surface of the bowel and extended out laterally. The mass was about the size of a small hen's egg. The portion of the rectum containing the tumor was resected and the bowel drawn down and attached to the anal margin. The patient stood the early part of the operation very well, but near the close her pulse became almost imperceptible. She did not rally and died ten hours later from surgical shock.

Gyn.-Path. No. 18756: Sections from the tumor show that it is composed of nonstriated muscle and fibrous tissue, with islands of uterine mucosa scattered freely throughout it (Figure 5). Some of these islands contain only one or two glands; in other sections there are eight or ten. The glands occasionally lie in direct contact with the muscle, but nearly all of them are embedded in stroma. The gland epithelium

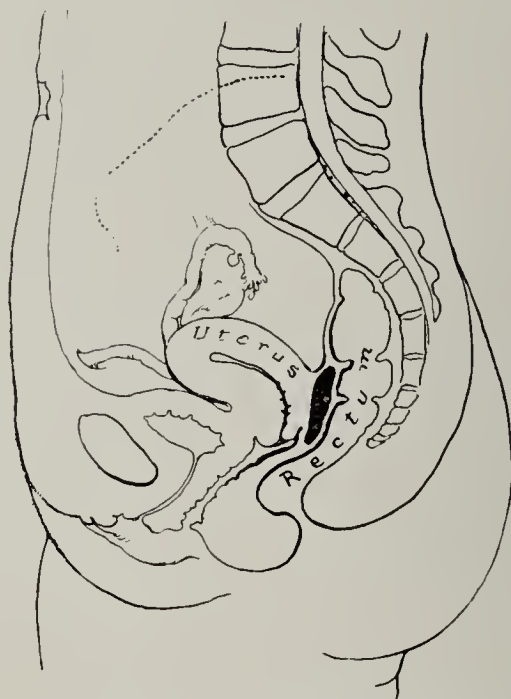


Fig. 1 (Case 4).—Adenomyoma of the rectovaginal septum. The black area posterior to the cervix indicates the location of the growth noted in Case 4. It had encroached on the right vaginal vault and at operation was found to have extended as far as the pelvic wall on the right. To this it was densely adherent.

is thicker than usual and corresponds to the type that we speak of as hyperplasia, being two or three times the normal thickness. The stroma surrounding the glands is also exceptionally abundant. A good many of the glands are dilated and some are evidently cystic. Even in the dilated glands the epithelium is much thicker than usual. The picture is that of a typical adenomyoma. The glands in the myoma encroach more on the rectal wall than usual (Figure 6).



Fig. 2 (Case 4).—Adenomyoma of the rectovaginal septum. In this case the growth had invaded the right broad ligament, and extended out to the pelvic wall, so that it was necessary literally to dig the growth away from the side of the pelvis. In the lower part of the section two or three glands are seen. The dark areas surrounding them are the characteristic stroma of the uterine mucosa. In the left portion of the section it will be noted that the adipose tissue is being replaced by fibrous tissue and muscle. The condition was diagnosed clinically by Dr. Huckins, the family physician.

In a few places they have penetrated the muscle and at one point at least they have broken through the muscle and lie in direct contact with the rectal glands (Figure 7). One gland is seen projecting down nearly half way through the rectal mucosa. Such an intimate blending of uterine mucosa with rectal mucous membrane I have never seen before. To have shelled this growth out or to have cut it away without removing a segment of the rectum would have been an utter impossibility.

DESCRIPTION OF ADENOMYOMAS OF THE RECTO-VAGINAL SEPTUM

Myomas occurring in the septum between the vagina and the rectum have long been known, and some of them have reached such a size that they encroach markedly both on the vagina and on the rectum. In the male, so-called rectal myomas have been noted. In one case the tumor was as large as a coconut and at first was thought to be an inoperable malignant growth. The short but comprehensive article on the subject by F. Descoedres⁷ is well worth a thorough study.

From the cases of adenomyoma of the rectovaginal septum that I have been able to collect, the following tentative classification may be made:

1. Small adenomyomas lying relatively free in the rectovaginal septum (Cullen's Case, 1, Stevens' Case 1, Stevens' Case 5, Nadal's case).
2. Adenomyomas adherent to the posterior surface of the cervix and at the same time to the anterior surface of the rectum (Lockyer's Case 2, Cullen's Case 3, Stevens' Cases 2, 3, 4 and 6, Jessup's Cases 1 and 2).
3. Adenomyomas gluing the cervix and rectum together and spreading out into one or both broad ligaments (Cullen's Case 4, Cullen's and Richardson's Case 5).

4. Adenomyomas involving the posterior surface of the cervix, the rectum and broad ligaments, and forming a dense pelvic mass that cannot be liberated (Cullen's Case 2).

Of course, one group merges imperceptibly into another, and a case which today belongs to Group 1 may in a few years belong to Group 2 or to Group 3.

On vaginal examination one can detect a definite thickening. This may be situated in the posterior wall to the right or left of the cervix, but is usually directly behind it. It may vary from 1 to 3 or 4 cm. in breadth. The thickening is occasionally nodular. As a rule, however, it is diffuse, hard, and reminds one of dense inflammatory tissue or of a small adherent myoma. In some cases the nodule moves with the cervix, as if the two made up a single piece. In other cases the nodule also seems firmly fixed to the rectum.

In a few cases the vaginal mucosa over the nodule has been puckered and is of a bluish tinge. This was noted in Lockyer's Case 2, and in my Case 4. In Stevens' Case 2 the overlying vaginal mucosa was also puckered. The puckering is due to the tumor becoming adherent to the vaginal mucosa.

In those cases in which the growth has invaded all parts of the pelvic floor, one finds induration throughout the vaginal vault. There may also be a slightly cystic feel on bimanual examination, if some of the glands or a miniature uterine cavity in the tumor have filled up with blood. This was observed in my Case 2.

On rectal examination, these tumors, if situated directly behind the cervix, can often be more clearly felt than through the vagina. If the growth be adherent to the rectum, the bowel over this area is splinted and hard, and does not yield. The rectal mucosa, however, even over the growth, is, as a rule, perfectly normal, although the tumor may project slightly into the lumen of the bowel. In my Case 3 the growth had partly encircled the bowel and had produced a considerable degree of narrowing of the lumen. In

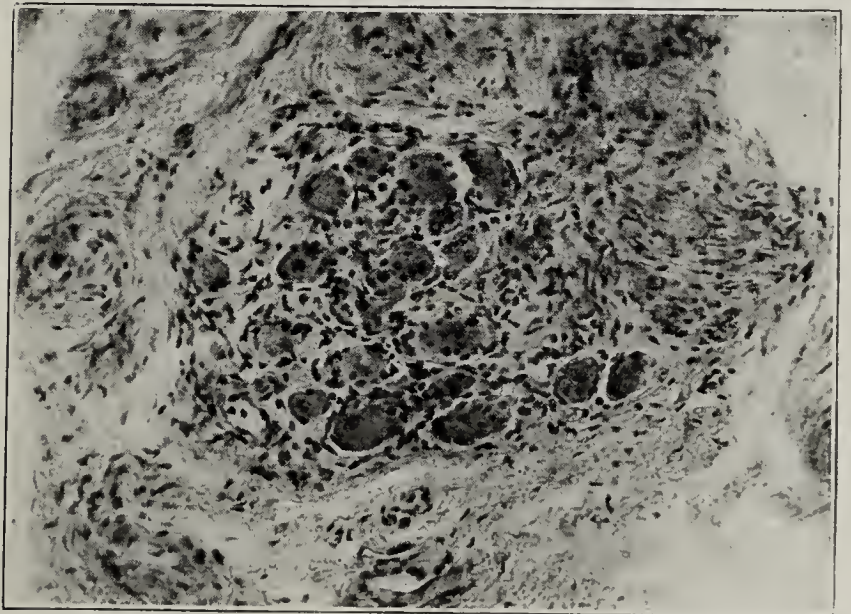


Fig. 3 (Case 4).—Muscular and fibrous tissue in an adenomyoma of the broad ligament encircling and compressing nerves. This section is from the right broad ligament. It shows the diffuse myomatous and fibrous tissue surrounding nerves. There were definite symptoms of nerve pressure.

Jessup's Case 2 the patient had had hemorrhoids for thirteen years, and in my Case 1, in which a discrete myoma, 4 cm. in diameter, was encroaching on the lumen of the bowel, the rectal mucosa at this point showed several small polypi projecting from it. These Dr. Samuel T. Earle removed prior to my doing the hysterectomy.

7. Descoedres, F.: Des myomes du rectum, *Rev. de gynec. et de chir. abel.*, 1910, xiv, 5.

HISTOLOGIC APPEARANCES

These growths, whether large or small, discrete or diffuse, consist of nonstriated muscle and fibrous tissue, and have scattered throughout them typical uterine glands. These glands may occur singly and lie in direct contact with the muscle, or may be found in groups. As a rule, they are separated from the muscle or fibrous tissue by the characteristic stroma of the uterine mucosa, and at many points one can see islands of stroma devoid of glands. In some of the glands fresh blood may be found. More frequently, yellowish-brown pigment is noted in clumps scattered throughout the stroma. This pigment is the remnant of old bleeding.

Along the advancing margin of the diffuse growth, the manner in which the growth extends can sometimes be very clearly followed. This was well shown in my Case 4 (Fig. 2). Here the young connective tissue cells and the muscle fibers gradually replace the adipose tissue of the broad ligament, and finally engulf it completely. They encircle nerves and gradually compress them, thus adding to the discomfort of the patient.

The most widespread growth that I know of was found in my Case 2. In this case a hysterectomy had been performed in San Francisco two years before. When I saw the patient, the lower portion of the pelvis was filled with an adenomyomatous growth. The mass in the left side proved to be a miniature uterine cavity filled with chocolate colored fluid—the residue of the retained menstrual flow.

Histologically these growths are identical with adenomyomas of the uterus.

SYMPTOMS

Age Incidence.—The ages were as follows, 25, 30, 32, 35, 37, 37, 38, 41, 41, 41, 42, 43 and 53. The 53 year old patient still menstruated slightly. She told me that members of her family did not reach the menopause until somewhat late, and that her great uncle was born when his mother was 54. All of the cases occurred among women who were still menstruating.

Menstruation.—The most pronounced symptom was profuse menstruation. In some this was painless, in others accompanied by great discomfort. My patient, in Case 2, was almost exsanguinated, although a supravaginal hysterectomy had been done for removal of a myoma two years before. In my Case 3 the patient had insufferable pain for two days before and after each period. In my Case 4, in which we found the adenomyoma gripping small pelvic nerves on the right, the pain at the period was always on the right side; it also extended to the right hip. Partial removal of the growth relieved her of these pains for from six to eight months. In my Case 5 the pain at the period was very severe, and the patient was finally incapacitated for three out of the four weeks.

Rectal pain was also a prominent feature in some cases. In Lockyer's Case 2 there was great pain in the rectum, and defecation was difficult. The patient said

that something prevented the bowel from moving. The discomfort was more severe at night. In my Case 3, the patient had had for the last two months six bowel movements daily. The discomfort was so severe that she insisted on having something done. It was in this case that we found much narrowing of the lumen of the bowel. In my Case 4 the woman was slightly constipated. Before her first operation defecation had been invariably accompanied by pain. In my Case 5 there was pain in the lower abdomen, chiefly in the rectum.

When the growth is small, is not adherent to the rectum and has not spread out into the broad ligament so that it has commenced to exert pressure, we shall expect few if any symptoms. In those cases, however, in which the adenomyoma has become adherent to the rectum, there is a tendency to pain in the rectum, with or without painful defecation.

When the growth has invaded the broad ligament and encroached on the nerves, we may expect discomfort referable to this region, due in the first place to the pressure on the nerves, and in the second place to the swelling of the tumor at the menstrual period. Profuse periods seem to be the rule.

CAUSE OF ADENOMYOMA OF THE RECTOVAGINAL SEPTUM

Our knowledge of the distribution of adenomyoma is becoming more stable each year. Adenomyomas of the uterus, formerly thought to be rare, are relatively common.⁸ The source of origin of their glands is also clear, namely, from the uterine mucosa. We know that adenomyomas may be found in the round ligament,⁹ in small umbilical tumors,¹⁰ in the utero-ovarian ligament,¹¹ and recently one has been described as occurring in the broad ligament over the left ureter.¹² My colleague, Dr. William W. Russell,¹³ has found uterine mucosa in the hilum of the ovary.

When discussing cervical adenomyomas, in my work on "Adenomyoma of the Uterus," several years ago, I pictured an island of perfectly normal mucosa of the body of the uterus situated near the outer surface of the cervix.¹⁴

Subsequent studies may possibly show that this is no great rarity. If so, this growth might readily become the starting point for those adenomyomas found in the rectovaginal septum.

Krönig, Hartz and Breus have reported cases that may be of interest in this connection.

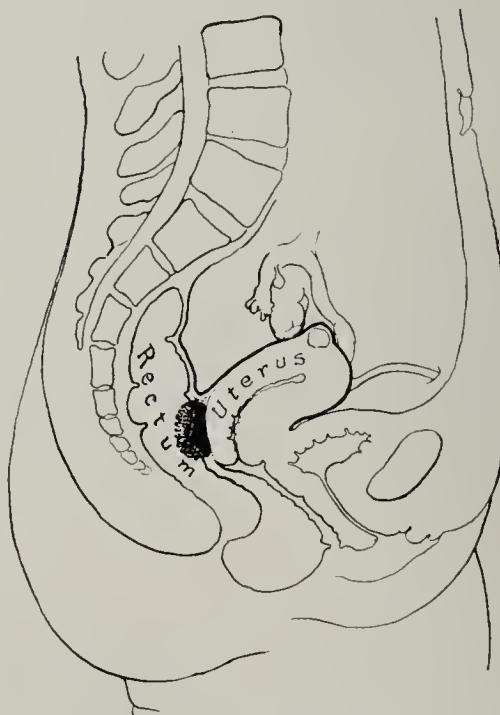


Fig. 4 (Case 5).—Adenomyoma of the rectovaginal septum. The black area between the cervix and rectum indicates the location and approximate size of the supposed inflammatory thickening noted at operation in Case 5. A reference to the description of the specimen shows that the mass was a typical adenomyoma. In the fundus of the uterus was a small myoma.

8. Cullen, Thomas S.: Adenomyoma of the Uterus, Philadelphia, W. B. Saunders Company, 1908.

9. Cullen, Thomas S.: Adenomyoma of the Round Ligament, Johns Hopkins Hospital Bull., May and June, 1896.

10. Cullen, Thomas S.: Diseases of the Umbilicus, Philadelphia, W. B. Saunders Company, 1916, p. 373.

11. Cullen, Thomas S.: Adenomyoma of the Uterus, Figure 41, p. 142.

12. Stickney, G. L.: A Case of Diffuse Adenomyoma of the Uterus with Discrete Adenomyoma over the Left Ureter, Johns Hopkins Hospital Bull., 1915, xxvi, 304.

13. Russell, William W.: Aberrant Portions of the Müllerian Duct Found in an Ovary, Johns Hopkins Hosp. Bull., 1899, x, 8.

14. Cullen, Thomas S.: Adenomyoma of the Uterus, Figure 49, p. 169.

Krönig¹⁵ reports a very interesting instance of a cystic adenomyoma springing from the posterior wall of the uterus and extending backward beneath the peritoneum of Douglas' pouch. It consisted of one large thin-walled cyst containing a liter of brownish-red fluid, and of a more solid portion consisting of about thirty small spaces so arranged that they



Fig. 5 (Case 5).—Adenomyoma of the rectovaginal septum. The matrix of the tumor consists of nonstriated muscle and of fibrous tissue. The round colony of glands on the right is composed of typical uterine glands. They are surrounded by the characteristic stroma of the mucosa. The large glands in the center and also those on the left have a thicker epithelium than usual. They look exactly like those noted in hyperplasia of the endometrium. They also are partially embedded in stroma similar to that of the endometrium. (Photomicrograph by Herman Schapiro.)

resembled a honeycomb. The walls of the large cyst, especially of that portion lying free in the abdominal cavity, were very thin, in places measuring scarcely more than 1 mm. The cyst walls were composed of fibrous tissue and of a varying amount of muscle. The inner surface was in places lined with cylindric ciliated epithelium. The more solid portion of the tumor was a typical cystic adenomyoma, which, as Krönig says, in the form and arrangement of glands and in the cystic spaces, corresponded in practically all points with the adenomyomas of von Recklinghausen. There were definite groups of glands surrounded by the characteristic stroma. Krönig thinks that the tumor originated in the uterine wall and was later pushed out into the connective tissue of Douglas' pouch.

Hartz¹⁶ observed a similar case in Säger's clinic.

In Breus' ¹⁷ Case 2 the patient was 51 years of age. There was a tumor, the size of a child's head, springing from the posterior surface of the uterus and covered by the peritoneum of Douglas' sac and the left broad ligament. The tumor, on its upper and posterior surface, was hard. On section it was seen to be composed of myomatous tissue, but the central portion contained several cavities. These varied from a pea to an apple in size, and were in part separated from one another by thick partitions. Several of them, however, communicated with one another. The cysts had smooth inner surfaces and were filled with a thick chocolate-brown fluid. The largest cyst com-

municated directly with the uterine cavity by a funnel-shaped opening just above the internal os. The cysts were lined with cylindric ciliated epithelium, and, where the large cyst communicated with the uterine cavity, the surface epithelium of the uterine mucosa was directly continuous with that of the cyst. Breus considered the tumor as a subperitoneal and intraligamentary cystic myoma of the uterus.

The glands in the adenomyomas of the rectovaginal septum look like, and act exactly like, those of the mucosa of the body of the uterus, and they undoubtedly arise from uterine glands or from remnants of Müller's duct.

DIFFERENTIAL DIAGNOSIS

As pointed out by Jessup, in both of his cases, in which the patients were operated on by Dr. William S. Bainbridge, other surgeons had diagnosed the growths as inoperable cancer. That was permissible in the past, but will not be in the future. These growths occur in women, are noted in the childbearing period, are usually situated directly behind the cervix and, as a rule, are firmly adherent to the rectum. The symptoms are excessive and painful periods, accompanied in severe cases by much rectal pain. On rectal examination the growth is found literally plastered to the anterior surface of the bowel. The rectal wall is fixed at that point, but its mucosa is intact, and is normal, or merely shows a few hemorrhoids or possibly a polyp. I know of nothing in pelvic or rectal surgery that should be confounded with this condition in future.

TREATMENT

Some might argue that simple removal of the appendages would cause atrophy of the uterine mucosa contained in the adenomyomas of the rectovaginal septum. My Case 2 is a sufficient answer. Although



Fig. 6 (Case 5).—Adenomyoma of the rectovaginal septum. The rectal mucosa is normal. Some of the glands of the adenomyoma are small and round; others are large. The large glands have a thickened epithelium and correspond to the characteristic picture noted in hyperplasia of the endometrium. Nearly all of the glands are surrounded by the characteristic stroma of the uterine mucosa. At the right limit of the section one of the uterine glands is lying in direct contact with the rectal mucosa. (Photomicrograph by Herman Schapiro.)

a supravaginal hysterectomy had been performed two years before for a myomatous uterus, the pelvic condition had grown steadily worse.

1. Where small discrete nodules exist in the posterior vaginal vault, these may be readily removed

15. Krönig, B.: Ein retroperitoneal gelegenes voluminöses Polycystom entstanden aus Resten des Wolff'schen Körpers, Beitr. z. Geburtsh. u. Gynäk., 1901, iv, 61.

16. Hartz, A.: Neuere Arbeiten über die mesonephrischen Geschwülste, Monatsschr. f. Geburtsh. u. Gynäk., xiii.

17. Breus, Carl: Ueber wahre epithelführende Cystenbildung in Uterusmyomen, Leipzig, 1894.

through a vaginal incision, as was so successfully done by Stevens.

2. Where the growth occupies the posterior surface of the cervix and extends laterally, after the ureters have been dissected out carefully, a complete abdominal hysterectomy should be performed.

3. If the growth be firmly adherent to the rectum, a wedge of the rectum should be removed, together with the uterus. It has been found best, after freeing the uterus on all sides, to open up the vagina anteriorly and laterally. The uterus and the rectum can then be lifted farther out of the pelvis, thus facilitating the removal of the necessary wedge of the anterior rectal wall. The uterus really acts as a handle, and the necessary rectal tissue and the uterus are removed as one piece.

4. Where the lumen of the bowel is greatly narrowed, a complete segment of the rectum should be removed with the uterus, and an anastomosis should be made.

5. In desperate cases, where everything in the pelvis is glued together, as in my Case 2, an ideal operation is out of the question. The patient will not stand a long operation, and, if she could, a satisfactory result could not be obtained. In such a case it would be better to cut across the sigmoid, invert the lower end, close it, and bring the upper end out through the abdominal wall of the left iliac fossa, making a permanent colostomy. When the patient has to some extent regained her strength, the uterus, the lower portion of the rectum and the broad ligament tissue can be shelled out as one piece.

These growths, while histologically not malignant, remind one of glue. Unless they are completely removed, further trouble is liable to occur.

The fact that Stevens has observed five cases of adenomyoma in eighteen months, and that I have had five cases in my own practice, leads me to believe that adenomyoma of the rectovaginal septum is no great rarity and that the literature of the near future will contain records of many such cases.

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ABSTRACT OF DISCUSSION

DR. CAREY CULBERTSON, Chicago: At first thought one might be led to surmise that adenomyoma of the rectovaginal septum is a pathologic entity so rare as to be of little value. But when we realize that Cuthbert Lochyer's first case was reported as recently as 1913 and that already we have these five cases of Dr. Cullen's, with the six additional ones of Stevens', it can only mean that in all clinics of any considerable size these cases have been overlooked. In addition to his own cases, the first of which, by the way, Stevens claims

he reported as far back as 1909, cases have been described in England by Spencer, Lietch, Gough and Stewart and Bland-Sutton. A. Mayer last November reported five cases of a peculiar tumor-forming inflammatory process in the tissues between the rectum and vagina which he places in the same category as R. Meyer's "posterior paravaginitis and parametritis with proliferation of epithelium," described in 1908. Aman recently described a case which he calls "retrocervical fibro-adenomatous serositis" and refers to five others, accepting Meyer's pathologic explanation and conclusions. An interesting point in the pathology of growths is that, with the exception of two of Stevens' cases, all were associated with inflammatory processes, the uterus usually being retroverted and densely adherent. This suggests at once the similar condition in the tubes, called by Robinowitz "adenomyosalpingitis," but which has also been regarded as a true neoplasm. It is not so difficult to understand how inflammatory pressure might produce such a squeezing out of the mucosa into the wall of the tube; but in the case of the rectovaginal septum or postcervical space, the distance from the uterine cavity is too great to admit of the presence here of typical uterine mucosa as the result of inflammatory pressure. Lack of time prevented Dr. Cullen from expressing his opinion as to the origin of these growths—whether he regards

them as due to inflammatory pressure on the uterus, which seems to be the German idea, or as true neoplasms originating from embryonic rests persisting from the fusion of the müllerian ducts.

DR. THOMAS S. CULLEN, Baltimore: I have had in all five cases of adenomyoma of the rectovaginal septum. When the first case came under my care I was ignorant of the fact that such a condition as adenomyoma of the rectovaginal septum ever existed, and it was only within the last five weeks when looking over old specimens, that we found out the exact nature of the case. In our cases of adenomyoma of the rectovaginal septum there has been no indication whatever of inflammation, that is of the pouring out of small round cells or polymorphonuclear leukocytes. There is, however, an inherent tendency for the mucosa and for the nonstriated muscle and connective tissue to spread out and invade surrounding structures. The glands in



Fig. 7 (Case 5).—Glands of adenomyoma of the rectovaginal septum penetrating the rectal mucosa. The rectal mucosa looks normal. In the underlying muscle are a few uterine glands (a) lying in direct contact with the muscle. At b is a uterine gland extending down into the rectal mucosa. The continuity of this gland could be followed in other sections. This is the only instance known to us in which the glands of an adenomyoma have actually invaded the rectal mucosa. (Photomicrograph by Herman Schapiro.)

these cases undoubtedly originate from the uterine mucosa or from remains of Müller's duct. I feel confident that within the next few months more cases of adenomyoma of the rectovaginal septum will be reported.

Tapeworm in Portugal.—The *Medicina Contemporanea* states that the eggs of the *Hymenolepis nana*, the smallest tapeworm known, were found in thirty-three of 503 children at Lisbon whose stools were examined. From one to several hundred ova were found, and in nineteen cases they were associated with other helminths' ova. This is a proportion of 6.5 per cent.; Grassi found this parasite in the stools of 10 per cent. of the children in southern Italy that were examined, and it seems to be prevalent in Belgian miners and in Italian immigrants in Brazil. In the Lisbon case there did not seem to be any special symptoms from the presence of the parasite.

PETER PARKER, THE FOUNDER OF
MODERN MEDICAL MISSIONS

A UNIQUE COLLECTION OF PAINTINGS*

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A few months ago occurred the laying of the corner stone of the hospital for the Yale Medical School in Changsha, China, a city of 300,000 in a province (Hunan) of 20,000,000 inhabitants. It is said that this will be the finest building of its kind in interior China. This notable work, now being done in China by Dr. Hume and Dr. Yen and their associates, is such a natural outgrowth of that begun there by another Yale man about eighty years ago that I have ventured to describe briefly the work of this earlier physician of the last century. His name was Peter Parker, and to him belongs the distinction of being the founder of modern medical missions. Fortunately there is an excellent biography of Dr. Parker, written by the Rev. George B. Stevens, D.D., "The Life, Letters and Journals of the Rev. and Honorable Peter Parker, M.D., Missionary, Physician and Diplomatist, the Father of Medical Missions and Founder of the Ophthalmic Hospital in Canton." The language of this title may seem extravagant, as that of the clergy is apt to be when speaking of matters medical. A study of the many things which Dr. Parker accomplished in various lines, however, convinces me that the entire title is fully deserved.

He was born in Framingham, Mass., June 8, 1804. From his boyhood on one is impressed by his intensely religious nature and his desire to exert an influence on others. His education was delayed because of the poverty of his home, and it was only in his twenty-second year, after making suitable arrangements for the care of his parents, that he was able to start out for a more liberal education. At 23 he entered Amherst College, where he remained three years. He evidently thought seriously of completing his college course at Harvard, but was advised by his ministerial friends that it was not desirable for pious students to go there at that time. He then decided to enter Yale for his senior year. One is impressed with the enormous amount of extracurriculum work, chiefly of a religious nature, which he carried that year. How early he decided to study medicine does not appear,

although he evidently intended from his youth to go into the mission field. However, it is interesting to note what an excellent foundation for his medical studies was provided in this required course in the senior year in college. Of it he says:

By anatomy I have been made acquainted with my own material system, the framework, the union of the several parts, and their requisite functions; whilst Locke, Stewart and Brown have rendered me acquainted with the mind, its occupant, and the mental powers and operations. Geology has made me acquainted with the awful history of my birth-place; chemistry, with the constitution of the various elements; botany, with the names and physiology of all the individuals of the vegetable kingdom which extends over no small portion of its surface; astronomy leads to an acquaintance, or contemplation at least, of the whole universe. Natural theology has pointed me to the proofs of an all-designing and infinite mind; and to complete the climax, the descent of the Holy Spirit has wonderfully displayed the riches of redeeming grace.¹

He graduated from the college in 1831. In the following year, we find him as a student both in the divinity school and in the medical school at Yale.

His routine work at that time is outlined in a letter to his mother and sister, dated Nov. 25, 1831:

You will better understand what I mean by unprecedented pressure of duties, if I enumerate some of them. I arise at half-past five in the morning, and attend prayers in the Seminary. From this until breakfast, at half-past six, study Hebrew or Greek. From eight to ten, again study Hebrew or Greek. From ten to eleven, attend Dr. Ives' lecture on the theory and practice of medicine. From eleven to twelve I am engaged in Miss Hotchkiss' school. From twelve to

one, attend Dr. Knight's lecture on anatomy. From two to three p. m., a recitation to Professor Gibbs in Hebrew or Greek. From three to four I have a class in chemistry, or Paley's Theology, then one hour for exercises, and the remainder of the day for study and attending meetings. This is a fair outline of every day's employment; so you will not regard it as altogether strange that I have not written you before.²

Some of the examples of the manner in which he combined medical and religious work at this time are interesting. A woman had been murdered and her husband was suspected of the crime. As a medical student, Parker attended the necropsy on the body of the murdered woman, and then in his other field of labor hastened to the jail to pray with the wretched husband.

During the great epidemic of cholera in the summer and fall of 1832, he had an unusual opportunity as a

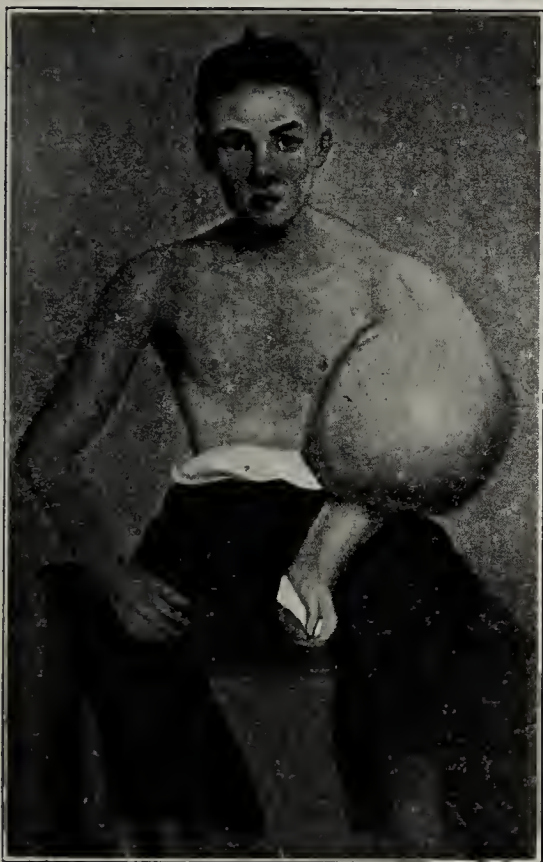


Fig. 2.—See case report No. 2.



Fig. 3.—See case report No. 2.

* Owing to lack of space, this article has been abbreviated in THE JOURNAL by the omission of several case reports and illustrations. The complete article will appear in the reprints, a copy of which can be obtained of the author on request.

1. Stevens, G. B.: Life of Peter Parker, p. 49.
2. Stevens, G. B.: Life of Peter Parker, p. 57.

medical student to do practical work among the poorer classes. After completing his courses in the divinity school and in the medical school and being publicly dedicated as a missionary to China at a great public meeting at the Bleeker Street Presbyterian Church in New York, he sailed for China, June 4, 1834. Early in life he formed the habit of keeping a journal or diary, and he had also developed to a large degree the old New England custom of introspection or self examination. As a result his journals frequently give us not only an account of his work but also his own estimate of himself and of his successes or failures. When only a week out from New York on his first trip to China, we find recorded this estimate of his undertaking, "I am among those who stand upon the pinnacle of the world, a spectacle to millions, both of the friends and enemies of Christ," and repeatedly there is found in his journals good evidence that he had no mean estimate of himself and his life work. After a voyage of 140 days he arrived in China. Without waiting to acquire any very extended knowledge of the language, he at once began the practice of medicine together with other missionary work. Thus in the following February he records, "It is now four o'clock in the afternoon. In the morning as usual attended the sick; at ten in the morning held divine service with about twenty-six Chinese, at the close of which I again attended the sick." Also, "As it respects my intercourse with the Chinese, and my medical and surgical practice among them it far excels all of which I ever thought." The time appeared to be ripe for this work, for while he was the forerunner of medical missionaries in that country, individual physicians in small numbers, particularly from England, had preceded him. Vaccination had already been introduced into China. Parker's first field was at Singapore, and as he plunged into his medical work with great zest we find him sorely distressed at his "declining spirituality," a condition in which perhaps he is not unique among medical men.

The great work of Dr. Parker's medical life began with the opening of the Ophthalmic Hospital in Canton in November, 1835, as a missionary hospital. As the name implies, this hospital was intended primarily for diseases of the eye, which were very prevalent in China; but the great abundance of general surgical material made it necessary to receive surgical cases into the hospital, and Dr. Parker's reports have to do chiefly with the latter cases. The hospital appears to have become quickly popular, for about the middle of 1837, men from distant provinces and from every rank flocked there.



Fig. 5.—See case report No. 4.

At the Yale University School of Medicine, there is a collection of between eighty and ninety oil paintings illustrating surgical conditions as Dr. Parker found them in that country. These paintings were the work of a Chinese artist, and many of them are in excellent condition. They were particularly prized by the late Dr. Moses C. White, for many years professor of pathology in the Yale medical school and himself at one time a medical missionary in China. It is in searching through the Chinese Repository for the reports of this ophthalmic hospital at Canton and for the descriptions in these reports of the cases corresponding to the serial numbers of these paintings, that I have become interested in the work of its founder. From the first, he appreciated the necessity of training Chinese youths for medical service, and in his reports are occasional references to these students. In 1840, on account of the opium war between England

and China, his work was interrupted and he returned to America, and in the winter of 1841 again attended medical lectures in New Haven and at the University of Pennsylvania. Up to this time, there had already been about 8,000 patients treated at the hospital in Canton. He did not return to China until the fall of 1842. During his stay in America, his main endeavor was to arouse interest in the affairs of China not only among those who cared for missions but also among government officials. On his second Sunday in Washington he preached in the Hall of Representatives to the members of the Senate and House of Representatives, an audience to which he refers as being one of the most enlightened of any age or nation. At this time Daniel Webster was about to become secretary of state, and the

interest which Parker was able to arouse in him regarding the affairs in China was an important factor in the early establishment of diplomatic relations between that country and America. He was requested by Webster to submit in writing his views regarding the crisis then existing between America and China and the steps which should be taken by this country in the situation. Parker did as requested, and the value placed on his statement is indicated by a very significant circumstance. When the first commissioner was sent by the United States to China a few years later (1843), he had been provided with a copy of Parker's letter in full.

Parker also took a trip to England and France in the interest of his cause. He married in Washington a Miss Harriet Webster, a connection of Daniel Webster and of Rufus Choate. The only description which I have found of his personal appearance wa

written at this time. According to this he was a young man, tall and fine looking, a perfect blond. As a part result of his trip to America and Europe, he arranged for the sending out of additional physicians and surgeons to China; and still more important for the future of China, he perfected plans both in England and America for the education of Chinese students for medical work. The influence which he had already exerted in China was indicated by a letter written in 1841, by S. Wells Williams, who himself spent many years in China, becoming an authority on matters pertaining to that country and, in his later years, professor of Chinese in Yale. Mr. Williams wrote that no foreigner was so extensively known among the Chinese as Parker, the conductor of the hospital at Canton; that his gratuitous treatment of disease among the Chinese had done much to place foreign character on a better footing there, and to show them that we are not exactly the "devils" they took us for.

He reached Canton on his return in November, 1842. Mrs. Parker was the first foreign woman to reside in that city. Parker at once took up his medical work. He writes, "I have more work than any one mortal can perform. Never were my medical services sought with more avidity than now. Officers of high distinction seek them, and crowds of all classes." And in June, 1843, he records, "Arose at six o'clock this morning . . . have admitted two hundred patients at the hospital." And from Nov. 21, 1842, to Dec. 31, 1843, there were 3,501 patients admitted to the hospital.

As the interest of medical men is chiefly in his professional work, I will quote from some of his reported cases and show a few of the paintings referred to. While diseases of the eye appear to have been most numerous, and he speaks of couching eight patients in one afternoon, yet the major part of his reports have to do with surgical cases. I shall quote only one or two of these case reports in full and give brief notes of others, as many of them are too long to give entire. It is to be remembered that these reports were made to a group of nonmedical persons for publication in a nonmedical work.

REPORT OF CASES

CASE 1 (No. 30621³).—*Fungoid tumor*.—Feb. 26, 1849, Chúshú, a Manchu, aged 54, had a fungoid tumor of the size of an orange, situated on the back near the right scapula and spine. The tumor was readily and successfully removed. Before leaving the hospital, the patient made repeated solicitations to be allowed to send an artist and take the portrait of the surgeon; his importunity was at length acceded to, and

a portrait taken in water colors, by the side of which on the same canvass was the following inscription in poetry, and an account of his case, and what he had seen in the hospital:

"What man is that? America's noble and disinterested man, who does to others as he would that others should do to him. His country is different from ours, his feelings are the same. In all distresses and diseases, he feels the sorrows and joys of others as though they were his own. Those cases which require the use of instruments, and which are difficult to others, are easy to him. He cherishes a mind that is divine, and bears the visage of Buddha; a full halo of glory surrounds his deeds, and he deserves immeasurable longevity. Parker's meritorious virtues are innumerable as the sands of the ever-flowing river. I denominate him a Yé-sú. What say you, yes or no?"

In addition to the poetry, he next proceeds to give the following statement:

"In the second month of the year of the cycle *kí-yú* (1849), I had a tumor on my back in an ulcerated state; I was also afflicted with a hemorrhoidal affection, to which the (Chinese) physicians with difficulty applied their hands, when I went to Dr. Parker for treatment, and was healed with speed divine. Moreover, I have in person seen him heal other men, and although their maladies were such as would baffle Lú I and Pien Tsioh,⁴ there were none with which he did not succeed. Furthermore, possessing the influence of the example bequeathed him in Jesus, he delights in doing good, never tiring, and loves other men as himself. I have therefore taken this his portrait, and respectfully composed a few verses in order to keep in memory my constant sense of gratitude; as I stand before it, I remember him with respect and esteem. With the utmost sincerity, respectfully composed by Chúshú, styled Tsingtien."

The expressions of gratitude to Dr. Parker, couched in extravagant oriental language, appear not infrequently in the printed reports. Some of them might compete successfully with the twentieth

century medical testimonials which are still served for daily pabulum by the press of our free country.

CASE 2 (No. 2152,⁵ Figs. 2 and 3).—*Amputation at the shoulder joint*.—Po Ashing, aged 23, entered the hospital, Nov. 3, 1836. Six years since, he fell from a house and broke the humerus of the left arm. Union so far took place as to render the arm serviceable, till six months since, in a crowd at a "sing song," it was again broken. From that time, according to his statement, the arm gradually became larger till it had attained its present enormous size. Beside being painful, the weight of it drew him quite to one side. There was no doubt of its containing fluid. I punctured the arm, supposed that possibly it might contain pus. A dark greenish fluid escaped, with considerable force, but soon became darker and more bloody. The lancet was reentered nearly its whole length; but the same discharge continued with a greater proportion of venous blood; 32 ounces in all were discharged. All were agreed that the only chance of life was in the removal of the arm.

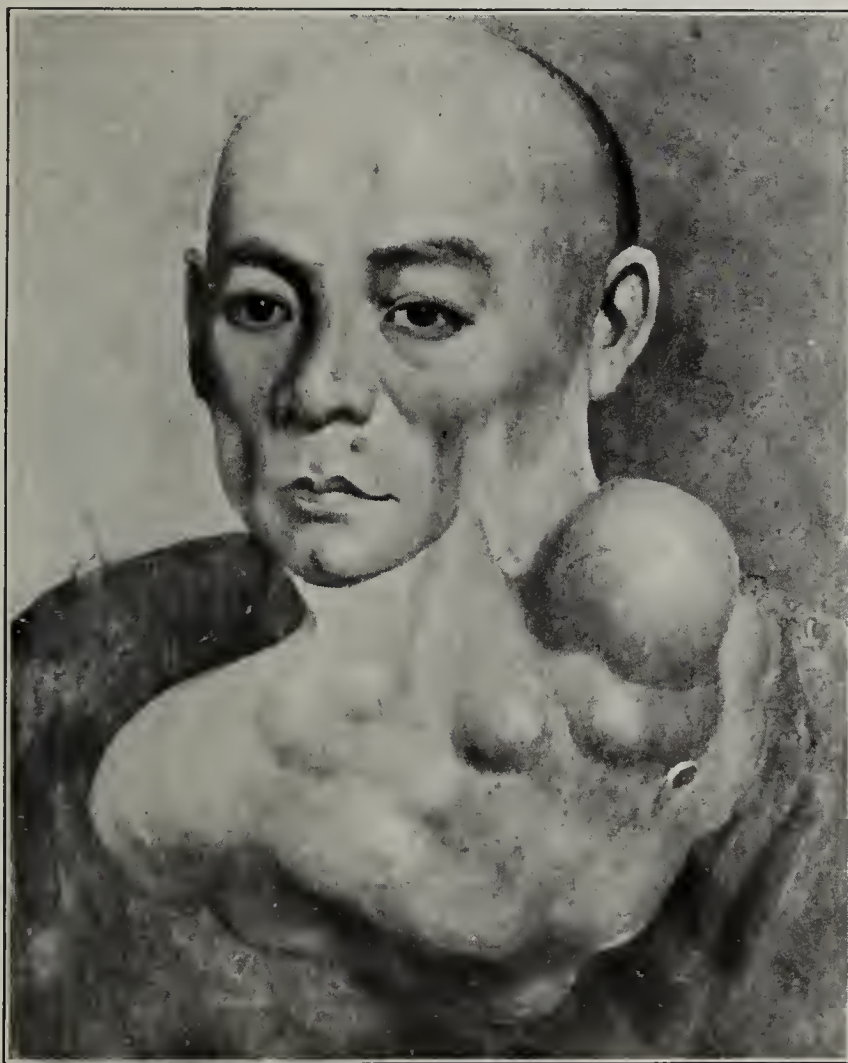


Fig. 6.—See case report No. 5.

3. Chinese Repository, xix, 270.

4. Two celebrated physicians of antiquity.

5. Chinese Repository, v, 329.

At 11 a. m. (the next day) the patient was seated in a chair supported around the waist by a sheet. The time did not exceed a minute from the application of the scalpel till the arm was laid on the floor. The best representation of the arm after amputation, so far as shape is concerned, is that of a large ham of bacon. It weighed 16 catties, equal to $21\frac{1}{8}$ pounds. All who were present pronounced the case the most remarkable they had ever seen. The patient is the first Chinese, so far as I know, who has ever voluntarily submitted to the amputation of a limb. The patient made a good recovery.

It is to be recalled that these operations were performed before the days of anesthetics, and the rapidity of operating is striking.

CASE 4 (No. 3000,⁷ Fig. 5).—April 17, 1837. Lew Akin, aged 12 years, had a steatomatous tumor on the right hip, of a magnitude that required the patient to lean forward when she walked, in order to preserve her balance. April 27, the usual indemnity being given by the parents, the tumor was removed in two minutes and fourteen seconds. Its circumference (exceeding that of her body) was 2 feet at the base, and much larger at the middle; it was very slightly attached, and consisted of concentric layers of fatty substance, separated from each other by a surrounding serous membrane, till near the center it was found of a much firmer structure, resembling cartilage. It weighed 5 catties, or 7 pounds avoirdupois. In one week the whole was so far healed that the child was able to walk about the room without pain to herself or injury to the wound.

I am indebted to Lamqua, who has taken an admirable likeness of the little girl, and a good representation of the tumor. The more interesting cases that have been presented at the hospital, he has painted with equal success, and uniformly says that as there is no charge for "cutting," he can make none for painting.

The foregoing is of interest as it is the only reference which I have found to the artist who did these paintings.

CASE 5 (No. 3488,⁸ Fig. 6).—*Cartilaginous tumor*.—May 22, 1837. Woo Pun, aged 41, a shoemaker, had been afflicted seventeen years with a large unshapen tumor on the left side of his neck. The tumor was 2 feet in circumference and weighed 7 pounds. The patient scarce uttered a groan. In twenty minutes he was comfortable in bed.

CASE 10 (No. 15,000,¹³ Fig. 11).—*Glandular tumor*.—Oct. 16, 1844. Yang Kang, aged 35, of Sinhwui, latterly a beggar in Macao, had a tumor on the right side of his face, which commenced in the situation of the parotid gland, measuring 2 feet and 6 inches in circumference, weighing when extirpated $6\frac{1}{2}$ catties, equal to $8\frac{2}{3}$ pounds. It commenced ten years since. Portions of the tissue cut harder than the rest, and approached a cartilaginous or semiosseous structure. The mingling hope of success and fears of the worst possible consequences excited devout and sincere intercessions at the throne of grace in his behalf, and an earnest use of means to prepare him for whatever might be the divine allotment. He

was told that others fervently entreated the most high God to save him, but that it was desired that he himself should pray to Him who alone would succeed the means to be used.

This patient became the porter of the hospital.

In the following case, the serial number of the report does not agree with the number on the painting. As the description corresponds entirely with the condition shown in the painting, however, and as the results of the Chinese custom of binding the feet are of general interest, the report and illustration are here given as belonging together.

CASE 11 (No. 23,944,¹⁴ Fig. 12).—*Loss of both feet at the ankle, from compression*.—March 8, 1847. Lú Akwang, an interesting little girl of Honan, 7 years of age. February 9, agreeably to a custom that has prevailed in China for thousands of years, the bandages were applied "à la mode" to her feet, occasioned her excessive sufferings, which after the lapse of a fortnight became insupportable, and the parents were reluctantly compelled to remove the bandages, when, as the father represented, the toes were found discolored. Gangrene had commenced, and when she was brought to the hospital, March 8, it had extended to the whole foot. The

line of demarcation formed at the ankles, and both feet were perfectly black, shriveled and dry, and nearly ready to drop off at the ankle joint. The left foot separated a few days after, and within about ten days, the right also, leaving the stumps healthy, the granulation rapidly covering the bone and new skin forming at the edges. The friends preferring it, notwithstanding advice to the contrary, they were furnished with the necessary dressings, and the child was treated at home, being brought occasionally to the hospital. The last time she was seen, the right stump had nearly healed over; the other was less advanced in the healing process. Since the occurrence of this case, I have heard, on good authority, of several others similar, a painful comment on the cruelty of this custom, to which millions in



Fig. 11.—See case report No. 10.

China have been subject during many centuries past. The origin of this practice has been ascribed to Tanke, an infamous empress, 1100 B. C., who was born with club feet. She is represented as having great influence over the emperor, whom she induced to issue an imperial edict, adopting her feet as the model of beauty, and requiring the compression of the infant females' feet so as to conform to the imperial edict. This account is necessarily traditionary, as it dates from a period long prior to the universal destruction of Chinese books in the Tsin dynasty, 300 B. C. Had the custom been introduced 200 years since by the conquering Tartars, as some European writers have stated, it must have been so recorded in existing history.

Another account furnished by an intelligent Chinese is as follows: "The compressing of the feet of female children, tradition says, commenced under the Emperor Yangte, of the Suy dynasty, 605 A. D., who ordered his concubine to bandage her feet, and in the sole of her shoe, there was placed a stamp of the lotus flower, with aromatics deposited within it, so that at each step she took there was left on the ground the print of the lotus flower; hence the saying that her steps produced

7. Chinese Repository, vi, 39.

8. Chinese Repository, vi, 436.

13. Chinese Repository, xiv, 450.

14. Chinese Repository, xvii, 141.

the golden lotus, and to the present day men compliment little girls with small compressed feet, by designating them the golden lotus."

The fact that none of the Chinese classics allude to the subject is presumptive evidence that the practice did *not* exist so early as the days of Confucius. During some of the successive dynasties the practice has been partially suspended, as under the Ming dynasty they were comparatively few, but it is very general among all, except the Tartars, in the present reign.

OTHER ACTIVITIES

In Parker's later reports are numerous cases of lithotomy, in some of which he removed calculi of large size, and one of the results of these operations is the unusual collection of large urinary calculi now in the possession of the Yale University School of Medicine.

Beginning with 1844, Parker was able to give somewhat less of his time to the hospital because of the diplomatic work which then and afterward engaged a part of his attention. Still, ten years later, on the date of his fiftieth birthday, June 18, 1854, he could record in his diary:

To tens of thousands of Chinese I have been permitted to preach the gospel of salvation, and to 52,500 afflicted with physical ills of our common humanity, directly or indirectly, I have been permitted to administer with a degree of success that demands praise to Him who is the giver of health and life.

From the instructions of the Prudential Committee of the American Board of Foreign Missions, which were delivered to Dr. Parker on the occasion of the meeting at the Bleeker Street Presbyterian Church in New York, at which he was dedicated as a missionary, the following quotation is taken:

The medical and surgical knowledge you have acquired, you will employ, as you have opportunity, in relieving the bodily afflictions of the people. You will also be ready, as you can, to aid in giving to them our arts and sciences. But these, you will never forget, are to receive your attention only as they can be made handmaids to the gospel. The character of a physician, or of a man of science, respectable as they are, or useful as they may be in evangelizing China, you will never suffer to supersede or interfere with your character as a teacher of religion.

These instructions Dr. Parker evidently carried out to the letter in all of his medical work.

When the first commissioner from the United States to China reached there in 1844, he at once appointed Parker as secretary to the legation, and they entered on what Parker speaks of as the gigantic undertaking of securing recognition and definite commercial stand-

ing for the United States. From this time he was employed first as secretary and interpreter, later as chargé d'affaires ad interim, and then acting commissioner. Under the strain of the excessive amount of work which he was carrying, his health gave way, and in May, 1855, he sailed for America. The prolonged rest on shipboard so completely restored his health that he reached America in fairly good condition. The affairs in China were so complicated that President Pierce urged him, as the best man available, to return at once to China for the purpose of arranging a new treaty. Parker finally accepted, and arrived at Macao in January, 1856. It is not my intention to follow him in this diplomatic work any further than to note that his first official act was to strike a blow against traffic in Chinese coolies. After establishing a basis

for a new treaty between America and China, he finally left for America in 1857. The numerous honors which came to him in his later years are of interest, but hardly to be referred to here. In June, 1859, his only son was born, and his own birthday, which came five days later, we find recorded as the happiest birthday of his life; he knew then beyond doubt that "praying breath shall not be spent in vain."

He began to collect the vast amount of material accumulated in China with a view of publishing a medical work, but this never went further than a comprehensive plan, with the beginning of an introduction.

In his declining years, he appears to have found especial satisfaction in his connection with the Smithsonian Institution, of which he was elected a regent in 1868 and remained as such until 1885. Much of his time he spent at his old home in Fram-

ingham, Mass. He died, Jan. 10, 1888, in his eighty-fourth year.

This short account of Dr. Parker's life has placed the emphasis on what appears to me to have been his greatest accomplishment. He was a missionary in the strict sense of the word, and a diplomat of no mean order. But his chief contribution to the spread of civilization was as a medical man, in founding medical missions. He appreciated to the full the value of combining the healing of disease with the teaching of eternal truth.

Drugs and Stamina.—If the quantity of medicine a citizen takes is any index of his physical condition, then this nation needs to take thought of the stamina of its people.—*Health Letter*, Life Extension Institute.



Fig. 12.—See case report No. 11.

THYROID EXTRACT IN THE TREATMENT OF MALIGNANT UVEITIS*

JAMES BORDLEY, JR., M.D.

BALTIMORE

Last year before the American Ophthalmological Society I presented a communication entitled "Malignant Uveitis Treated With Thyroid Extract." It is my purpose to make this paper merely a supplementary statement.

I would have it understood that I do not claim that thyroid extract is a panacea for all types of malignant

uveitis or, indeed, for any especial type. It will take much more investigation and many more cases than I have treated to prove even its usefulness. I have seen patients apparently relieved of uveitis by the administration of thyroid gland, and it seems to me worth while to call the attention of ophthalmologists to this very interesting possibility.

In my original communication I said I was convinced that in malignant uveitis we had to deal with two factors: an infection, and an eye that makes a strong defensive, but lacks the something necessary to an offensive fight. Indeed, in every one of the five cases there cited, a focus of infection outside of the eye was discovered. While it is proper that we should bend our efforts to the discovery of the source of infection, it must be remembered that the mere finding of a focus is not proof of its causative relation. Nor should we forget that malignant uveitis once established becomes an entity and not a symptom. We can remove the original source of infection and still not materially lessen the progress of the ocular changes.

We cannot anticipate and often cannot discover secondary foci which may play an important part in the degenerative process. It therefore becomes necessary for us to fortify the eye against invasion, and to promote a strong offensive effort on its part.

Having observed the profound changes which frequently occur in the thyroid gland following severe infections, such as tonsillitis, peritonitis and skin burns, I am prepared to believe that the thyroid gland plays an important part in the body's fight against infection or the results of infection. To me, therefore, it is not a very great stretch of the imagination to believe that the favorable results obtained in the treatment of uveitis with thyroid extract are based on a very logical foundation.

Of course it can be argued, and with much reason, that the cases cited by me have not passed over as long a period of quiescence as do many cases before there is a repetition of the attacks. My personal experience, however, does not lend color to this argument. I am as doubtful of "repeated attacks" of

malignant uveitis as I am convinced of recurrent acute exacerbations of a latent malignant uveitis. In other words, I have seen cases during quiet periods; but in all of these cases there was definite evidence that the uveitis still existed. Now, of cases dealt with in my former article four of the patients, so far as can be determined by examination, are well, not one of them having had the slightest sign of trouble since my last report. While I am not prepared to say that these patients will not have attacks in the future, I am convinced that if such a misfortune should overtake them, we have an efficient remedy at hand to combat their disease.

I have additional evidence in two new cases to support the idea of the value of thyroid extract in malignant uveitis.

REPORT OF CASES

CASE 1.—A woman, aged 27, for several years has come to me for glasses from time to time. Both with and without low grade hypermetropic astigmatic lenses, her vision was normal. No pathologic changes were ever found. Nov. 2, 1915, she consulted me about her right eye. The cornea was steamy, the iris semidilated but responsive to light and accommodation: vision was $\frac{2}{200}$, the result of a large central scotoma (Fig. 1). Tension was 45. She was placed in the hospital, and a strong solution of physostigmin (eserin) was instilled in the eye every two hours. As the tension had increased in twenty-four hours to 70 and the pain was more intense, she was given sodium salicylate in large doses often repeated. During the late hours of the same day the tension fell to 40, and in twenty-four hours the steamiess and pain had disappeared and the tension was 22. In a few days there was an increase in tension to 60, and for the first time a slight circumcorneal injection and dots on Descemet's membrane were noted. A systematic investigation was then started. Dr. Thomas R. Brown made a complete physical examination, including analyses of urine, stomach contents and feces, and reported the patient physically normal. A Wassermann test was made by Dr. Albert Keidel, and proved negative. Tuberculin reactions were negative. Dr. Henry Strasser, a dentist, was asked to examine the teeth. He found a "suspicious bicuspid right upper jaw." This suspicion

was confirmed by roentgenoscopy, and when the tooth was extracted it uncovered quite a large periapical abscess and much destruction of the root. A complete Roentgen examination of all the teeth and the accessory nasal sinuses failed to reveal further trouble. An encysted mass of foul smelling debris was removed from the right tonsil. For eleven days following extraction of the tooth the sodium salicylate

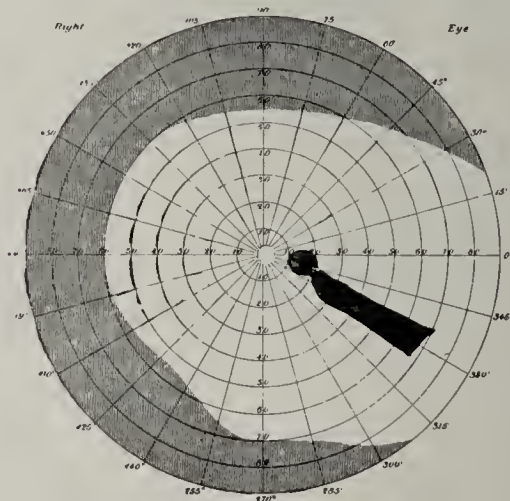


Fig. 2.—Field of vision, Case 1, Dec. 8, 1915.

and physostigmin were continued. At the end of that time the posterior surface of the cornea was covered with deposits, and the patient suffered intensely from photophobia. Iodothyryn in doses of $2\frac{1}{2}$ grains was then started, given at first once a day and then increased to three times a day. All other medicine was discontinued.

The rapidity of the change for the better can be best appreciated by a glance at the fields of vision, one taken November 2 (Fig. 1) and the other December 8 (Fig. 2). There was a like alteration in the descemetic disturbance, and the intra-ocular tension at this date was 35. Jan. 31, 1916, the eye was to all appearances entirely normal except for a scotoma, and the vision was $\frac{20}{15}$. The patient was seen

* Read before the Section on Ophthalmology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

a day or so ago and carefully examined. Except for the small scotoma which has persisted the eye was free from trouble.

CASE 2.—A woman, aged 25, married, developed trouble in her right eye in June, 1915. She consulted an ophthalmologist who told her she had an incurable form of malignant uveitis. She came to me for a glass for the left eye, December 16. I found a pronounced attack of uveitis in the right eye with a clouded vitreous, pupil moderate in size and barely responsive to light, the iris free from tags (Fig. 3). Tension in the eyes



Fig. 3.—Condition of eye, Case 2.

was abnormally low, registering only 12. Vision was $\frac{20}{100}$. The posterior surface of the cornea was filled with deposits of various sizes.

This case was to me one of more than ordinary interest because I had treated a sister with choroidoretinitis and nystagmus, had seen a brother with an almost complete absence of the bridge of his nose, and knew that her father prior to his marriage had contracted syphilis for which he had refused treatment. I knew also that her mother had a serious form of exophthalmic goiter.

Iodothyrene in $2\frac{1}{2}$ grain doses was immediately started, and increased until she was given $7\frac{1}{2}$ grains a day.

December 22, vision was $\frac{20}{80}$, the tension had increased to 20, and she was greatly impressed by her improvement. January 15, her vision had improved to $\frac{20}{40}$, and the temporal half of the vitreous was clear enough to study the details of that portion of the fundus. January 31, the vitreous had still further cleared, and no dots were discoverable on Descemet's membrane. Vision was $\frac{20}{30}$, less one or two letters. When she passed from under my care the latter part of February her vision was a full $\frac{20}{30}$, her vitreous entirely clear, with no deposits on the cornea, and except for an enlargement of the blind spot (Fig. 4) I could discover no evidence of her former trouble.

During her treatment she at first complained of marked double vision. The cause of this I was never able to determine. Prior to the introduction of the iodothyrene this patient was found physically normal. Roentgenograms of the sinuses and teeth were negative, and the Wassermann reaction was likewise negative. I think it is quite possible that the eye disease was a late manifestation of inherited syphilis.

330 North Charles Street.

ABSTRACT OF DISCUSSION

DR. NELSON M. BLACK, Milwaukee: It is certain that none of the methods of treatment for malignant uveitis has heretofore given results in a sufficient number of cases to warrant our placing any dependence on any one form of treatment. In the majority of instances there is improve-

ment for a time, possibly, but in nearly every instance the result is the same, an acute exacerbation or a recrudescence, for these cases are rarely absolutely cured. Even in cases of apparent complete disappearance of the disease, the eye is practically useless, the result of the vitreous opacities which fail to clear up, or which become more numerous and dense, or the permanent opacity of the cornea, due to the density of the exudate. Dr. Bordley's hypothesis as to why thyroid extract should be beneficial in the treatment of malignant uveitis seems based on thoughtful deduction and sound judgment. First, there is a primary source of infection somewhere in the body. Second, an organ is invaded which puts up a strong defensive, but lacks "the something" to make the fight effective. But why was that organ invaded primarily? Was it not because "the something" was lacking which Dr. Bordley has found, if added to the body, stimulates the fighting power of the eye? The result of the invasion of the eye from the primary source of infection is malignant uveitis, but this is not the end-result, for removal of all the discoverable sources of infection, together with local treatment of the affected part, does not tend to improve the condition. Is it not because the eye itself has become the source of infection, which now more than takes care of "the something" which the body should have furnished to combat the primary invasion? This "something," from the results obtained by Dr. Bordley in the reported cases, appears to be the secretion of one of the ductless glands. This substance must have been lacking in the body in sufficient amounts or we should not have had the original invasion of the system. So it seems we must go back still further and seek the cause of the lack of sufficient secretion of the ductless glands to protect from systemic invasion by infection. Dr. R. C. Brown of Milwaukee recently advanced the theory that through the ingestion of too great quantities of meats, meat soups and eggs the natural defenses of the body, of which the ductless glands are the principal ones, cannot neutralize and render harmless the protein poisons they contain. As a result the body resistance is lowered and invasion is invited. Dr. Brown has found that complete elimination of the foodstuffs containing protein poison from the diet of individuals who are susceptible to its effects results in the manifestations promptly disappearing. So it may be possible that the primary etiologic factor is in the main a protein diet in excess of the individual's duct-

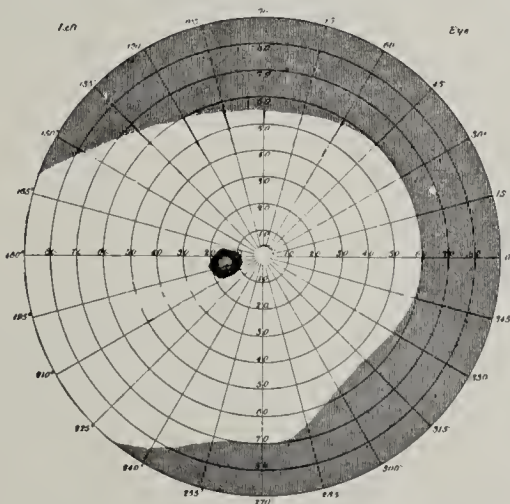


Fig. 4.—Field of vision, Case 2, Feb. 26, 1916.

less gland capacity. I should like to mention a case of mild but persistent uveitis following the extraction of a cataract by the Smith-Fisher method in a woman of 65. The operation was performed about two weeks after she had been subjected to a hysterectomy, as she did not wish to return to the hospital again. The eye was not looked at for seven days following the extraction, as she had no discomfort. When the bandage was removed the lids were edematous, and there was marked photophobia and free lacrimation. The cornea was clear and bright, but there was considerable circumcorneal injection, and she claimed she could not see anything. The patient was also morose, nervous and despondent. Hot compressions, atropin and dionin were ordered and for a week no change seemed to take place. At this time I received a copy of Dr. Bordley's paper. I immediately ordered 1 grain doses of thyroid extract twice daily, increasing cautiously, and meats, meat soups and eggs were eliminated from the diet. Within a week the change was marvelous. The local treatment was stopped and the patient became cheerful and happy, and within a few days told

me she could see to count her fingers. She was making rapid progress when seen last.

DR. EDWARD C. ELLERT, Memphis, Tenn.: I have used thyroid extract in six cases of uveitis and I am impressed with the fact that in addition to the treatment of accompanying and apparently casual constitutional conditions, the relief of focal infections, etc., thyroid extract seems to have a beneficial effect in uveitis, but more extended experience is needed to enable us to say what we may expect from its use.

DR. CLARK W. HAWLEY, Chicago: Four years ago I had a very severe case of erysipelas which left me with several troubles that I could not account for. One of them was swelling of the feet and legs, and it was difficult for me to walk on account of pain. I supposed it was heart and kidney trouble, but both were eliminated. I went to a laboratory and they told me I was suffering from autointoxication at this time. I had had chronic uveitis for some time, so that it was difficult to read newspaper print without shaking my head, when the bodies would float back again. I saw two large yellow circles composed of small opacities. They were increasing in size. Fortunately I discovered the source of it. I commenced treating the autointoxication for the swollen feet, and within thirty days more than half the opacities had disappeared. In two months I could read newspaper print comfortably. This was in September. I used a restricted diet mainly. In February or March I believed I might increase the diet a little and I made an attempt to eat meat. In a week the opacities began to return. I stopped using meat and the effect could be seen in a few days. I have quite a number of patients with chronic uveitis who have, from that discovery, been very much benefited, so that, perhaps, my personal experience may be of as much value to others, to help clear up some indefinite cases.

EFFECTS OF HEAT ON THE EYE*

WILLIAM E. SHAHAN, M.D.
ST. LOUIS

Since ophthalmic thermotherapy is in an indefinite state, and the beneficial or harmful effects of heat on the eye are moot questions among ophthalmologists, it is desirable to make an exact study of the effects of heat when applied to the eye in various conditions of health and disease.

In order that the study may be exact, the following preliminaries must be satisfied:

1. The devising of some simple, convenient means of applying constant, measured quantities of heat directly to the corneal or scleral surfaces for measured lengths of time.

2. The determining by experiment on animals of the physiologic limit of heat tolerance for stated lengths of time. The physiologic limit of heat tolerance will be defined as the maximum temperature at which tissues may be held for stated lengths of time without permanently harmful effects.

3. The application of physiologic limits to various pathologic conditions (infections, etc.), and tabulation of results. This is the aim and end of the study.

The first of these preliminaries was solved in a satisfactory way by the construction of an instrument which may be conveniently designated as a thermophor.

DESCRIPTION OF THE THERMOPHOR

This consists of a central brass tube one-half inch in diameter and 6 inches long with a walled off slot 4 inches long and five-sixteenths inch wide, cut into its side. This

walled off rectangular space communicates directly with the interior of the tube and serves to contain a zinc-iron sensitive strip. One end of this sensitive strip is fixed to insulating material in one end of the slot; the other end is tipped with platinum plate and swings free. Around the brass tube and the rectangular space containing the sensitive strip, a sheet of insulating material is placed, and around this is wound about 6 feet of No. 26 nichrome resistance wire. One end of the resistance wire is fastened to the fixed end of the sensitive strip while the other serves as one of the terminals of the electric heating circuit. Over the end of the rectangular space in which the platinum tipped end of the sensitive strip swings is a small brass casing tapped for an 8-32 machine screw and fastened by means of insulating material to the central brass tube. The machine screw carries on its head a nonconducting disk of fiber. Its tip carries a platinum point. The screw is connected directly with the other terminal of the heating circuit. By revolving this screw, its platinum tip can be brought into contact with the platinum plate of the sensitive strip and current be made to flow through the resistance wire, generating heat. Almost immediately the zinc element of the sensitive strip will expand more than the iron, and carry the platinum plate away from the platinum tip of the regulating screw, breaking the circuit and stopping the heat. Shortly the strip will cool and the plate again come into contact with the screw point, reestablishing the circuit and heat flow for a few seconds. After oscillating for a short time, the temperature of the interior of the central brass tube will settle down to a nearly constant quantity.

When it is desired to use the instrument, a nickel plated brass heat conducting head or applicator of the size and shape desired is placed within the central brass tube and allowed to project about one-half inch beyond its end. This projecting end is shaped to a definite size, and is intended to be placed in direct contact with the part of the eye to be heated. The center of this applicator is drilled out as nearly as possible to its tip so as to contain a thermometer. In the end of the central brass tube opposite the end containing the applicator is a small brass collar with an aperture of a size just sufficient to admit the thermometer. When the thermophor is in use, therefore, the thermometer extends through its center and has its bulb in the exposed head of the applicator.

Around the above described resistance wire is placed suitable insulating material and the whole inserted into a tube of ordinary red fiber so as to make a neat looking instrument. The amount of resistance wire used in the instrument is just enough to get the desired heat when connected up in a series on a 110 volt current with a 32 candle carbon lamp. If connected directly with a 110 volt current, the amount of heat generated would shortly destroy the instrument. Up to 130 F. this instrument can readily be kept constant within 1 degree. Up to 150 F., variations of 1½ degrees may occur. The platinum terminals must of course be kept clean.

The apparatus for determining the thermal behavior of the interior of the eye, when the applicator of the thermophor is in contact with all or a part of its accessible surface, consists of a dead-beat low resistance galvanometer supplied by the Leeds & Northrup Company, a vacuum bottle and several German silver-iron thermocouples and all-iron switch with several poles. The galvanometer was kindly lent me by Prof. Lindly Pyle from the Department of Physics in Washington University. German silver and iron wires (of small caliber) were selected for these investigations by advice of Professor Pyle. The special advantage of these two metals for thermocouple junctions is that for the required range of temperature (from 80 to 150 F.) that part of the hyperbolic curve used is practically a straight line.

In constructing the thermocouples for these investigations, two German silver wires were soldered at one end to an iron wire, which was connected to one pole of the galvanometer. The two German silver wires were then soldered at their other ends to two iron wires which were connected to two separate poles of the iron switch. Another iron wire

* From the Laboratory of Ophthalmological Pathology, in the Department of Surgery, Washington University Medical School.

* Read before the Section on Ophthalmology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

ran from the switch to the other pole of the galvanometer. By means of this arrangement either of the junctions could be almost immediately connected with the galvanometer, and the temperature of its surroundings indicated. For calibrating these thermocouples an especially large thermophor with a sensitive strip 8 inches long and about 15 feet No. 26 nichrome resistance wire was constructed so that temperatures could be held constant within very narrow limits for long periods of time. Previous attempts at calibration in water heated by a Bunsen burner had ended in failure, owing to "lag" of the mercury in the thermometer. In this calibration a large bulbed thermometer with a long stem was used, and no reading was taken until after the mercury had been stationary for some time and all motion of the galvanometer mirror had ceased. All thermometric readings were made with the aid of a hand lens and from a position such that the scratch on the thermometer stem was exactly in line with its image as reflected from the column of mercury. The junctions to be calibrated were bound to the bulb of the thermometer. The cross piece on the arm of the galvanometer is graduated in millimeters and it was found that 1 F. corresponded to exactly 4 mm. of the arm throughout the whole range from 90 to 150 F. The readings obtained from a smaller thermometer used in the thermophor proper would differ from those obtained from the larger (and slower) thermometer by from 0.1 to 0.4 F. The probable limit of accuracy of all readings may be stated with reasonable certainty to be 0.25 degree F. as shown by variations in several graphs drawn.

When this apparatus is set up for use, the common joint, where two German silver wires are soldered to one iron wire, the whole being insulated, is placed in the vacuum bottle which has been filled with cracked ice and water drained from it (the ice having been made from distilled water). It takes about three days for the ice placed in a vacuum bottle like this to melt; consequently a junction placed in such a bottle can be kept at constant temperature for that length of time, and the apparatus be constantly ready for use. The other junctions can then be arranged (say) so that one is in a groove in the tip of the applicator of the thermophor, and in direct contact with the corneal surface, while the second is in the large calibration thermophor so that if the galvanometer should be accidentally jarred, it can be properly readjusted. With the apparatus thus set up, we are in a position to read off the average temperature of the applicator (from the thermometer in it), and the exact temperature in the transition plane between the tip of the applicator and the corneal (or other) surface, in quick rotation, and study any relation between them.

In these experiments it is necessary for the wires of the thermocouples to be insulated by some convenient material that takes up very little space. The best material found for this purpose was a celluloid varnish made by dissolving 15 gm. of sheet celluloid in 85 c.c. of acetone and 15 c.c. of amylacetate. This makes a firm, flexible, waterproof insulation entirely stable for the temperatures employed, and easily painted on with a camel's hair brush.

EXPERIMENTS

In rough preliminary experiments in which parts of dog's or pig's eyes were placed in a test tube with a thermometer and 0.7 per cent. sodium chlorid solution and the whole slowly heated in a water bath over a Bunsen burner, the following results were noted:

1. Corneal epithelium began to cloud faintly at 122 F. and became unmistakably clouded after remaining at that temperature for one minute. At 123 F. there was slight opalescence of corneal substance, at 130 F. dense opalescence. At 138 F. the epithelium was white, and at 140 F. the corneal substance was shrinking and the epithelium shriveled.

2. The lens began clouding slightly at 135 F.; began to get opalescent at 142 F.; became opal white at 157 F., and pearl white above that, and became of a firm rubberlike consistency.

3. Vitreous remained perfectly unchanged until the temperature approached 212 F., when the whole gelatinous mass became perfectly fluid, and remained so on cooling, even to low temperatures (approaching 32 F.).

These experiments would suggest beginning on living eyes with a temperature of about 120 F. and varying that according to findings.

It is realized that when the temperature of the applicator is raised considerably above the normal temperature of the eye, the surface applied to the eye, in consequence of rapid withdrawal of heat, may have a lower temperature than that indicated by the thermometer within it. Accordingly, a small hole was drilled through the end of an applicator parallel to the surface to be applied to the eye and as near to it as possible. Within this hole was placed a thermo-

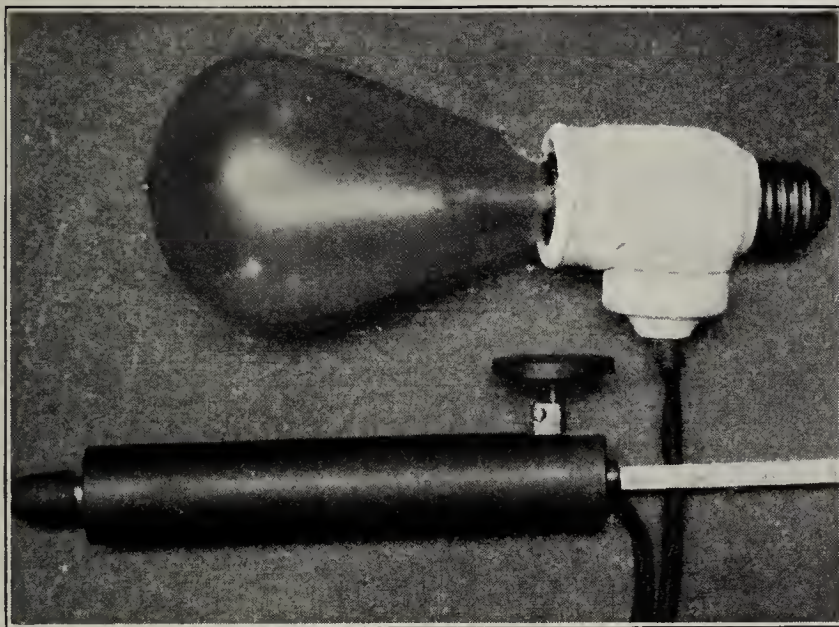


Fig. 1.—Complete thermophor with connections.

junction, and the temperature indicated by it compared with that indicated by the thermometer. By means of this arrangement it was found that up to 125 F. the thermometer accurately indicated the temperature applied to the corneal surface (our limit of accuracy is 0.25 F.). At 128 F. the thermometer was 1 degree ahead of the thermocouple, at 131 F. the thermometer was 2 degrees ahead, and at 135 the thermometer was 3.6 degrees ahead.

Corrections for these differences are made in the readings noted below. It was soon found in searching for physiologic limits that the different tissues of the eye have different limits.

The first to succumb to heat is the corneal epithelium. The limit of tolerance of this tissue was determined by means of an applicator with an end surface 14 mm. in diameter, consequently covering the entire cornea. It was found that application of 120 F. (48.9 C.) for ten minutes removed the epithelium completely over the whole of the area heated; 119 F. (48.3 C.) did likewise; 118 F. (47.8 C.) left an irregular border of incomplete desquamation. By the next day this had desquamated, leaving a sharply defined border. A temperature of 117 F. (47.2 C.)

applied for ten minutes caused an extremely faint opalescence, but not the slightest immediate desquamation, as shown by total absence of staining with fluorescein. Twenty-four hours later, however, an area 5 by 3.5 mm. had desquamated. Forty-eight hours later this was completely replaced, but clouded. The clouding disappeared in three or four days. A temperature of 116 F. (46.6 C.) did not cause any desquamation, immediate or remote, nor was there any clouding or other pathologic results. This may be stated, therefore, as the limit of physiologic tolerance of the corneal epithelium for a ten minute application.

When temperatures higher than 117 F. were used with an applicator covering all or most of the cornea, it was observed that the epithelium replaced itself rapidly to within 1.5 or 2 mm. of the center, or even replaced itself entirely, but subsequently broke down and entered into a state of dystrophy during which the substantia propria gradually wasted away with much discharge of leukocytes, perforation occurring after about three weeks. When the area denuded of epithelium was no greater than 11 mm. in diameter (where the cornea was 14 mm. in diameter), no such effects were noted, the epithelium replacing itself completely and permanently.

The anesthetic used in these experiments was cocain 5 per cent. in epinephrin 1:2,000. The "drying effect" of cocain must be guarded against. The drying is not due to the cocain but to the fact that when a rabbit's cornea is anesthetized, the animal will not blink its lids. In this regard a rabbit's eyes appear to be independent of one another. The untreated eye will blink, while the anesthetized one will remain constantly open and its surface dry.

In applying heat for effects on the substantia propria, an applicator with a 7 mm. point was used. The following data were obtained:

A temperature of 124 F. (51.1 C.) applied for ten minutes did not cloud the substantia propria. Twenty-four hours later an area 7 by 8 mm. was denuded of epithelium; forty-eight hours later the denuded area was 2.5 by 3 mm.; seventy-two hours later, the epithelium was entirely replaced. The cornea was clouded over the treated area. Two weeks later, the cornea was entirely clear. A temperature of 128.4 F. (53.5 C.) applied for ten minutes to the upper part of the cornea caused slight clouding of the substantia propria (Bowman's membrane being included with this structure). One day later, the whole upper part of the cornea was opal white, and the iris was indistinctly visible through it. There was no discharge. A sharply defined area 9 by 9 mm. was denuded of epithelium. Three days later, the epithelium was completely replaced; the cornea continued opalescent. Seventeen days later, the cornea was entirely clear except for slight pigmentation which streamed in from the periphery during the process of repair.

A temperature of 131.6 F. (55.3 C.) applied for ten minutes caused some clouding over the area treated. Next day an area 10 by 11 mm. was denuded of epithelium. The cornea was more clouded. Six days later there was a very faint clouding of the cornea with faint irregularity of the surface. Twenty-four days later it was almost entirely clear.

A temperature of 135.3 F. (57.4 C.) was applied for ten minutes under a general anesthetic (ether). The cornea was markedly clouded over the area treated. The epithelium was denuded over an area 11 mm. in diameter (the diameter of

the cornea was 14 mm.). That part of the cornea not in contact with the applicator was not changed. Next day the cornea was more clouded. The pupil was somewhat irregular at the lower side. The epithelium was denuded over an area 9 mm. in diameter. Two days later, the epithelium was denuded over an area 4 by 6 mm. Three days later the epithelium was entirely replaced, but the clouding unchanged. Seven days later, the cornea still was gray and bulging over the site of the application in the form of a keratoconus. Vessels were growing markedly into the cornea from above; there was no discharge. Ten days later, keratoconus was more marked. Twelve days later keratoconus was very marked. Fifteen days later, the keratoconus was receding, and the cornea was much clearer. Twenty days later, the keratoconus was about gone, and the cornea was clouded only over the center of the heated area. Twenty-eight days later, the keratoconus was gone, and the site of apex was occupied by a slightly pigmented and vascular scar. Most of the cornea was clear.

It is evident from these experiments that the substantia propria has no sharply defined limit of physiologic tolerance to heat, but that the effects on it vary increasingly with increase in the intensity of the heat applied. It would appear, however, that about 130 F. (54.4 C.) is as high as it is safe to go without producing gross permanent changes.

There are some changes in the interior of the eye worthy of note:

Shortly after one cornea had been anesthetized, the pupil was 11 mm. in diameter. After the application of a 14 mm.

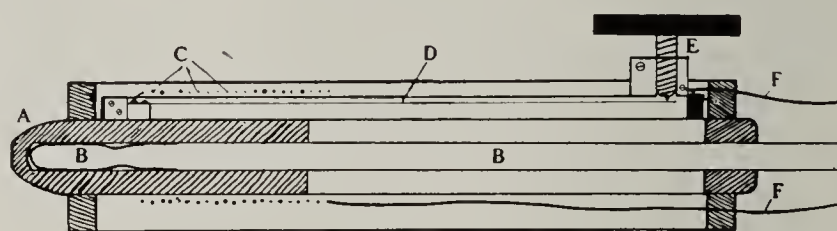


Fig. 2.—Longitudinal section of thermophor: A, applicator; B, thermometer within applicator; C, resistance wires for generating heat; D, zinc-iron sensitive strip; E, regulating screw; F, F, wires for electric current.

applicator ten minutes at 116 F. (46.6 C.) the pupil was 3 mm. in diameter, although the anesthetic effect on the cornea was still in full force. This miotic effect of heat was a constant and striking feature in all these experiments. In cases in which the pupil was fully dilated and the heat centrally applied so that the point of application was rather distant from the iris, the effect was less noticeable. When the experiment was done under ether, the effect was much more marked. The miosis was always transient. When the heat reached 128 F. (53.3 C.) and was applied opposite a part of the iris, either above or below, that part of the iris subsequently (in about two weeks) became gray, somewhat shrunk and drawn toward the filtration angle, and evidently atrophied, without apparent injury to the rest of the iris or the eye. Physostigmin (eserin) applied in such a case did not affect the discolored part, while causing marked miosis in all the rest of the iris.

By means of the thermocouple set up as described above, the rate at which heat passed through the cornea was studied. First, general data as to the rabbit's temperature were obtained. The rectal temperature (thermometer) was 104.2 F. (40.1 C.). The rectal temperature (thermocouple) was 104.2 F. The temperature of the upper culdesac varied from 102 F. (38.9 C.) to 103 F. (39.4 C.), increasing as the eye was handled. The temperature of the lower culdesac varied from 102.2 F. (39 C.) to 103.7 F. (39.8 C.), increasing as the eye was handled. The temperature under the third lid was constantly 103 F. (39.4 C.).

The junction was then introduced into the center of the anterior chamber just behind the cornea. The temperature there ranged from 101.2 to 101.7 F. (38.4 to 38.7 C.). A 7 mm. applicator was then applied at 123 F. (50.5 C.). The temperature just behind the cornea rapidly rose to 116.5 F. (46.9 C.), where it became stationary. The applicator was then removed, and the temperature dropped to 102.5 F. (39.2 C.) in fifty seconds. The applicator was then raised to 132.5 F. (55.8 C.), and applied to the cornea. The tem-

perature just behind the cornea then rose rapidly to 124 F. (51.1 C.), where it became stationary. The applicator was then removed, and in one and a half minutes the temperature just behind the cornea fell to 103.2 F. (39.5 C.) and subsequently fell slowly to 100.2 F. (37.9 C.). The applicator at 133 F. (56.1 C.) was now applied to the cornea, and the temperature just behind the cornea rose from 100.2 F. (37.9 C.) to 122.7 F. (50.4 C.) in one and a half minutes.

The vitreous was apparently unaffected by changes in the anterior chamber, remaining constantly at a temperature very near that of the body temperature of the animal. This shows that heat passes rapidly through the cornea in either direction. Any degree of heat, therefore, that will affect organisms or pathologic conditions on the surface of the cornea ought to affect them anywhere in its interior.

Most of the eyes on which the foregoing experiments were performed have been removed, and are being prepared for histologic investigation by Dr. Harvey D. Lamb, to whom I am indebted for earnest cooperation throughout this investigation. The results of this will be reported in a separate paper.

There are some organisms, such as the pneumococcus of *ulcus serpens*, that have a relatively low thermal death point. The destructive effects of this organism on some corneas are well known. There appeared to be excellent theoretical reasons for believing that the cornea would stand more heat than such invading organisms. It was now very desirable to obtain some virulent pneumococci for the production of experimental hypopyon ulcers. After considerable difficulty this was finally accomplished by Dr. Lamb, who procured material from the lung of a patient who had died of bronchopneumonia with pulmonary infarction and thrombosis of a lateral sinus.

This was injected into mice. These died of general septicemia, and cultures were taken from the blood of one of them on serum agar. A profuse growth of pneumococci (identified in the laboratory of bacteriology) took place on this. Material from this tube was then inoculated into the center of the cornea of several rabbits. Ulceration took place in every case. Some of them proceeded to spontaneous cure with or without hypopyon. Others ran a destructive course with hypopyon.

To these ulcers various degrees of heat were applied with variously sized applicators according to the size of the ulcer. In one case 125 F. (51.7 C.) was applied for eight minutes with a 4 mm. applicator. Next day the ulcer was larger and progressing steadily. Then 129 F. (53.9 C.) was applied for ten minutes under ether. The ulcer was now about 5 mm. in diameter. An area 8 mm. in diameter was denuded of epithelium. From day to day the ulcer steadily grew larger. The epithelium, however, completely replaced itself, converting the ulcer into an abscess by the third day. This was punctured and thick pus expressed from the *substantia propria*. Microscopic examination showed this to be chiefly mucoid material with a few bacteria. A serum agar culture gave a profuse growth of pneumococci in twenty-four hours.

In another case, 130 F. (54.4 C.) was applied for ten minutes under ether. This ulcer recovered beautifully, as also did the opposite entirely untreated control.

In another case, 130 F. was applied for ten minutes under ether. The heated cornea at the present writing is in worse condition than the opposite untreated control.

In short, any temperature up to 130 F. applied directly to an *ulcus serpens* for ten minutes appears to have no beneficial effect whatever. It is probably even harmful. This is the only condition so far investigated.

Before heat is discarded as useless in these conditions, however, it is necessary to investigate another

method of applying it, namely, that of applying higher degrees for shorter lengths of time. As shown above, the full temperature applied to the anterior surface of the cornea reaches the posterior surface within two minutes, possibly within one minute. If now beginning at 135 F. or about 57 C. successively higher temperatures are employed, there will certainly come a time when infecting organisms will be destroyed. The effect of this temperature on the cornea for the given length of time can then be studied, and its usefulness or uselessness be established. An investigation of this sort is now under way.

ABSTRACT OF DISCUSSION

DR. T. B. HOLLOWAY, Philadelphia: While the various properties or physiologic actions attributed to heat are well known, the most suitable method and duration for its application and the benefits to be derived from it in certain conditions are still matters for discussion. In eye affections heat, as it can now be employed, is in the majority of instances an adjuvant to other lines of treatment, if we exclude the direct effect on certain conditions or structures that have been attributed to diathermy. It must also be considered as to whether it is to be used for what might be described as its stimulating effects, styptic influences, or its destructive and cauterizing action. Numerous instruments or appliances have been devised for the application of either dry or moist heat, but none has been more ingenious in its construction than the one described by Dr. Shahan, which has also the distinct advantage of accurately measuring the degree of heat applied. As he has stated, it remains for his future experiments to prove whether it has certain clinical advantages over other methods or appliances already described. It is probable that the use of Dr. Shahan's instrument would be attended by greater risk and it seems to approach more in its action the hot air douche or the method of Weekers, although both of these methods cause distinct, if only temporary, changes in the cornea. Further, are these methods superior to the application of moist heat by means of hot irrigations, hot compresses, the dropping of hot water on the eye, the steam spray, or the mixture of steam and hot air? Finally, how do these measures compare in their efficiency to the development of heat by high frequency currents, so-called diathermy? In regard to the albumin content of the aqueous and the predominance of antibodies, Sattler found that hot air was no more efficient than other types of heat; that the agglutinins and hemolysins were increased by temperatures that produced inflammatory irritations, but that the highest temperature tolerable had no effect on the antibodies. In this respect subconjunctival injections and tapping the anterior chamber were more efficient. After later experiments he stated that diathermy afforded greater effects on the ciliary body than subconjunctival injections. Zahn found that the temperature of the conjunctival sac could be raised on an average of 4.2 by diathermy, against 1.6 C. with hot applications. The results of various researches show that with diathermy the temperature tolerance is quite uniformly placed at 44 to 45 C. (109.4 to 113 F.) at which point chemosis of the conjunctiva and corneal changes develop; 42 C. (107.6 F.) is about the height that can be reached with comfort and safety. The highest obtained by Waldmann on the human eye was 42 with diathermy and 37.5 (99.5 F.) with hot application.

If these various temperatures be compared with the temperatures obtained by Dr. Shahan, whose experiments were made under cocaine or ether, it will be found that he attained considerably higher temperatures, that is, 46.6 C. (116 F.) as the physiologic tolerance of the corneal epithelium for a ten minute exposure, while 53.3 C. (128 F.) caused permanent changes in the iris; a higher temperature than 54.4 C. (130 F.) was apt to be followed by definite changes in the corneal stroma.

Weekers and Angus MacNab have stated that a temperature of 42 C. (107.6 F.) for twenty-four hours will kill

the pneumococcus and Morax-Axenfeld bacillus, while the former will succumb to a ten minute exposure at 56 C. (132.8 F.), the latter to a five minute exposure at 55 C. (131 F.). In his experiments on rabbits the essayist was still capable of obtaining a positive culture from a pneumococcus corneal lesion after a ten minute exposure to a temperature of 53.9 C. (120 F.) and states that a temperature of 54.4 C. (130 F.) was of no value. We will watch with interest the future experiments of Dr. Shahan when he uses a high temperature and shorter exposure, conditions that would seem to bring his heat effects in closer relation to that obtained by Weekers, Bourgeois and others. In the presence of severe cornea ulceration after the failure of such cauterizing agents as phenol and iodine thoroughly applied, I rely on the actual cautery, but we must not lose sight of other adjuvants such as the vaccines.

DR. JOHN GREEN, St. Louis: Dr. Shahan's experience with this method in experimentally produced pneumococcus ulcer in rabbits was not encouraging. Recently an opportunity presented itself to try the thermophor on a patient with hypopyon keratitis. The applications were made under the supervision of Dr. Shahan so that the conditions were favorable for a fair test. A worker in a chemical factory presented himself May 28 with a 4 mm., nearly round ulcer near the center of the cornea. There was hypopyon rising to a little less than one-quarter the height of the anterior chamber. Smear and culture showed pneumococci in abundance. The thermophor was brought to a constant temperature of 115 F. and gently but firmly held in contact with the ulcer for ten minutes. The contact was practically continuous, except for momentary withdrawals, due to sudden shifts in the position of the eye. At the end of the seance it was found that the epithelium had been denuded to a total diameter of 5 mm., the ulcer proper measuring 4 mm. Atropin, 1 per cent. three times a day, and boric acid irrigations were ordered. May 29 there was only slight change in the ulcer; the hypopyon was either stationary or had increased a trifle. Thermophor applied for ten minutes at 121 F. May 30, the hypopyon was appreciably higher and the ulcer measured 5.5 mm. in diameter. Thermophor applied at 122 F. for ten minutes. May 31, hypopyon increased, ulcer spreading superficially as indicated by nasal and temporal subepithelial yellowish exudates. Thermophor applied at 124 F. for five minutes to the nasal side of the ulcer and for five minutes to the temporal side. June 1, there was positive increase in the size of the ulcer but no tendency to penetrate deeply. It was deemed inadvisable to pursue this line of treatment further. The edges of the ulcer were touched with 20 per cent. zinc sulphate solution and the ulcer itself buried in a mass of methylene blue powder. The following day the inflammatory signs were less marked and the hypopyon had diminished. A continuance of the methylene blue treatment was effective in checking the further spread of the ulcer and the hypopyon gradually diminished. The patient is now making satisfactory progress.

DR. L. HOWE, Buffalo: We are very much indebted to the author for the way in which he has presented the negative phases of the effects of heat on the eye. We must keep clearly in mind the factors involved; that is, the resistance of the eye and the resistance of the bacteria if we expect to kill them. We now know definitely what the lethal point of the eye is. Bacteriologists are not so well agreed as to the lethal point of bacteria. When I prepared the paper three years ago which described for the first time this method of measuring the temperature of the eye by means of thermal junctions, I was rather surprised to find such a difference of opinion on this point among bacteriologists. At that time I asked Professor Ernst of the Harvard Laboratory concerning the lethal point of the gonococcus. He gave figures which made it quite sure that that form of bacteria could stand heat better than the eye. It is true we use heat when we cauterize, but over only a very small surface. The value of the measurement of heat does not relate to the higher temperatures. But as we find moderate heat of advantage clinically the practical point is to deter-

mine with delicate tests, like the galvanometer, what the exact temperature is of the applications we make. When that is done we can decide what class of cases are affected by increased temperature and in what way.

DR. WILLIAM E. SHAHAN, St. Louis: This method should not be confused with any electric method where the electric current heats the tissues by passing through them. In this method all unknown factors, except heat, have been eliminated, and the effects of this agent alone studied. Neither should it be confused with any application of heat approaching cauterization. Dr. Howe's remarks on the practical impossibility of getting accurate results with the use of the mercury thermometer alone are fully concurred in and indebtedness to him for his paper on the thermocouple at Minneapolis in 1913 ought to be fully acknowledged.

ORTHOPEDIC SURGERY IN WAR TIME*

ROBERT B. OSGOOD, M.D.

BOSTON

We are of the opinion that efficiency as it is generally understood should not be the goal of life. But we are also of the opinion that once a goal is set, it should be attained by the least expenditure of any energy which is worth saving, and we believe that this is what efficiency ought to mean.

In a physical conflict such as war, the goal of both sides is set. To attain it each must conserve the physical energy of its soldiers in order to increase their strength in battle. Each must strive for the complete recovery of its wounded in order that the ranks may be kept as full as possible. Finally, but perhaps most important of all in any long conflict, each must see to it that those large numbers who do not lose their lives, but who by reason of their mutilating wounds lose their fighting power, do not become a burden on the industrial community already depleted and vastly overburdened by the necessity of support of the armies in the field. The few left at home are doing intensive work, and the wounded heroes, if the national strength is to be conserved, must have a still further test of their heroism and be made to contribute their remaining energy to help maintain their still efficient comrades.

Our thesis is to be that orthopedic surgery has a very large part to play in (1) assuring physical efficiency in the ranks; (2) in conserving and restoring the function of the locomotive apparatus of the wounded; (3) in providing the physical possibility and perhaps reorganizing the means by which the war cripples may become happy, productive, wage earning citizens, instead of boastful, consuming, idle derelicts.

ORTHOPEDIC EXAMINATION OF RECRUITS AND SOLDIERS IN TRAINING

Posture.—It has not been, we believe, solely because of the better appearance presented by erect, full-chested men, that all recruits are compelled to go through "setting up" exercises, and that good carriage is so strongly emphasized. Life insurance figures suggest that the number of inches of chest expansion up to certain limits is in direct ratio to the quality of the risk.

This important part of preventive work, namely the acquisition and maintenance of a good posture, is surely essentially an orthopedic concern. It is well

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looked after at present by the trainers of recruits. It is possible if orthopedic help were sought that still more might be accomplished in the direction of simplification and more rapid attainment of the desired end.

Feet and Shoeing.—We are perhaps tempted to forget in these days of trench warfare that the feet of the soldiers are of supreme importance. The front must be reached often by forced marches. Railroads may supply men and provisions, but do not fight battles or push on as victory is gained. At the Battle of the Marne, an English surgeon, in charge of a hospital near the front by which the armies surged in haste, told me that in the early days there were constantly large numbers of footsore men in every company, sometimes 25 or 30 per cent. These men were inefficient, if not an actual burden.

Being impressed with the large numbers of nurses who had to be temporarily relieved of duty in the course of their training in a large general hospital on account of foot strain, the writer began many years ago to examine the feet of all probationers as a routine when the classes entered. Suggestions as to shoeing and any necessary immediate treatment, etc., were made on the basis of this examination, and on the basis of the muscle balance tests, by which potential trouble may be discovered. By this method it was possible to actually eliminate foot strain from the causes of disability among the nurses who followed instructions. In armies the soldiers *must* follow instructions.

We believe that careful tests of this sort would more than compensate for the time consumed by the discovery of potential but correctable faulty weight bearing and the assurance of more constant and continuous efficiency when severe tests came.

The American army shoes, as far as we have been able to ascertain, are vastly better than those of many other nations, and several of the so-called army shapes leave little to be desired. It was most satisfactory to pick out an unusually good shoe from among hosts of bad ones which the patients in a French hospital were wearing, and to find that this was an American shoe and was being supplied to certain of the French soldiers.

No care can be too detailed as to the fit, shape and quality of soldiers' shoes. Battles may be lost or won by shoes alone. In a questionnaire conducted by Dr. Smith Peterson and the writer at the American Ambulance in Paris, many more than half of the 200 soldiers under investigation had suffered from blisters and other more serious foot troubles caused by faulty fitting and faulty fashioned shoes. A man may not fight at his best with a blister on his heel.

ORTHOPEDIC SURGERY IN A BASE HOSPITAL

The opportunities for preventive orthopedic surgery have not ceased when the base hospital is reached. They have hardly begun. The wounds of the war are nearly all infected. Healing is delayed, and contractures and adhesions are almost certain to occur, unless these dangers are appreciated and future function striven for quite as strenuously as the healing of the wound.

Ankylosis, after joint injuries with their accompanying infections, is a very common and unfortunate sequela, but the degree of this misfortune depends on attention to the position in which the joint stiffens, and every joint may be said to have its position of

choice. For example, a stiff shoulder in 45 degrees of abduction, an elbow in 90 to 100 degrees of flexion, a knee in 20 to 30 degrees of flexion, are often not serious handicaps, whereas an arm glued to the side, a fully extended elbow, a knee flexed to a right angle, represent actual crippling and require an operation or a forcible manipulation, which, because of the previously septic nature of the wound, may not be without serious risk.

I shall not discuss at length the problems of immobilization of joints and compound fractures of bones. These matters have been considered in some detail in a previous paper; but I would remind you that no surgeon should be as well qualified to deal successfully with these problems as an orthopedic surgeon. Mr. Robert Jones has his great orthopedic base hospital at Alder Hey near Liverpool, Professor Lange his German orthopedic base at Munich. Both these masters make trips to the front and instruct the surgeons in the orthopedic technic of splints and plaster, but unless we are much mistaken, in the other base hospitals of both these countries, and surely in the base hospitals which we observed in France, there is still very great opportunity for orthopedic endeavor, and this endeavor is sure to yield full compensation for labor.

In our own experience we found plaster of Paris most adaptable for immobilizing even the septic compound fractures requiring constant irrigation. Wide reinforcing bridges must, of course, span the open wound, and nice application must be had; but in hands familiar with its use it serves its purpose well. The ingenious splints of Mr. Jones, Dr. Joseph Blake and other surgeons are also most useful, and the overhead suspension, or so-called Balkan splint, often used in combination with metal splints, adds greatly to the comfort of the patient and often facilitates drainage.

Problems of Restoration of Function.—The return of function in wounded and infected joints depends on many things: first, of course, on the extent of the injury, and second, on the seriousness of the infection. We have been impressed by the power of repair which the ends of bones possess and also by the considerable amount of resistance which the synovial membrane displays.

It seems to us that conservatism should be practiced in regard to early excision of joints, and that multiple incisions and absolutely free drainage should be reserved for those cases which actually *do* need it. We do not believe in making these incisions and providing this drainage in cases which *may* need it. We are aware that occasionally we shall be sorry that we did not thus widely open and drain, but we are sure we shall many more times be glad when we simply wash out the joint thoroughly and leave only a tiny rubber tissue drain running into or down to the joint opening. Joint function returns very quickly and perfectly if the latter procedure is successful, very slowly, or not at all, after the former.

We need not emphasize the importance of massage and early gentle, active and passive motion to prevent the formation of permanent adhesions.

Brisement forc , which is usually resorted to if these early movements have not been carried out, is a most unsurgical procedure, and only rarely successful.

There are now several very excellent universal mechanotherapeutic machines, both French and German, which, working on the principle of the pendulum, afford excellent opportunity for the slow but safe limbering out of joints and stretching out of muscular

contractures. The results which they accomplish are slowly gained, but they may be expected to be permanent and we know no shorter road.

Operative Orthopedic Surgery.—As the war progresses there will be no limit to the field of what may properly be called orthopedic operative surgery. There is ample opportunity for its practice now, but with septic compound fractures, in which wide gaps of bone exist, grafts are obviously not advisable until the sepsis has thoroughly disappeared, and in stiff joints all experience teaches that no attempt should be made to perform arthroplastic operations until long after the septic process has been quiescent, how long may be found to vary with different germs. Perhaps a year is not too long as a working rule.

Many limbs are saved now that formerly would have been amputated, both because it is more possible to save them and save life as well, and also because the supply of artificial limbs bids fair to be so inadequate for some time to come. In these limbs, position has often been sacrificed to life, and realignment will be necessary. A further task and opportunity for orthopedic surgery is thus presented. These are only a few of the tasks and opportunities.

ORTHOPEDIC WORK WITH CRIPPLES

Apparatus.—The cripple has a right to look to the orthopedic surgeon for an amelioration of his condition. Much may be done by preventive and restorative surgery alone; much more may be accomplished by the added use of apparatus of one sort or another, supportive, retentive or corrective.

The little book of Spitzzy and Hartwich gives us an idea of the care with which these matters are being considered in Germany. Not only adaptations of the standard types familiar to all orthopedic surgeons are required, but also various forms of inexpensive prostheses are in constant demand for both upper and lower limbs. It would be hard to conceive of a more ample opportunity for exercise of mechanical ingenuity than that presented by the maimed limbs of the returning soldiers. Even if funds were at hand, which they are far from being, there is apparently a completely inadequate supply of the modern expensive and complicated and not always durable forms of artificial limbs. Once given the occupation, an inexpensive and adaptable makeshift can usually be planned and can be easily obtained.

Occupational Training.—This brings us to the consideration of the occupational training of cripples. It is fitting that orthopedic surgeons should take the lead in organizing this work, as they have done in the past and are doing now in Europe.

Here in America, although much has been accomplished, most of the cripples throughout the country are cripples still, and idlers instead of special wage earners. There can be no question as to which state of being is of greater use to the nation, or as to which state is the happier state for the individual. We should surely appreciate the importance of devoting much energy in our several communities to a rounding up of these interesting people and providing them, probably by state legislation, with vocational training. This is a form of preparedness of which every pacifist must approve.

We point with much satisfaction to a recent bill introduced into the Massachusetts legislature by Representative John L. Monahan and just signed by Governor McCall, the provisions of which are as follows:

Resolved, That the board of education is hereby directed to investigate and report to the next general court, on or before the second Tuesday of January, 1917, what facilities exist in this commonwealth and what provisions have been made to give special training and instruction to persons who have suffered the loss of sight or loss or injury of limb or member and whose earning capacity has been destroyed or impaired by such injury, for the purpose of reestablishing of increasing the ability of such persons to earn a livelihood, and also to investigate and report what provision has been made or opportunity furnished for such purposes of training or instruction in other states and in foreign countries, and to include in its report a statement of the opinion of said board on the advisability of action on the part of the commonwealth to establish or extend means for such training and instruction, and also to submit drafts of such legislation as they deem necessary to carry into effect their recommendations.

The American Orthopedic Association at its last executive session appointed a special committee, of which Dr. J. E. Goldthwait is chairman, to consider ways and means by which the orthopedic surgeons of the country may organize a national orthopedic reserve. Detailed plans of an orthopedic base hospital are being worked out and sources of supply assured. We urge most strongly the cooperation of this section, both officially and individually, with this committee. It seems to us of great national importance—how great it may be, we trust we shall never know. At the executive session it was recommended that a committee be appointed by the Chair, and Dr. Goldthwait was appointed chairman of this committee also.

We believe orthopedic surgery in times of peace is a most comprehensive specialty; in war time the possibilities of its helpfulness are still greater. The fact that these possibilities are not always recognized should make orthopedic surgeons seek opportunities to demonstrate them. If this opportunity is accepted it may well mark an epoch in the history of the specialty.

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ABSTRACT OF DISCUSSION

DR. NATHANIEL ALLISON, St. Louis: I succeeded Dr. Osgood at the American Ambulance last summer. In the early months of the war in Europe, I speak particularly of the French and Belgian sides, the hospitals were not adequately prepared, and the surgeons comprehended little of what they had to do. Supplies were not forthcoming. General surgeons, medical practitioners—all the leading men in France, were called to the colors, to serve in such ways as they could in inadequately prepared hospitals with no supplies. The American Ambulance was in a fortunate position, having an excellent building, unlimited supplies, and being able to spend on the care of the patient about five francs a day from the donations that were made for the hospitals. This is much more than can ordinarily be afforded in France. Mr. Frederick Villars, a war correspondent who has followed all the wars that have occurred in the last thirty years, said that the American Ambulance was the best military hospital that the world had yet seen.

The thought this brings up to us is what we would do for the care of tremendous numbers of wounded, if war should come suddenly on us. The more or less of a catch word we all are using, "preparedness," is apt to be only a catch word, unless things are taken quite seriously. These men come in in hundreds and thousands, and they must be taken care of, and their wounds are of the most severe character. The American Ambulance, in its first year, treated three thousand patients, with a death rate of 8.8 per cent. This compares very favorably with any municipal hospital. In the first year they did only eighty amputations. That shows what orthopedic surgery—the hospital was practically an

orthopedic hospital—has done. No one thought of anything but conserving the limbs to the best function that could be obtained for them. Everyone tried to devise means to conserve them, and in that way, these very original and valuable appliances that Dr. Osgood has shown you have come into use.

Some provision should be made in this country for taking care of tremendous numbers of wounded. I hope that we shall never have need to have such measures put into effect; but if we should, the need will come suddenly and not after months of preparation. The American Orthopedic Association, to this end, appointed at its meeting in Washington, D. C., a committee to standardize some notion of what orthopedic surgery could do in case such a condition should arise with us, and I would suggest that this section might also appoint such a committee.

DR. EBEN W. FISKE, Boston: My experience was, perhaps, a little different from that of Drs. Osgood and Allison. Dr. Osgood said that preventive orthopedics had hardly begun when the base hospital was reached, and this is very true. But on the other hand, orthopedic surgery is as essentially prophylactic as it is reconstructive, and nowhere is this truer than in its application to the surgery of war. How large a proportion of the cases in Europe which are today requiring late treatment for deformities were preventable no one can say. Of course, lack of time and material, and the presence of wide-spread infection, make it very difficult to carry out these measures; yet even with the first dressings certain knowledge of the mechanics of fractures must be employed, and all the way back, long before the base hospital is reached, there are innumerable opportunities for the application of orthopedic principles toward the prevention of deformity and the preservation of function. Naturally in the most severe injuries we must first preserve the limb, if not the life, with the establishment of full drainage. Second in importance is immobilization, and lastly, alignment and orthopedic principles. In the moderate injuries, however, which furnish the largest proportion of cripples, we can do a great deal. It is as easy, for example, to put up a wrist in dorsiflexion as in any other way, yet it is not always done. Again, among the minor injuries, the necessary rest and relaxation of the exact structure damaged, to be obtained by orthopedic measures, is greatly neglected, although this would often prevent the patients' transfer back to the base, a matter of extreme importance in keeping the maximum number of men in active service. Dr. Osgood advised the use of plaster-of-Paris and I think from his experience he is fully justified. But in many of these early purulent conditions, it has been the experience of many good observers that splints are superior to plaster because, provided the immobilization is perfect, the splint is usually cleaner and gives more chance for drainage and dressing; it allows observation of the limb for spread of infection or gangrene and control of the secondary hemorrhage, and for early massage and manipulation. But the choice of the splint is very important. Traction and coaptation together are undoubtedly the ideal method of putting up fractures of the extremities, but traction with the body weight as a counterforce is not ideal, because every movement of the body creates spasm, so prejudicial to the comfort and safety of the patient. Pull and counterpull within the splint is ideal and is so used throughout the English army, after the Thomas method. It is also adapted to the arm, with the counter-pressure by a padded ring against the chest wall. A material now generally used is an aluminum alloy rod, which can be easily bent, cut or sliced, and can take the place of any splint, even the Thomas. I want to call this splinting to your attention, because I feel that orthopedic surgeons in this country should be familiar with a material that is so universally applicable and valuable in war surgery.

DR. J. D. GRIFFITH, Kansas City, Mo.: I want to second the suggestion Dr. Allison made that we should have a committee appointed from this section, such as was appointed from the American Orthopedic Association, for the purpose of helping us in being prepared for an emergency. To one who has been along the line the absolute unpreparedness of this country is apparent. We ought to be prepared thoroughly.

DR. JOEL E. GOLDTHWAITE, Boston: The committee of the American Orthopedic Association was appointed with the idea of trying to standardize, or decide what is the best equipment for an orthopedic base hospital, or what material should be used in any hospital unit which might be established, whether a general or special orthopedic unit. It was also thought possible to have the members of the Orthopedic Association and all the men in the country who are interested in orthopedics get together, so as to be made available for service in case of need. The committee consists of Drs. Allison, Henderson, Forbes, Erving and myself. Already General Gorgas has been written to, and the plan put before him, and he is most cordial in his wish to have the thing go on. It is a part of the committee's expectation after they have worked out what is necessary for an equipment of a unit, to have such collections of material stored in different parts of the country ready for use, these storage places to be known to the National Academy, and also to the army. All of us must feel that the great need is for our doing something that will put us in a position very different from what most of the nations abroad were in when the war began. Then too, it is not only in the time of war that opportunities of this kind are available. When the war is over there will be an opportunity to get orthopedic experience, for hospitals are being established to help those who have been crippled. It is the hope of the committee that any of the men here wishing to join an orthopedic unit will communicate with the committee. The committee will send letters to all those doing work in our specialty; but in case they should not hear on account of error in the mails we should like them to send a statement of their age, experience, whether married or not, etc., to the committee. We can have the names classified so that the government will have men fitted for different kinds of service. Some could go to the front, others could go to the base units. It will help the committee if you will do this.

A PLAN OF TREATMENT IN INFANTILE PARALYSIS *

ROBERT W. LOVETT, M.D.

BOSTON

The successful treatment of infantile paralysis requires that the surgeon should have in his mind a definite plan covering all the phases of the disease, a plan based on the pathology in its various phases. We have at the outset a virulent acute affection with a high mortality, then comes a period of two years during which we try to restore to their highest efficiency the affected muscles, and finally we meet in the later and so-called stationary stage of the affection the question of correcting deformity and restoring or improving function by operative measures. Few affections offer a wider range of requirements from a therapeutic point of view, and if when we are treating the first stage we bear in mind what may happen to the patient in the third stage, we shall treat the early stages better.

The muscle test spoken of in the paper is a means of quantitatively estimating the strength of muscles by means of their pull against a spring balance, and is not only useful in locating the existence of weakness in different muscular groups, but offers a means of estimating the gain or loss in muscular strength under given conditions.¹

The stages of the disease are as follows:

1. The stage of onset begins with the acute attack, and may be assumed to end when the tenderness has

* Read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Martin, E. G., and Lovett, R. W.: A Method of Testing Muscular Strength in Infantile Paralysis, *THE JOURNAL A. M. A.*, Oct. 30, 1915, p. 1512.

disappeared, a duration in general of from four weeks to three months. A hemorrhagic myelitis is present, widespread, and affecting chiefly the centers of motion. The centers of sensation are also involved, the posterior root ganglia in experimental pathology showing the first changes, and the existence of tenderness must be accepted as evidence of an active process in the spinal cord. During this tenderness it is not physiologically reasonable to excite the peripheral connections of the affected nerve centers by massage and electricity. The former at times causes great increase of pain and soreness, and has nothing to recommend it at this stage, and there is no evidence whatever to show that electricity is of any value at this stage. Rest is the physiologic requirement, and the method of treatment that in practice works best, and the growing tendency to omit meddlesome therapeutic measures at this stage is hopeful. There is evidence that the use of hexamethylenamin in monkeys diminishes the risk of infection, but has no effect after the paralysis has occurred, and as the drug in moderation is harmless, it is extensively used in this stage. There is no serum or drug or proceeding that is known to abort the affection or limit the paralysis, although Netter of Paris has administered intraspinal injections of the blood of recovered persons with, he believes, benefit, but only in a small series of cases, and the proceeding is as yet wholly in the experimental stage.

During this stage the patient should be kept quiet. Joints will not stiffen, hopeless muscular atrophy will not occur, and by this proceeding the damaged cord will have the best chance to repair, and repair to the highest degree is desirable.

Deformities should be prevented by keeping the feet at right angles to the legs to avoid the most common deformity, a dropped foot. Toward the end of this period immersion in a warm salt bath is desirable and permits a degree of exercise to the affected limbs. Scoliosis begins frequently in this stage, and is often overlooked.

2. The second stage, or phase of convalescence, may be assumed to begin with the disappearance of the tenderness and to last for two years or more, at the end of which period the disease has become more or less stationary. The pathologic condition at this stage formulates the treatment. The hemorrhagic myelitis is subsiding, the perivascular infiltration which has blocked some of the spinal arteries is being absorbed, and these cells are resuming their function little by little, inflammatory products are being absorbed, and the clinical manifestation of these processes is expressed in what we all recognize as "spontaneous improvement," which begins when the tenderness disappears and lasts almost indefinitely, diminishing in its rate as the months pass.²

The clinical manifestation of the pathologic process is a motor impairment of muscles, widespread and in general erratic, more often a weakening than a complete paralysis. In the Vermont series of cases,³ manual examination of muscles showed the proportion between partial and total paralysis to be as $2\frac{1}{2}$:1, and the more delicate muscle test,² which detects slighter grades of weakening, found the proportion to be as 9:1.

Our problem at this stage therefore is to restore the maximum function to affected muscles, and to study carefully the measures most likely to accomplish this

end. This point of view becomes especially important when we realize that muscular weakening is much more common than complete loss of power. It is a very important matter to the patient with a gastrocnemius muscle with only 20 per cent. of the normal power whether that muscle ultimately regains 40 per cent. or 90 per cent. of its proper strength.

It becomes necessary then to consider those measures which are likely to prove most useful in bringing about the maximum improvement, and to comment on conditions likely to prove detrimental.

AMBULATORY TREATMENT

When the acute stage is over it is on the whole desirable to get the patient on his feet, that is, to institute ambulatory treatment. Prolonged recumbency is for a child unnatural and undesirable physiologically and mentally. The sitting position not varied by the upright position is of all most likely to lead to flexion deformity of the hips and knees and to dropped feet. The upright position induced by ambulatory measures is desirable not only because it antagonizes the conditions mentioned, but because the effort to balance on the feet instinctively excites to effort a large number of muscles not otherwise to be reached, and is a valuable form of "muscle training," a therapeutic measure to be mentioned later. On the other hand, this method is open to the objection of possibly fatiguing convalescent muscles and some authors advocate prolonged recumbency. In my opinion, the ambulatory method with proper avoidance of fatigue is on the whole the best to be pursued at the end of two or three months.

If the patient can walk without braces, so much the better. If apparatus is needed to permit ambulatory treatment it should be used, but worn only in walking and in early cases not continuously. The most commonly required form of apparatus is the Thomas caliper splint, which serves to keep the knees straight. Crutches may or may not be required. A good general rule with regard to apparatus is that it should be used when the patient cannot stand without it, or if in standing or walking a position of deformity is assumed, because deformity leads to stretching of soft parts, and if persisted in to permanent bony changes.

The two conditions most frequently overlooked which lead to serious results are weakening or paralysis of the abdominal muscles and scoliosis. In the writer's opinion when these occur the use of a cloth corset or plaster jacket is imperative from the time that the first stage is over.

A patient who has been long in bed when first put on his feet is often unable to balance even if he has sufficient muscular strength, and the problem of cultivating equilibrium in these cases must be taken up by itself and patiently persisted in.

Having thus formulated the matter of ambulatory treatment, the question next arises as to those therapeutic measures which are likely directly to have a favorable effect on the muscles. These are (1) massage, (2) electricity, (3) heat, and (4) muscle training.

1. Massage is of value because it empties the veins and lymphatics and thus promotes the flow of blood to the limb, and because it apparently retards muscular atrophy and promotes muscular tone. More than this, however, is not to be expected of it. It does not promote the passage of nervous impulses from brain to muscle, and its action must be considered purely local. Given roughly or for too long a time it is detrimental

2. Lovett, R. W., and Martin, E. G.: Certain Aspects of Infantile Paralysis, *THE JOURNAL A. M. A.*, March 4, 1916, p. 729.

3. Lovett, R. W.: The Treatment of Infantile Paralysis, *THE JOURNAL A. M. A.*, June 26, 1915, p. 2118.

and retards progress, and its overuse is probably responsible for much harm.

2. Electricity has been much discussed, and in the absence of definite data one must fall back on personal experience. Faradism causes a mild muscular contraction, and may be a useful form of gentle exercise. It is disagreeable, and to young children often a source of terror. The galvanic and newer forms of currents are assumed to have a beneficial effect in general, but in many years' experience in treatment with and without electricity (used often on one side of the patient and only with the other side as a control) the writer has never been able to satisfy himself in a single case that it was of any value. Certain recent experimental work on the retardation of atrophy in denervated muscles is of interest:⁴

It is practically certain that if electrical stimulation has a beneficial effect, the optimal effect will be with that current which is strong enough just to cause contraction. In the ordinary methods of stimulating muscles through the skin, whether by unipolar or bipolar methods, with currents of long or short duration, the intensity of the current is much greater in the superficial than in the deep fibers, and we think it doubtful whether the latter can be stimulated without using currents injurious to the former.

That the use of electricity has done much harm is undoubted, because not only is the use of strong currents admittedly injurious, but the routine use of electricity often deludes the physician and parents into thinking that the child is receiving adequate treatment while measures of admitted value are neglected.

3. Heat is of value either as radiant heat from electric bulbs or by some form of oven, because it raises the temperature of the limb, and thus offers more favorable conditions for muscular contraction, and because it stimulates the flow of blood to the limb.

4. Muscle training is in the writer's opinion the measure of the greatest value at this stage, and this stage is so important because however operative the surgeon may be he will during these two years use nonoperative treatment.

Muscle training attempts to drive an impulse from brain to muscle to enable it if possible to open up new paths around affected centers in the cord. The connection between these centers with each other and between the centers and the muscles is most extensively complicated,⁵ and the facts given as to the predominance of partial paralysis show that as a rule the entire voluntary control of a given muscle is not wiped out as a whole, but only in part. On this basis rests the claim for muscle training, a measure which in the opinion of the writer is one of the most powerful factors in determining ultimate muscular function.

As to the efficacy of this treatment, the following data were observed in Vermont by means of the muscle test. The period covered was three months:

The chance of improvement in affected but not totally paralyzed muscles under expert treatment by muscle training is about 6 to 1, under supervised home exercises 3.5 to 1, under home exercises without supervision 2.8 to 1, while untreated affected muscles in these patients showed an improvement ratio of 1.9 to 1. These figures represent cases at the end of the first year. They are all from the Vermont group and were treated there.

In order to determine just what might be expected from the treatment by muscle training an analysis was made of the progress of all patients in my private

practice during the past winter who had had two successive muscle tests at times widely enough separated to warrant any conclusions as to their progress. No cases were omitted, and the patients, as indicated in the accompanying table, are divided into two classes, those coming daily to the office for treatment by an expert assistant, and those whose treatment by muscle training was prescribed at the office but carried out at home by some unskilled person.

One difficulty presented itself in the analysis. Certain cases were regarded as having no power at all at the first examination, and in these cases for purposes of computing it was assumed that the children had power of one-eighth pound, not sufficient to move the scale. It was found that a child with one-fourth pound of muscle power would, however, move the scale, and these were the ones that were noted at the initial obser-

RESULT OF MUSCLE TRAINING

Age	Time Since Attack	Interval Covered by Tests	Average Total Gain of Affected Muscles, per Cent.	Average Monthly Gain of Affected Muscles, per Cent.	Apparatus Worn	Region Recorded
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Patients treated daily at office by skilled assistants

22	1 mo.	6 mos.	197	24	Sling.....	Arms
8	3 mos.	5 mos.	82	16	Corset, crutches, braces	Legs
9	3 mos.	6 mos.	146	21	None.....	Legs
9	21 mos.	10 mos.	200	20	Plaster jacket, crutches, braces	Legs
14	4 mos.	4 mos.	688	172	Corset, braces, crutches	Legs
8	15 mos.	7 mos.	702	100	Corset, braces, crutches	Legs
8	3 mos.	6 mos.	184	30	Corset.....	Legs

Patients treated at home by relatives or nurses (unskilled)

10	1 yr.	6 mos.	13	2	High heels.....	1 leg
30	5 mos.	1 mo.	44	44	Sling.....	1 arm
24	6 yrs.	3 mos.	12	4	None.....	1 leg
10	2 1/4 yrs.	8 mos.	108	13.5	Corset, plate....	1 leg
11	6 yrs.	5 mos.	89	17	Plaster jacket, braces	Legs
4	1 yr.	7 mos.	30	4	Brace.....	1 leg
11	9 yrs.	2 mos.	33	17	None.....	Arm and leg
10	3 yrs.	4 mos.	16	3.5	High heel.....	1 leg
10	5 yrs.	7 mos.	None	None	High heel.....	1 leg
14	8 yrs.	8 mos.	67	8	Plaster jacket, brace	1 leg
16	2 mos.	3 mos.	620	206	Brace and crutches	1 leg
8	1 yr.	7 mos.	202	28	Braces and corset	2 legs, 2 arms

vation as having a trace of power. The percentage gain of each muscle was then reckoned, and the figure given in the table represents the average percentage of gain of all the muscles. If the paralysis was unilateral, the per cent. of gain in the unaffected limb was deducted from the gain of the affected side and only the excess counted.

Deformity occurs in many forms, but the therapeutics of it are easily formulated. In the earlier stages it is generally to be avoided by preventing persistent malposition. If fixed deformity exists it must be removed before undertaking treatment, nonoperative or operative. The neglect of this rule is one of the most frequent causes of failure of treatment. Deformity is corrected by stretching by hand, by plaster or by apparatus, by forcible stretching under anesthesia, by tenotomy, fasciotomy, myotomy or osteotomy, the mildest measure that will suffice being the soundest and best.

⁴ Langley and Kato: Jour. Physiol., 1915, xlix, 432.
⁵ Bing: Compendium of Regional Diagnosis in Affections of the Brain and Spinal Cord, New York, 1909.

Stretched muscles are at a great disadvantage so far as recovery goes, as pointed out years ago by Charles Fayette Taylor, and later by Robert Jones. The best example of this is in gastrocnemius paralysis, most efficiently treated when it exists alone by very high heels, throwing the muscle out of use and preventing stretching.

Fatigue and overtreatment by massage and exercises are detrimental factors of the highest importance too little attended to. This has been especially brought out by the studies by means of the muscle test, which have shown that a surprisingly small amount of exercise was detrimental to convalescent muscles, and in some muscles returning power has been wholly abolished by overuse. The advice often given to use affected limbs as much as possible is in the opinion of the writer the worst advice that can be given. It is difficult to underuse such muscles, but fatally easy to injure them by overuse.

3. The third stage is generally called the stationary stage, and begins about two years after the onset. The requirements of the preceding stage as to the care of the muscles, etc., still exist, but are less urgent. In cases which have not been properly treated earlier, muscle training may accomplish much, even in cases of long duration. The requirements as to apparatus remain much the same throughout.

The dominant requirements of this stage are operative, and are first the correction of deformity, a matter already discussed, and second, operations to improve function and secure stability.

Operations to improve function are by all experienced surgeons deferred until at least two years after the onset (and by some men several years) in order to permit recovery of muscular power to become as great as possible and to enable the mechanical conditions in the affected limb to become clearly defined before operating.

Tendon transplantation⁶ is the most brilliant of these measures. It implies the existence of one comparatively normal muscle in the region to be operated on. Simple operations have replaced complicated ones, periosteal insertion is used, silk extensions are in common use, tendons are passed in the subcutaneous tissue, and prolonged after-treatment is the rule, unrestricted use not being allowed under one year from operation.

Nerve transplantation,⁷ which is the other operation to improve function, has not been generally used because the most skilful operators in this field have not reported a large proportion of satisfactory results, and also for the reason that the operation is advised at so early a period in the disease.

OPERATIONS TO IMPROVE FUNCTION

Arthrodesis⁸ has lost favor because of the entrance in the field of operations yielding better functional results, and the most experienced surgeons do not favor it in the ankle until after late childhood, if at all. At the knee it is always questionable and dangerous in early childhood. In the hip it is desirable, but often unsuccessful.

Astragalectomy,⁹ on the other hand, has gained in favor, and although originally introduced by Whitman only for talipes calcaneus, it is now widely used where arthrodesis would formerly have been performed. A transverse section of the foot devised by Davis¹⁰ deserves mention as being useful in calcaneus deformity.

Silk ligaments¹¹ are used because silk left in the tissues becomes coated with fibrous tissue and serves as a ligament. This is especially used to correct the dropped foot by passing several strands of silk anteriorly from the tibia to the tarsus. It is a brilliant operation when successful, but has often failed, probably because too little silk has been used. In a child of 8 or 10 one should use six to eight strands of No. 12 silk.

Tendon fixation¹² or tenodesis has lately been revived by Gallie, and is extensively used. The paralyzed tendons are sewed into grooves in the bone, thus being transformed into ligaments, to correct deformity and check excess of motion. Stretching may occur, but the operation seems to have a field of usefulness.

Two of these operations are frequently combined, as, for example, tendon transference and silk ligaments, and similar instances.

SUMMARY

This paper is a plea for a definite uniform plan for the treatment of infantile paralysis in all of its stages, for a direct attack on the disease based on its pathology, and for persistency and precision in that therapeutic attack, with special care as to the avoidance of fatigue from overexercise or overtreatment. It is the belief of the author that nowhere in orthopedic surgery does the difference between the best and indifferent treatment have more effect on the ultimate result than in this disease.

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ABSTRACT OF DISCUSSION

DR. E. W. RYERSON, Chicago: There is no question about the value of the muscle training as advised and perfected by Dr. Lovett. It is, however, unfortunate that so desirable and important a method of treatment should be so difficult to apply in most of our large clinics. It is not so difficult in private practice, where we have specially trained and paid assistants; but it is very hard to obtain voluntary service in our free clinics. For that reason, in my experience, this method of treatment has been very much neglected. The use of electricity has been, very properly, frowned on by the author. His experience corresponds exactly with my own. While electricity will always assume a certain position in these cases, because we hope that it may do some good, I know of no one who has done much practical work in this line who will enthusiastically claim very much value from its use.

The operative treatment, as described by Dr. Lovett, is of great importance; for the reason that we shall always be confronted with a large number of cases in which no other method of treatment has been used, or perhaps could be used. I formerly advocated the use of silk in the form of ligaments and tendons. During the last few years, however, I have not been so confident that this was the ideal method of treatment; for the reason that there is a certain element of uncertainty in the use of silk. I have seen cases in

6. Lange: München. med. Wehnschr., 1902, No. 1; Ztschr. f. orthop. Chir., xxix; Ztschr. f. ärztl. Fortbild., 1905, 22. Vulpius: Deutsch. med. Wehnschr., 1912, xxxvi. Lovett: Boston Med. and Surg. Jour., 1910.

7. Spitz: Handbuch der Kinderheilkunde, Lange and Spitz, Leipzig, 1910, p. 310; Ztschr. f. orthop. Chir., xiii. Osgood (review): Boston Med. and Surg. Jour., June 30, 1910. Vernicchi: Arch. di ortop., 1910, xxvii, 337. Kilvington: Brit. Med. Jour., April, 1907. Deroux: Lyon chir., December, 1912.

8. Jones, Robert: Tr. Int. Cong. Surg., 1909, xvi.

9. Whitman, R.: Ann. Surgery, February, 1908; Am. Jour. Med. Sc., November, 1901.

10. Davis, G. G.: Am. Jour. Orthop. Surg., October, 1913, p. 240.

11. Lange: München. med. Wehnschr., 1906, li; Ztschr. f. orthop. Chir., xvii, 266.

12. Gallie: Am. Jour. Orthop. Surg., January, 1916.

which the silk acted as a foreign body—perhaps very long after the operation—and had to be removed, and in which the fibrous tissue that had been deposited around the silk was apparently not strong enough to do the work that we had expected the silk to do. Hence, we are inclining toward tendon operations and fixation, especially in the line of astragalectomy. This, in the field of marked deformity, will always be the routine treatment, combined with tendon fixation and tendon transplantation.

DR. H. W. FRAUENTHAL, New York: Some years ago, I started an orthopedic clinic in New York in which I treated bad cases of infantile paralysis of more than three years' duration. Many men are not sufficiently familiar with what massage and electricity can do, when you do not overdo it. In the last year, I have had as patients a number of adults who had been troubled for more than ten years, and I hope to show the result at the next meeting of this section.

DR. F. C. KIDNER, Detroit: I, too, was very enthusiastic about silk ligaments three years ago, but I became less enthusiastic as time went on. I still believe, however, that they have a very useful application as a help or a steadying factor, for a few months, in connection with massage, electricity and other forms of treatment; but I do not believe that they hold very strongly.

DR. A. H. FREIBERG, Cincinnati: In reference to tendon fixation, we should go slowly. The lesson that we should have learned in connection with our experience with silk ligaments is that caution should be observed in selecting this method of treatment. The gentlemen who have just spoken have referred in the past to the very definite value of silk ligaments, and are now retracting these statements. I wish to confirm what Dr. Lovett said about the use of massage and electricity. Every doctor who buys an electric battery tries electricity; but I am convinced that electricity, in itself, is an agent of no value in bringing about recovery or even considerable improvement in these cases. On the other hand, I am convinced that massage is of value; but I am also convinced that its value is not to be compared with that of muscle training. The latter, however, has to be administered properly to be of benefit; and this demands experience.

DR. F. J. GAENSLER, Milwaukee: I have done a number of cases of silk-ligament suspension, and in two of them there occurred a fracture of the tibia at the point of insertion of the ligament. In one case, the silk had torn; and a subsequent silk ligament suspension was done, a long time after the first. At the second operation, the drill-hole was placed a short distance above the first hole; but, following a slight trauma, a fracture occurred near the point of insertion. The roentgenogram seemed to show osteoporosis about the point. In another case in which there had been only one drill hole, the fracture also occurred at that point. I suppose that osteoporosis was responsible for it, and wonder whether others may not have had the same experience.

DR. A. L. FISHER, San Francisco: Three years ago I had the same feeling in regard to the value of electricity as those who have spoken, but I have since seen the results secured by a man who had paid great attention to this method of treatment in Paris. He uses a very weak interrupted galvanic current. This does not seem to be important; yet in the two groups, treated prior and subsequent to three years ago, there is a contrast that shows that there is great benefit from this method of treatment. Another, and more important method of electric treatment to use is the faradic current. By it, you can get an idea of the quantitative amount of the muscle strength, by using a given coil and getting the minimum amount of current that will elicit a response to the unaffected side and treating the affected side, using the same amount of current. The proportion of muscle damage is practically in inverse proportion to the amount of current that it takes to get a response. This, in the way of prognosis, is extremely important.

DR. J. T. WATKINS, San Francisco: I have not had any success at all with the use of galvanism and faradism. With

regard to muscle building, people living in the South and other distant parts of the country cannot go to New York for this training; so the work has to be turned over to persons who are sometimes expert, and sometimes not. My experience is that the people who had been trained in Christiania or London, when dealing with very young children, got practically no results from muscle building. They did not seem to be able to convey to the children what was needed, so that they could do it themselves by mental impulses. On the other hand, when dealing with older persons or adults, they obtained very remarkable results.

DR. WALTER G. STERN, Cleveland: Believing as I do in the value of massage and muscle training and also that overuse and overstimulation of the weakened muscles are especially harmful, I hold that Dr. Lovett is incorrect in his advice to us and through us to the general practitioner "to put the patient on his feet as soon as the acute symptoms have subsided," because when you allow this you allow him to run the dangers of overuse and overexertion. The patient makes his own efforts at walking, is stimulated by his parents to make further efforts and by the neighbors and friends to make still further attempts. These efforts are all made through the contracture of the strong and healthy muscles, which increase in proportionate strength to such an extent that soon overstretching of the weakened muscles takes place and they lose their tone. This is one of the chief causes of deformity which we find so difficult to overcome later on. Children should have, at least, a considerable period of rest after the acute stage, and during this time one can use muscle training and massage to good advantage. The late Dr. Townsend told us a few years ago that his best results in the first epidemic in New York were obtained with children who had been kept in bed for at least a year; Judson says eighteen months to two years, but that seems to me to be entirely out of the question. However, I believe that they should be kept quiet for a much longer period than Dr. Lovett would have us infer from his printed statements.

DR. W. R. MACAUSLAND, Boston: I agree thoroughly with Dr. Lovett's outline of conservative treatment, but I object strenuously to a statement made by him that the results of tendon transplantation and silk ligament fixation are "brilliant." These infantile cases demand stability and increased function. I have seen silk ligaments that have produced deformities by holding too strongly or insecurely, and an endless number of tendon transplantations that have not held, so that the part was weaker than before the operation and the patient was distinctly hurt by the tendon transplantation. I feel that, with the exception of about one transplantation in the foot, there is but one operation to be done in these cases of infantile paralysis that can stand the test of time; and that is astragalectomy, as outlined by Dr. Whitman.

DR. CHARLES A. PARKER, Chicago: I believe that every man does the best work in his own hobby. If he believes in operations, he gets the best results with them; if he believes in the use of electricity, or in massage, or in a combination of the two, he gets the best results with them. Most of the deformities are in the lower extremities in infantile paralysis, and the best result that we generally get, after the patients have lost the finer movements, is to teach them to stand on and use their feet and legs for the support of their body. In considering these different operations, one sometimes loses sight of the fact that the body should be straight, in order to be stable. The body should be straight over the hips, the knees straight, and the feet at right angles. These three conditions are the factors leading to the best results. How to get them is answered differently by different men. Some prefer tendon transplantation; some, astragalectomy, and some, other means.

DR. FRANK E. PECKHAM, Providence, R. I.: What do we want to obtain by our treatment? I may be wrong; but, personally, I feel that I want a fresh influx of blood to the paralyzed muscle. How is that best obtained? It has been held as an opinion that we could not do much until the pain stage had passed; but I have found that I could begin

treatment in the acute stage just as soon as I could have the child brought to the office. I have begun even before the fever had subsided entirely. You commence immediately by treating with applications of heat. I use a five hundred candle-power electric lamp for twenty minutes, and I apply mechanical stimulation by vibration. There is no pain caused by the treatment, and there is entire relief from pain in five minutes after the treatment is started. The relief lasts for a while only; repetition of the treatment, however, makes it permanent. I find that the cases improve faster in that way than when this method is not followed.

In regard to electricity: There are so many ways in which electricity may be applied that it is not fair to say that electricity is of no value without specifying just what method of application is meant, any more than it would be to state that drugs are useless without mentioning which drugs are referred to. The use of electricity is understood by the general practitioner to produce muscle contractions. Personally, I have not done that with it. I think that electricity has a use, but we must decide just what we want to accomplish and then accomplish it. The whole process should be stated in absolutely definite terms.

DR. ROLAND MEISENBACH, Buffalo: I wish to lay stress on the value of apparatus in connection with cases of infantile paralysis, even in the earliest stage. By a careful adjustment of the proper apparatus, one can assist muscles to return to their normal more quickly than without. However, before the apparatus is applied, we must keep in mind the actual condition of the muscle, not only at the time when the apparatus is applied, but in the course of the paralyzed or paretic muscles. The opposite can also be said about apparatus that is applied without any understanding of the muscle action. I have seen an entire quadriceps regenerated in a child, and I know it was due to the fact that a duralumin brace had been applied properly and so regulated from time to time as the muscles became stronger that the opposing group of muscles had no opportunity to check the progress of the quadriceps. Therefore, one should not apply apparatus unless he has a very thorough understanding of the individual muscular action. Dr. Lovett said that operation should be postponed until the third stage. I believe it is true. I think it is wrong to operate in the early stage. The insertion of silk is not the proper method of treating infantile paralysis, for two reasons: First, because it is not permanent; second, because it may check muscle exercise, and therefore prevent regeneration of one or a group of muscles. There is no question that silk resolves. If any one of you has had an opportunity to study cross sections of silk strands embedded in living tissue, you will see that after twenty days there is very little silk left, and in its place is connective tissue. I am taking out many more silk ligaments than I am putting it.

I firmly believe that apparatus, if applied carefully with Dr. Lovett's idea of muscle education in mind, will give better results. Stability is to be desired. You cannot immediately get stability by operative procedure. Where the attack of infantile paralysis is very mild, I have applied rubber muscles, as I chose to call them. These could be adjusted in thickness and width corresponding to the afflicted muscles, whether they were in a state of paresis or total paralysis. These acted as apparatus, and were sometimes combined with apparatus, especially in the early stage of infantile paralysis. The rubber tissue over the involved muscle acted also by causing a hyperemia, and thereby stimulating circulation. I cannot agree with Dr. Lovett in his statement that the pathology of infantile paralysis changes so rapidly for the better. I would like to ask Dr. Lovett whether the afferent and efferent impulses have much to do with the rapid rebound in cases of infantile paralysis, and whether he can tell the percentage of gain in the given paralyzed muscle in, let us say, six months of paralysis.

DR. ROBERT W. LOVETT, Boston: I do not want to go on record as advocating extreme conservatism in the treatment of the disease. If we can avoid operation, so much the better. Dr. Stern's criticism about getting the patients

on their feet is a just one. I intended to protest against allowing children to sit in a chair, month after month, and did not mean to imply that there should not be considerable rest. In many cases, I do not allow walking at all. I am satisfied that the element of fatigue is of great importance in all early cases, and I am getting better results since I have been paying greater attention to it. I did not mean to advocate the insertion of silk ligaments over the other operative measures, but only as one of the operative procedures. I have had failures in cases in which I have used it. I now put in from six to eight strands of No. 12 silk. I do not know how this will work out in the end. I hold no brief for it over astragalectomy. It often has failed, but its results have often been brilliant. The muscle test gives a quantitative test of muscle strength. I believe it to be reliable. I have been able to treat the cases better, because I could take tests of them in that way. I believe that it is the means by which the question of the benefit of electricity can be settled. I am starting on the observation of a set of cases treated with and without electricity in order to compare the two sets by quantitative tests. Nine patients out of ten in my private practice during the last winter have had their muscle training under the mother or an untrained nurse. The results under these circumstances were about one third as good as when given in my office by an expert.

I must differ with Dr. MacAusland about tendon transplantation. I think it is a very good and at times a brilliant operation, although there are failures from its use; but the same may be said of astragalectomy. I think that astragalectomy is suitable for one set of cases, while tendon transplantation is suitable for another set. Tendon transplantation is especially suitable for cases in which you have tested the muscles and know just what you are doing. Of course, if you substitute a very small muscle for one that is strong and heavy there is nothing in it; but if you test out the muscles beforehand, you can avoid this. Therefore, this muscle test is in the line of precision. It has shown me how little I knew about the disease. Dr. Meisenbach's questions I cannot answer. The tendency of my paper is not to advocate any particular method. I merely wished to state my personal experience and to make a plea for a greater precision in the treatment, advocating a plan based on the supposition that there will be two years of nonoperative treatment. What operative treatment we should employ is a separate question.

SPECIFIC TREATMENT OF INFANTILE PARALYSIS

PRELIMINARY NOTE

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Epidemics of infantile paralysis since 1907 have afforded opportunity for careful clinical as well as laboratory study. In the present epidemic of infantile paralysis in New York, large numbers of patients with acute cases have been removed from their homes to the city contagious hospitals. In the Kingston Avenue Hospital at the time of this writing there were over 300 patients.

As a member of the committee in charge of these cases, assigned in charge of the treatment during the acute stages, I had a particularly good opportunity to select different types of the disease at different stages, and to make comparative observations which helped in deciding the value of the different treatments.

It is manifestly difficult to speak with any certainty of the value of any curative treatment in a disease like infantile paralysis in which early diagnosis in the pre-paralytic stage is difficult, often impossible, and in which the mortality is relatively low.

Our active treatment heretofore has been purely symptomatic. Anything based on sound rationale,

which properly used should do no harm, and which should theoretically do good is worth using, at least till we get something better.

The analogy, etiologic, pathologic and epidemiologic, between infantile paralysis and epidemic meningitis is very close. The symptoms of infantile paralysis, as in epidemic meningitis, may be grouped into those caused by (1) hydrocephalus; (2) the inflammatory reaction in the meninges and nerve substance, and (3) paralysis—due to focal involvement of nerve tissue.

The successful treatment of epidemic meningitis depends on the proper relief of hydrocephalus, and the injection into the spinal subarachnoid space of an immune serum which bathes the inflamed parts, produces a local leukocytosis and through its opsonins causes a sharp phagocytosis.

Treatment along similar lines should theoretically be of value in infantile paralysis.

The treatment of infantile paralysis may be divided into: (1) relief of hydrocephalus; (2) intraspinal injection of serum, normal human, normal horse, or convalescent; (3) control of special symptoms, as respiratory paralysis; (4) symptomatic general treatment, and (5) orthopedic treatment.

1. RELIEF OF HYDROCEPHALUS

Hydrocephalus with its pressure symptoms is most pronounced during the acute stage. In most cases it is only moderate, but not infrequently, especially in the cerebral cases, it is quite pronounced. In the latter the patients are often very stuporous, with twitchings, convulsions and respiratory embarrassment. Paralysis of the respiratory center is the usual cause of death in infantile paralysis. Early relief of respiratory embarrassment is therefore important. One lumbar puncture usually suffices, but in some cases it must be done several times till relief is permanent.

The following case history will illustrate:

CASE 1.—A. K., girl, aged 2 years, was admitted to the hospital on the fourth day of an attack of infantile paralysis. Her condition was bad. She was in profound stupor, was cyanosed, and respirations were very irregular, of Biot's type. Macewen's sign of hydrocephalus was marked. There was paralysis of left face and both lower extremities. By lumbar puncture, 60 c.c. of clear fluid under very high pressure were removed; 8 c.c. of normal horse serum were injected. Twelve hours later, the child was much improved but still drowsy, and the respirations were still irregular. Macewen's sign was marked. By lumbar puncture, 50 c.c. of fluid under very high pressure were removed. Two hours later the child was bright, taking the bottle well and breathing well. Convalescence was uninterrupted from that time on.

Relief of hydrocephalus is an important therapeutic measure. In cerebral cases it is often urgently indicated. It is quite safe to remove fluid till the pressure drops to the normal.

INTRASPINAL INJECTION OF SERUM, NORMAL HUMAN, NORMAL HORSE OR CONVALESCENT

A highly immune serum for poliomyelitis is what we want. So far such serum has not been produced.

The beneficial results of immune antimeningitis serum therapy have been attributed to a number of factors—the opsonic action of the serum, the stimulation by the serum of a local and general hyperleukocytosis, and the antitoxic, bactericidal and agglutinative action of the serum. Is the hyperleukocytosis, local and general, altogether a specific reaction, produced by the immune serum? I do not believe it is. It is a common

experience to inject patients with meningitis, suspected as being meningococcic (of the epidemic type) with immune antimeningococcic serum. Cases which later proved to be poliomyelitis, tuberculous meningitis, toxic meningismus and syphilitic meningitis have been so treated. A cerebrospinal fluid, obtained twenty-four, or sometimes forty-eight hours after such injection of serum, is often turbid, and shows a marked hyperleukocytosis with relative polynucleosis, a reaction frequently observed in true cases of epidemic meningitis treated with immune serum. The local hyperleukocytosis is, I believe, to a very great extent a nonspecific protein reaction.

We thus have a simple, almost harmless means of producing a hyperleukocytosis in the cerebrospinal fluid. Normal horse serum and normal human serum can be easily procured, and if sterile and properly injected are harmless.

The objection to horse serum would be the sensitization to foreign protein; heretofore, if available, normal human serum would be preferable.

Epidemic infantile paralysis is not a virulent disease, with a tendency to progress unfavorably. It is the very opposite. The febrile and inflammatory stage is a short one, and the lesions usually appear early in the disease and in most instances do not spread further. The mortality is relatively low, averaging during the height of epidemics from 20 to 30 per cent., but usually much lower. It is a disease against which we have very high natural immunity, as evidenced by the very small percentage of all exposed who actually develop the disease.

It has been found that the production of a general hyperleukocytosis is a most important therapeutic measure, as recently pointed out in the treatment of typhoid fever by the intravenous injection of sensitized vaccine and other nonspecific proteins. Similar observations have recently been noted in the treatment of arthritis by the production of a hyperleukocytosis after nonspecific foreign protein injection. The importance of producing a hyperleukocytosis in the cerebrospinal fluid in the treatment of epidemic meningitis has long been known.

The probable value of a hyperleukocytosis in the cerebrospinal fluid in poliomyelitis, a disease produced by an infectious agent of relatively low virulence, should be considerable. In order to be of most help, the serum would have to be used very early in the disease, during the acute inflammatory stage, if possible in the preparalytic stage, especially if prevention of paralysis and abortion of the disease is hoped for. The active, acute inflammatory stage of the disease is so short that it is often impossible to inject more than one dose of serum in the important early stage. Serum injected intraspinally should be injected under the usual precautions of strict asepsis, and control of the dose by coincident blood pressure observations.

In view of my previous experiences with the injection of horse serum in different central nervous system infections, I felt that the measure should certainly be given a thorough trial in the present epidemic. In 1912, I had occasion to use the treatment in two cases, with results which were encouraging.

The present preliminary report is based on only a small series of cases. In view of the harmless nature of the treatment and the general encouraging results, I felt it important to make this a preliminary report at this time.

A series of ten patients were treated with normal horse serum. Unfortunately most of the cases admitted to the hospital were late cases, but a few of the early cases showed interesting results.

The following case histories show the results in different stages and types of the disease:

CASE 2.—G. A., boy, aged 3 years, ill forty-eight hours, was admitted in the early stage with general meningitic symptoms, high fever, 105 F., and a slight facial paresis. Sixty c.c. of cerebrospinal fluid under high pressure were removed by lumbar puncture. Fifteen c.c. of normal horse serum were injected.

Examination of the cerebrospinal fluid gave typical findings. Eighteen hours later the temperature was normal, and the patient much improved in every way but still drowsy. Forty-eight hours later he was still drowsy, and slept most of the time. Macewen's sign was marked. Temperature was 101, and rigidity of the neck was again distinct. By lumbar puncture 30 c.c. of cerebrospinal fluid were removed, and 10 c.c. of horse serum injected. Eighteen hours later the condition was about the same. Thirty-six hours later there was decided improvement. Forty-eight hours later the boy was convalescent, seven days after the acute onset. No paralysis developed.

CASE 3.—Child, aged 3 years (Bridgeport hospital), ill forty-eight hours, was in the acute meningitic stage, with no definite paralysis, but pronounced symptoms of acute meningeal irritation.

Diagnostic puncture of cerebrospinal fluid under high pressure gave typical findings. Two hours later about 15 c.c. of cerebrospinal fluid were removed by lumbar puncture, and 15 c.c. of horse serum injected. Twenty-four hours later the temperature was down and the child much better. Forty-eight hours later the child was convalescent, with no paralysis, and recovery was uninterrupted.

A number of patients under treatment with late cases appeared to show much more improvement than is seen in cases clearing up without any treatment. It should be noted, however, that some cases, even with considerable paralysis of limbs, face or throat, clear up within a period of a few days without treatment of any kind. Judgment of results under curative treatment must therefore be based on comparative results. Results from curative treatment in the late cases could be expected only where there was no destruction of tissue.

CASE 4.—Girl, aged 9 years, ill one week, was still very irritable, and evidence of acute meningitic irritation was still present. There were marked anteroposterior spasm of the neck, and spasm and tenderness of the back. Macewen's sign was marked. Diplegia was complete. Sixty c.c. of clear fluid under high pressure were removed by lumbar puncture, and 15 c.c. of normal horse serum injected.

Twenty-four hours later the patient felt better and was less irritable. Rigidity of the neck and back had improved. She could move with greater ease.

Forty-eight hours: The patient felt good, and could sit up. Opisthotonos was gone.

Seventy-two hours: Rapid improvement continued; some power had returned to both limbs. The patient sat up and moved with freedom.

Five days later the child was convalescent. Diplegia was present, but some power had returned to the limbs, which were growing stronger. There will probably be partial permanent diplegia.

CASE 5.—Child, aged 4 years, with disease of twelve days' duration, had paralysis. There were diplegia and paralysis of the right upper extremity. Evidence of acute meningeal irritation was still present; the patient was very irritable; anteroposterior spasm of the neck and Kernig's sign were marked; respiration showed occasional intermittence. The general condition was only fair. Forty c.c. of clear fluid

under high pressure were removed by lumbar puncture, and 12 c.c. of serum injected.

Eighteen hours later, the child was much brighter, and less irritable. Rigidity of the neck was almost gone. The general condition was better.

Two days later, improvement continued; power was beginning to return to the paralyzed limb.

Four days later, the improvement continued steadily; considerable power had returned to the paralyzed limb.

The immediately favorable response in this case might, to a very great extent, be attributed to the relief of hydrocephalus, but the coincident improvement in the paralyzed limbs suggests favorable action of the serum.

CASE 6.—Child, aged 1 year, was admitted to the hospital on about the fourth day of illness, with right hemiplegia, repeated general convulsions, and continuous clonic convulsion of the paralyzed side. The general condition was bad. Respiration was irregular, of Biot's type. The child was very irritable and stuporous. The fontanel was markedly bulging.

Thirty c.c. of fluid under high pressure were removed by lumbar puncture, and 12 c.c. of serum injected.

Eighteen hours later there was no improvement.

Daily puncture for three successive days was done with injection of horse serum varying from 3 to 12 c.c. There was continuous but slow improvement, and after the fourth treatment the paralysis totally disappeared, the child became bright, took its nourishment well, and made an uninterrupted recovery.

EFFECT OF SERUM INJECTION ON CEREBROSPINAL FLUID

As previously explained, in almost all instances there is a hyperleukocytosis with relative polynucleosis, a change in condition from a moderate number of lymphocytes, within eighteen hours to a very high cell count, almost all being polymorphonuclears. The fluid macroscopically twenty-four hours after serum injection often shows a faint opalescence; occasionally the fluid becomes very turbid, but bacteriologic examination shows a sterile fluid, like that seen in aseptic meningitis. The fluid of the last case treated shows findings typical of all: original fluid on first puncture: clear fluid, moderate pressure, seventy cells per cubic millimeter, all lymphocytes. Globulin positive plus. Fluid eighteen hours after serum injection: 330 cells per cubic millimeter, almost all polymorphonuclears; globulin ++.

The cytologic change following serum injection disappears in a varying length of time, usually about forty-eight hours.

Convalescent Serum.—The use of a blood serum obtained from cases convalescent from infantile paralysis offers the advantage of a human serum plus the presence of immune bodies. That serum obtained from at least recently convalescent cases contains immune bodies has been proved by the neutralization test in the monkey (the neutralization of poliomyelitis virus mixed with the serum, and subsequently injected into the monkey). It has been stated that serum is potent even from those who had had infantile paralysis years previously. The serum used in our series was obtained from two adults three weeks' convalescent. About 10 ounces of blood were removed through a large needle into sterile bottles under strict asepsis. The blood was immediately shaken thoroughly (glass heads in the sterile flasks helps the defibrination). The blood was then thoroughly centrifugated, and the serum aseptically siphoned off. If the serum is to be stored for later use, it is desirable to add a little preservative, as chloroform, and to heat at 56 C. (132.8 F.)

for one hour. The serum should be tested for the Wassermann reaction.

Netter¹ reported the use of convalescent serum in thirty-two cases, with good results. The difficulties of arriving at any decision as to the value of convalescent serum are apparent in attempting an analysis of his figures.

Our first series here reported consist of four cases:

CASE 7.—E. R., aged 4½ years, ill two days, was admitted to the hospital in the preparalytic, meningitic stage. The temperature was 102; there was no paralysis. Forty c.c. of clear fluid under high pressure were removed by lumbar puncture, and 15 c.c. of convalescent serum injected.

Eighteen hours later the child was brighter, not so irritable or drowsy, and there was no paralysis.

Steady improvement continued till the third day, when slight paralysis of the right deltoid appeared.

Sixth day, the patient was well, and there was no paralysis.

This case could well be considered aborted.

CASE 8.—M. C., girl, aged 8 years, ill five days, had complete paralysis of both lower extremities, and partial paralysis of both upper extremities. The patient was very irritable, restless, and noisy, and had considerable respiratory embarrassment. During the first two days in the hospital, general treatment was used, but the condition was unchanged and caused us considerable anxiety on account of the respiratory symptoms. Convalescent serum was then used.

Thirty-five c.c. of clear fluid were removed by lumbar puncture, and 15 c.c. of convalescent serum injected.

The patient on the following day was quieter, looked better and felt better. Her limbs were less painful and tender. Improvement in her general condition continued, but up to the time of this report, six days later, there was no change in the paralytic condition.

CASE 9.—J. A., aged 4 years, was treated on the twelfth day of illness. The general condition was good, but there was phrenic paralysis and persistent cyanosis. Little was to be expected from serum treatment, but it was administered on account of the gravity of the condition. Sixty c.c. of cerebrospinal fluid were removed, and 13 c.c. of convalescent serum injected. Ten days later, there was slight improvement, but it was apparently not due to the serum.

CASE 10.—Child, aged 1½ years, admitted about the sixth day of the disease, with diplegia, was very drowsy, and had marked respiratory irregularity. Macewen's sign was marked. Forty c.c. of clear fluid were removed by lumbar puncture, and 10 c.c. of convalescent serum injected.

Twenty-four hours later the general condition was much improved, and the child was brighter.

Four days later the child was convalescing, but there were no changes in the paralytic condition.

Results.—The convalescent series was very small, but the results were certainly no better than in the normal horse serum series.

In the normal horse serum series, two cases treated in the preparalytic stage were aborted. One case was aborted under the convalescent serum treatment. Best results were obtained in early cases.

Some of the late cases treated showed more improvement than is generally seen in untreated cases. There was more rapid convalescence and improvement in the paralytic condition.

It is hard to judge as to the saving of life, but the sickest patients, totaling fourteen, were selected for treatment, and there was only one death; that patient was almost moribund at the time of treatment.

Normal Human Serum Treatment.—No observations were made.

Epinephrin Treatment.—Dr. S. J. Meltzer suggested the use of epinephrin intraspinally as an active form of treatment.

The work of Dr. Clark,² done at Dr. Meltzer's suggestion, on the action of subdural injections of epinephrin in experimental poliomyelitis, indicated that for a time at least there was considerable response in the paralyzed animals.

Observations in the hospital were made in only three cases, an insufficient number from which to make any deductions. A boy of 5 with respiration paralysis had three doses at six-hour intervals. There was considerable temporary improvement, but the boy ultimately died. The other two patients each had only one dose with no result except sharp rise in blood pressure. Dr. Meltzer's suggestion, however, was to inject the epinephrin intraspinally at least every six hours in doses of from 0.5 to 1 c.c. for small children.

3. TREATMENT OF RESPIRATORY PARALYSIS

Respiratory paralysis is the most common cause of death in infantile paralysis. It is therefore of prime importance to meet this complication early, so as to tide the patient over the critical period until congestion and inflammation about the center subside. Transient paralysis, which can most logically be explained as being due to relief of congestion, edema and vascular involvement, is one of the regular features of this disease.

Many have noted that patients could be kept alive for hours, in one case three days, under artificial respiration.

In very stuporous, comatose cases with respiratory paralysis, a more active form of artificial respiration is indicated. At my inquiry, Dr. Meltzer suggested his pharyngeal respiratory apparatus for comatose patients; and for conscious patients, if possible early after respiratory difficulty has set in, he suggested the administration of oxygen under pressure by his method. A more detailed discussion of the results and technic will be given in a later paper. The administration of oxygen under pressure kept a number of patients alive for hours. It was used in several cases with slight respiratory embarrassment with benefit, but it was difficult to judge in these whether more serious respiratory paralysis was warded off.

The pharyngeal apparatus was used in several cases without result. As a rule the patient is conscious almost until the end, so that pulmonary edema is far advanced when the patients become unconscious. The method, however, should certainly be given careful trial.

4. GENERAL TREATMENT

At this time attention will be directed only to the importance of general treatment, especially in public wards. We are dealing with helpless children, each of whom requires especial care as to feeding, and care of bladder and bowels. Respiratory embarrassment should be carefully watched for. Turning from side to side is important; in this connection Dr. Meltzer suggested that it might possibly have some influence on the paralysis, owing to shifting of edema.

5. ORTHOPEDIC TREATMENT

This should be begun as early as possible. Patients should be watched from the beginning by the orthopedist.

2. Clark, P. F.: The Action of Subdural Injections of Epinephrin in Experimental Poliomyelitis, *THE JOURNAL A. M. A.*, Aug. 3, 1912, p. 367.

1. Netter: *Arch. de méd. d. enfants*, Jan. 16, 1916.

FOCAL INFECTION IN RELATION TO
CERTAIN DERMATOSES *

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It is an unfortunate fact that we dermatologists have neglected the search for the true etiologic factors of the diseases of the skin, devoting our efforts more to nomenclature and classification. Recently there has been a change, and research into dermatologic diseases is being undertaken more vigorously now, both in laboratories devoted especially to dermatologic pathology and bacteriology and in the clinics and offices of the dermatologists themselves. Especial credit for this awakening is due to Billings and Rosenow, whose theory of focal infection has opened our eyes to the explanation of certain dermatoses whose etiology was entirely obscure a few years ago. Now that we have the key we can unravel many a mystery, trace relationships, and diagnose intelligently, whereas only a few years ago we had to fall back on the much overworked term "idiopathic" in the description of such cases. It is a very few years since the epochal work of Billings described the relationship between focal infection and systemic disturbances; the theory at first met with ridicule and unbelief, but was so well supported by clinical and experimental data that it soon gained practically universal acceptance, and a vast amount of work has been done in the new field opened up by it. Of course, as is usually the case with that which is new, some men became too enthusiastic about it and carried it to an extreme, sacrificing teeth and tonsils, whether abnormal or not, in the presence of almost any diseased condition of the body, without stopping to make a careful search for the true causes. However, more conservative observers have been utilizing the new theory to great advantage, and while they have not found it an explanation of all diseases, they have opened up a new chapter in the study of the etiology of many diseases and the consequent rational treatment of them.

There are few to doubt that the presence of a steady spring of infection can cause many reactions and inflammations in other parts of the body in which the bacteria may find lowered resistance or a more suitable soil. Especially has this been recognized in those cases of arthritis and neuritis which were formerly lumped together as rheumatism, because so many of these cases have been reported; but not less true is it that a similar relationship exists between the so-called "focal infections" and skin diseases; and a great many dermatoses, formerly attributed to various other causes, can now be definitely traced to focal infections. Focal infection does not mean, as some seem to think, a source of infection in mouth or throat only, for the infecting source may be almost anywhere in the body. Most of us have encountered cases which could be traced to infection of the kidney, bladder, prostate, urethra or other part of the genito-urinary tract, or to infection from gastric or duodenal ulcer, chronically inflamed appendix, rectal fistula, or cholecystitis. Middle ear disease is a frequent cause of skin reactions, infected sinuses another; typhoid fever is also liable to cause dermatoses, as nearly all the more chronic infections may do, as well as sometimes the acute ones, such as pneumonia.

The reader of dermatologic literature will occasionally find mention of the part played by focal infections in skin diseases. Gosse¹ quotes McKenzie, 1886, that erythema nodosum is often accompanied by rheumatism, and suggests that it may be due to toxic or infectious diseases, in which connection it is interesting that Edward C. Rosenow,² working at the Mayo Clinic, reported recently that certain streptococci have an elective affinity for the skin, most evident in strains isolated from cases of erythema nodosum and herpes zoster, but also manifested to a lesser degree by strains from endocarditis, myositis, mumps and cholecystitis.

Galloway's article³ in 1912 should not be overlooked in this regard. He lays stress on the fact that in rheumatic infections we often see a scarlatiniform eruption, exudative multiform erythemas, and erythema nodosum, and especially that such erythemas accompany septic forms of rheumatism. In streptococcal infections of the kidney, liver and joints an inflammatory erythema of the skin frequently appears. At times a pure hemorrhagic eruption occurs (purpura rheumatica, peliosis rheumatica Schoenleinii).

Gerber's investigations⁴ are worthy of note, owing to their thorough and scientific character. He worked out the relationship of focal infection to certain of the idiopathic dermatoses. From the clinical point of view, Born, Uffelmann, Lewin and Besnier have noticed the coincident appearance of sepsis and erythema. Hoffman succeeded in detecting cocci in the altered veins in a case of erythema nodosum, while Gerber investigated ten cases of this disease and found all of them due to focal infection, the genito-urinary organs being the source of infection in one case, an abscess in still another. Histologic examination of the nodes revealed a thrombophlebitis of the cutaneous veins; in three cases cocci were found by this examination, while in still another case a growth of cocci was secured when cultures were made of parts of the nodes.

Audrych,⁵ in 1914, reported two cases of herpes zoster which were due to furunculosis, both of the patients recovering as soon as the furuncles ceased to make their appearance.

In septicemia, Churchman⁶ observed the following changes: erythemas, papular eruptions, urticarial eruptions, hemorrhagic eruptions, bullous eruptions and herpetic eruptions.

Vershinin⁷ believed that a great many dermatoses might be due to gonorrheal infection, such as erythema exudativum, keratosis and parakeratosis. In my experience, cases of recurrent eczema were due to gastric and duodenal ulcers. A recurrent urticaria was associated with carcinoma of the pancreas and a case of generalized pruritus with malignant tumor of the uterus.

Many more cases of this kind could be quoted. It is deplorable that dermatologists have not been plodding enough to collect such cases in the past, but it is a good sign that there is more work being done along these lines at present.

1. Gosse: Erythema Nodosum, Practitioner, London, 1914, No. 2.

2. Rosenow, E. C.: Elective Localization of Streptococci, THE JOURNAL A. M. A., Nov. 13, 1915, p. 1687.

3. Galloway, J.: Cutaneous Affections in Rheumatic Conditions, Practitioner, London, 1912, lxxxviii, 67.

4. Gerber, O.: Ueber das Wesen den so-gennanten idiopathischen Erythem, Dermat. Ztschr., 1912, No. 9.

5. Audrych: Zona conjugal, Ann. de dermat. et de syph., 1914, No. 5.

6. Churchman: Urol. and Cutan. Rev., 1914, No. 1.

7. Vershinin: Dermatoses Due to Gonorrheal Infection, Russk. Jur. kozhn. i ven. boliezn., 1914, No. 5.

* Read before the Section on Dermatology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

The following cases have been collected for this paper owing to the fact that they were obscure as to etiology and resistant to treatment, and may therefore be of some interest to the general practitioner. In all of them the usual remedies recommended by the best authorities were tried, but with only slight or transient relief.

REPORTS OF CASES

CASE 1.—M. R., man, aged 23, with no history of syphilitic infection, had on his left cheek a tumor which looked very much like an epithelioma. Several surgeons examined him when I exhibited him before the Jefferson County Medical Society, and they agreed that it was malignant. Portions of the ulcer were removed and sent to two laboratories for examination. The reports from the two laboratories were essentially the same: proliferation of the epithelial layers and their invasion of the deeper structures. The destruction of tissue was too rapid, however, for me to be satisfied that true malignancy was present. Further and more thorough examination revealed an infected root canal and alveolar abscess of an upper molar. On extraction of this tooth a fistulous tract was revealed. Simple treatment of irrigations with mild antiseptics sufficed to heal the fistula, after which the ulcer healed rapidly, leaving only a small scar.

CASE 2.—B. O., woman, aged 23, garment operator, referred to me by Dr. Boggess, had a typical roseola eruption, sore throat, swollen glands and patches in the mouth; fever of from 102 to 103, and headaches. Syphilis was suspected. The patient denied any illicit intercourse, but was afraid that she might have syphilis insontium. The Wassermann reaction was negative. On closer examination I found ragged tonsils with crypts full of pus. The *Bacillus influenzae*, pneumococci and streptococci were found. Applications to the tonsils locally, with acetylsalicylic acid (aspirin) and hexamethylenamin internally, cleared up the symptoms. The patient was advised to have her tonsils removed, but she refused and has had several attacks since then.

CASE 3.—N., woman, aged 24, referred to me by Dr. A. Pfingst, had chronic attacks of urticaria of angioneurotic type. All the usual remedies failed to relieve her. After eliminating all other possible causes that might have been responsible for her condition, hypertrophied tonsils with infected crypts were found. After the removal of the tonsils by Dr. Pfingst, urticarial attacks became milder and eventually entirely disappeared.

CASE 4.—M. W. D., girl, aged 17 years, had acne which yielded to Roentgen therapy and mild lotions. A year afterward she developed a very obstinate case of urticaria which made her life miserable. No treatment of any kind was of any avail. The affection persisted for months. (During my vacation she consulted and received attention from other physicians without any benefit.) Noticing the peculiar way she swallowed her words when talking, I examined her throat and found abnormal tonsils. The latter were removed and improvement followed rapidly. No further attacks have been reported.

CASE 5.—Miss E. W., aged 18, had a very obstinate attack of urticaria, accompanied by angioneurotic edema. The usual remedies were employed externally and internally with little benefit. Examination of her throat revealed very badly hypertrophied tonsils. After the removal of the tonsils the dermatosis disappeared.

CASE 6.—Mrs. F. S., aged 21, referred to me by Dr. Ewing Marshall, was treated for a very obstinate case of urticaria, accompanied by angioneurotic edema. Ordinary remedies caused only slight improvement, and that mainly in the subjective symptoms. Recurrent attacks persisted. She was advised to consult Dr. Cheatham, who found hypertrophied pyogenic tonsils. Their removal was followed by a prompt disappearance of all the symptoms.

CASE 7.—H. B., girl, aged 11, was suffering from frequent attacks of scarlatiniform erythema accompanied by high fever. Ordinary remedies gave prompt relief, but since the attack recurred quite often and local throat remedies only temporarily relieved her condition, removal of the tonsils

was advised. After their removal she made a perfect recovery.

CASE 8.—Mrs. J. B., aged 60, suffered from recurrent attacks of labial and generalized eczema. Pruritus accompanying these attacks was unbearable. Repeated urinalysis showed no cause for them. A vesicovaginal fistula was discovered, and she was referred to the late Dr. W. Wathen. After this trouble had been corrected the attacks ceased entirely.

CASE 9.—Mrs. R., aged 34, consulted me for chronic recurrent eczema of the head and chest. We attributed the cause of her illness to faulty metabolism. Internal and external remedies only temporarily relieved the condition. Mild attacks suggesting a chronic appendicitis occurred several times. An operation was suggested by me. After the removal of the appendix by Dr. Haggard of Nashville, the skin reactions ceased to make their appearance.

CASE 10.—Miss N. C., aged 26, referred to me by Dr. Duvall of Ghent, Ky., developed a very severe case of erythema circinatum bullosum. The etiology was traced to streptococcal infection of the throat. When the throat received the proper attention, the erythema yielded to mild external applications.

COMMENT

These are only a few selected cases. Many more could have been cited. Not all systemic and skin derangements are due to focal infection; a great many obscure diseases may be traced to faulty internal secretions, which offer a great field for clearing up the etiology of obscure diseases; but, again, faulty internal secretions may be due to focal infection. It all teaches us to be on our guard and to make thorough examinations in doubtful cases. Let us be more careful, cautious, conservative and painstaking, and, above all, let us treat the skin not as a surface only, but as a cutaneous organ, as capable of infection from within as any other organ.

ABSTRACT OF DISCUSSION

DR. EVERETT S. LAIN, Oklahoma City: I am inclined to believe that focal infections may be as important a factor in the causation of some of the common skin eruptions as are food or protein anaphylaxis. Last year, in discussing lichen planus, I mentioned that I had been roentgenographing the teeth and examining the tonsils in all of my cases of lichen planus. In the publication of that discussion, in spite of the fact that I had corrected the proofs, the typesetter made me say that I had been treating these cases with the Roentgen ray. At any rate, I am making a search for apical abscesses and pyorrhea. My investigations along this line are not yet complete, for I wish to collect a sufficient number of cases to make the conclusions drawn therefrom worthy of consideration. However, I can say now that in a large percentage, perhaps 95 per cent., of cases of herpes zoster, we have found apical abscesses. In a large percentage of cases of lichen planus, about 85 per cent., we have also found similar pockets of pus or evidences of pyorrhea. In the majority of cases of herpes zoster the symptoms began to subside within a short period after the extraction of the infected teeth. We have known for a long time that tonsillar infections were closely allied to rheumatism and herpes zoster. Something more definite, perhaps, may develop from this work.

DR. RICHARD L. SUTTON, Kansas City, Mo.: I am convinced that in some instances certain skin disorders, as herpes zoster and erythema multiforme, are a result of the absorption of specific micro-organisms from foci in the tonsils or in root abscesses. Dr. Lain recently called my attention to the frequency with which alveolar abscesses are found in these cases, and I believe that in every instance a roentgenogram should be made of the patient's maxillae. Such a procedure requires only a few moments, is inexpensive, and may serve to throw much light on the point in question.

DR. WALTER J. HEIMANN, New York: Herpes zoster is an acute infectious disease producing immunity. Thus recurrences are practically never seen. If it were the result

of a persistent focus of infection in the gums, or at root apexes, it would be reasonable to expect repeated attacks, which is contrary to our experience.

DR. ERNEST L. McEWEN, Chicago: One of the cases of herpes zoster reported by Rosenow occurred in the dermatologic clinic at Rush Medical College. The man had a severe attack of herpes zoster involving the right side. On examination, the tonsils were found to contain pockets of pus, and from this pus an organism was grown which was inoculated into dogs in whom, I believe, the disease was reproduced and the organism again recovered.

DR. HOWARD MORROW, San Francisco: During the past year we have seen a number of cases with localized areas of inflammation on the tongue, and indistinguishable from syphilitic glossitis. The patients were given antisymphilitic treatment without avail. On further examination, alveolar abscesses were found, and after the removal of the involved teeth the glossitis disappeared.

DR. MICHAEL LEO RAVITCH, Louisville: Dr. Lain said that in over 80 per cent. of cases of lichen planus investigators found evidences of a source of focal infection. That has not been my experience, and my few cases could not be traced to focal infection, no matter how hard we tried. I do not think that lichen planus can be traced to a focal infection, nor do I believe that many cases of dermatoses are due to infection from the mouth or nose. There are many other possible sources of infection in the body.

THE DIET OF CHILDREN AFTER
INFANCY *

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BALTIMORE

During the last quarter of a century more careful study has been given to infant feeding than to any other subject in pediatrics. Nearly every clinician has his favorite method, which he is willing, even anxious, to defend on all occasions. The infant, too, has been made the subject of a considerable number of complete metabolism experiments, in which his total heat loss has been calculated and the amount and composition of the food necessary to supply this loss and to furnish material for the rapid growth of his body have been estimated. These determinations of the data necessary for the infant's life and growth have confirmed the clinical experience of many years, namely, that while there are often marked individual differences in their need for food, sufficient nourishment can be supplied in an almost infinite number of food combinations, and that infants have a remarkable and very fortunate capacity to assimilate mixtures which are far removed in composition from their normal diet. While all this is true, it has been shown frequently that few babies can be made to gain who do not receive nourishment having a calorific value of more than 70 calories per kilogram, that is, 32 calories per pound; that the average infant will thrive best on a diet approximately 100 calories per kilogram, 45 calories per pound, and that a certain number of infants require considerably more than this last amount in order to thrive.

This knowledge of the infant's dietetic needs and even an approximate adjustment of his food to him under various conditions of temperature and environment, together with a much greater attention to the cleanliness of his milk mixtures, have been potent factors in the reduction of infant mortality among bottle

fed babies in recent years. When one considers these facts, which are generally recognized in respect to the infant, it is somewhat remarkable that comparatively little attention has been given to the diet of children who have recently passed their infancy. It is true, of course, that the diet of older children becomes increasingly complex and diversified, as they advance in age, and also true that the need for a specially restricted diet is less imperative for runabouts than for infants.

It does seem advisable, however, that when one is attempting to feed young and growing children, a diet should be provided in which the number of heat units in proportion to the weight of the child should be known, as well as the ratio of the protein content to that of the fat and carbohydrates. A young child's diet need not be radically altered from day to day. By a suitable interchange of cereal and fresh vegetables, meats and simple desserts, having about the same food values, sufficient variety is afforded. There have been no careful recent studies on the metabolism of growing children. Writers today still rely on the painstaking researches of Camerer¹ on his own children, conducted more than twenty years ago, for their fundamental data.

TABLE 1.—FOOD REQUIREMENT FOR CHILDREN PER KILOGRAM OF BODY WEIGHT

Age, Years	Sex	Protein, Gm.	Fat, Gm.	Carbohy- drate, Gm.	Calories
2 to 4.....	Each	3.6	3.1	9.2	75
5 to 7.....	Girls	3	1.9	10.7	69
	Boys	3.5	2.5	10.9	76.6
7 to 10.....	Girls	2.7	1.3	9.9	39.2
	Boys	2.8	1.3	10.4	61.6

Camerer estimated the food needed for children of various age periods per kilogram of body weight to be about as shown in Table 1. Similar investigations on young children made by Hassa, Herbst, Steffin and Uffelman have been tabulated by Locke.² These tables bring out several important facts, which must be borne in mind the successful feeding of children.

First, the actual amount of food required by growing children increases gradually to maturity.

Second, the relative quantity of food in proportion to the body weight decreases almost as regularly from infancy to maturity; that is to say, the amount of food and the number of heat units per kilogram or pound is greater the younger the child. The calorific value of the food required per unit of body weight at vari-

TABLE 2.—FOOD REQUIREMENT DETERMINED BY SEVERAL AUTHORS, COMBINED BY LOCKE

Age, Years	Calories per Kg.	Calories per Lb.
2.....	94	42
4.....	82	37
8.....	67	30

ous ages can be estimated only roughly. Locke combines the values determined by several authors as shown in Table 2. This he thinks may be a safe general standard. It is freely granted that many children will thrive on a diet of lower calorific value and occasionally one will need more food to insure gain. It is of distinct help, however, to bear in mind the average dietary needs, so that a wide departure from this mean

* Read before the Section on Diseases of Children at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Camerer: *Der Stoffwechsel des Kinder*, Tübingen, 1894.
2. Locke: *Boston Med. and Surg. Jour.*, 1912, clxix, 702.

will be made only for definite indications. The lack of sign posts of this kind in the textbooks on pediatrics is too evident. In some, certain amounts of various foods are prescribed for children of given ages under two years, while in many of them no idea of the proper amount of cereal, meat or green vegetable suggested is intimated.

A case which illustrates the injury from unwitting overfeeding is the following:

A girl of 5 years was brought to the office from a neighboring city because she would not gain. She had a long febrile illness with chronic otitis media two years before and remained in a hospital for two months. She was discharged in fair condition and continued well for some months, when she went through a severe attack of ileocolitis. Following this she gained slowly. The mother became anxious. She had a carefully arranged diet list and the food was prepared with the greatest care by a trained attendant. Because of her failure to gain, the amount of food was steadily increased despite the occurrence of occasional attacks of acute indigestion. The stools were unusually large.

When seen, the child had not gained for several months, was pale, her eyes were slightly sunken and she was much under weight. The diet was investigated and found to be well balanced, but to yield about 2,500 calories or more than 150 calories per kilogram. When this was reduced by about one half the patient became much more sprightly and vigorous and began to make slow gain. The amount of fecal material was greatly reduced.

This case, I believe, is not exceptional and illustrates a danger which could be readily avoided if the calorific limits of the child's dietary requirements, above and below which it was not advisable to go, had been ever so roughly determined, as would have been done had she been an infant.

In regard to the proportion of proteins, fats and carbohydrates needed in a child's diet in relation to age and weight, it is impossible to speak very definitely. Protein is essential to repair waste, but when sufficient fats and carbohydrates are present to supply heat and energy the amount of protein needed is comparatively small.

From the investigation already referred to it is recommended that not more than 4 gm. of protein per kilogram be given in early childhood and about one half of that amount after 8 years. Usually about 50 per cent. of the protein of a child's diet should be of animal origin; in later life an increasing proportion is furnished from the vegetable kingdom. As is well known, the fats and the carbohydrates are to a certain extent interchangeable in an average diet. The fats have double the heat-producing power of either proteins or carbohydrates and can be increased when there is need of raising the caloric value of a diet without adding to its bulk.

In Camerer's cases, the child at 2 years was given 4 gm. of fat per kilogram and but 2 grams at 10 years. A similar gradual reduction has been recommended by other investigators, and confirmed by long clinical experience.

The carbohydrates are likewise subject to marked variations in a child's diet. There is a great increase in the total amount of carbohydrate ingested as the child grows older, and there is a slight reduction in the carbohydrate intake per unit of body weight. Too little carbohydrate leads to acidosis. Locke puts the minimum requirement in childhood as 50 to 80 gm. per day. The usual quantity given is considerably

more, perhaps 150 gm. or 10 gm. per kilogram of body weight.

Taking the average values from a large number of investigations, Summerfield³ has tabulated the variations of proteins, fats and carbohydrates, at several age periods as shown in Table 3. If one calculates the caloric values of the diet thus summarized, they can be shown not to vary greatly. The marked difference in the figures are readily explained, as the fat and carbohydrates are largely interchangeable, and this is true in a measure of the protein also. In other words, the food requirements of the body can be met by a great variety of combinations and the physician has a large latitude in his effort to adapt the child's diet to its digestive capacity and at the same time provide for the necessary heat, energy and growth.

The quantity of water, fluid, given a young child varies within large limits with its exercise, the temperature, the moisture of the atmospheric air, and the character of the food. A liter or quart should be the minimum fluid intake at 2 years, according to Camerer, and this amount is increased to about three pints for a child of 7 years.

The metabolism of the mineral salts has been much studied recently. Salts are essential to the well-being of the growing child, but are furnished in abundance in a diet containing the average quantities of cereals, green vegetables, milk and fruits. A small amount of table salt should be added to cereals and vegetables to

TABLE 3.—FOOD REQUIREMENT AVERAGED FROM MANY INVESTIGATORS, TABULATED BY SUMMERFIELD

Age, Years	Protein, Gm.	Fat, Gm.	Carbohydrates, Gm.
From 2 to 4.....	40 to 64	32 to 62	110 to 205
From 5 to 7.....	50 to 58	30 to 62	145 to 197
From 8 to 10.....	60 to 88	30 to 70	220 to 250

make them more palatable. In a well-assorted diet in health they need not be calculated. With these fundamental needs of the child in mind, the physician should add to the exclusive milk diet of early infancy in such a manner as to provide a balanced ration and one readily digested.

The first addition other than sugar is some form of cereal. Cereal gruels, when properly prepared, can be digested in early infancy. A cereal water may be used as a diluent instead of water. After the age of 6 months cereal gruel should be given the baby once or twice a day. At 10 or 12 months broth or beef juice can be given in increasing quantities up to 2 or 3 ounces. It is often well to add to the broth well-cooked rice, stale bread or plain cracker. If there is a tendency to constipation, the pulp of baked apple, apple sauce or prune pulp, one to three tablespoonfuls, can be given to a child about 1 year of age. From this time onward to the second year the diet can gradually be extended by the addition of an occasional coddled egg and later of some scraped lean beef. Baked potato or macaroni can be substituted for rice. Dry toast, stale bread or cracker with a small quantity of butter are helpful during teething.

At from 10 to 18 months one of a number of green vegetables, thoroughly cooked and strained, may be given in small quantities, one or two tablespoonfuls, with the midday meal. At this time a simple dessert, junket, custard, tapioca, etc., can be added. By these

3. Summerfield, in Pfaundler and Schlossmann: The Diseases of Children, Am. Edit., Philadelphia, J. B. Lippincott Co., i, 424.

simple procedures the child's diet is gradually amplified, in accordance with the underlying principles already referred to. Perhaps the most frequent mistake that is made in feeding babies between 1 and 2 years of age is the tendency to continue with large quantities of milk, at the expense of a more varied diet. Milk contains little or no iron, and by this time the child has used up that surplus stored in his organs and unless more is furnished it becomes pale and ceases to thrive. Another frequent difficulty results from the too frequent feeding of children after their first year. Five feedings, including milk, often reduced to four in twenty-four hours, if properly spaced, will give the child all the food he needs and this will be taken with much more zest than if the feedings are more frequent. As has already been emphasized, one realizes fully that children can be made to thrive on widely differing diets and certainly one would hesitate even to suggest that any particular diet list is to be preferred.

It has seemed helpful, however, to have at hand a diet list for several age periods, in which the caloric values and the protein, fat and carbohydrate contents

the amounts of all the food elements, which are still well within the average limits. It is to be noted also that a larger proportion of the protein is derived from the vegetable kingdom.

It is believed that with information of this kind before him, the physician may find it easier to sub-

TABLE 5.—DIET LIST SUITABLE FOR CHILD OF FROM 2 TO 4 YEARS OF AGE

Hour	Food	Amount		Protein, Gm.	Fat, Gm.	Carbohydrate, Gm.	Calories, Gm.
		Ounces	Grams				
Breakfast	Cereal.....	3	100	2.8	0.5	11.5	60
	Egg, boiled.....	1.4	50	6.6	6.0	...	80
	Bread, 1 slice.....	1	30	4.0	0.5	20.0	100
	Butter.....	1/4	8	...	7.0	...	60
	Milk.....	6	180	6.0	7.0	8.0	120
							420
Dinner	Meat.....	1	30	7.0	3.0	...	60
	Potato.....	2	60	2.0	...	16.0	75
	Green veg. (spinach).....	2	60	1.5	2.5	2.0	35
	Bread, 1 slice.....	1	30	3.5	0.6	20.0	100
	Butter.....	1/4	8	...	7.0	...	60
	Dessert (custard).....	1	30	2.0	3.0	6.0	60
							350
Supper	Cereal.....	3	100	2.8	0.5	11.5	60
	Milk.....	6	180	6.0	7.0	8.0	120
	Crackers.....	...	30	0.4	0.4	3.0	20
	Fruit (apple, baked).....	2	60	...	...	15.0	60
							260
Approximate total..		..	...	45	45	121	1,070

TABLE 4.—DIET LIST SUITABLE FOR CHILD OF 12 TO 18 MONTHS

Hour	Food	Amount		Protein, Gm.	Fat, Gm.	Carbohydrate, Gm.	Calories, Gm.
		Ounces	Grams				
6:30	Cereal, strained.....	2 to 3	90	1.5	0.2	10.0	50
	Milk.....	8	250	8.0	9.0	11.0	165
							215
10:30	Milk.....	8	250	8.0	9.0	11.0	165
	Zwieback, 1 piece.....	..	...	1.4	1.4	11.0	65
							230
1:30	Broth, chicken.....	3	90	2.5	...	...	10
	Rice or macaroni.....	2	50	1.4	...	12.0	60
	Bread, small slice.....	..	...	2.5	0.5	15.0	75
	Milk.....	4	125	4.0	4.5	5.5	83
							228
5:30	Cereal.....	2 to 3	90	1.5	0.2	10.0	50
	Milk.....	8	250	8.0	9.0	11.0	165
	Appleauce, 1 1/2 table spoonfuls.....	..	40	...	0.25	16.0	70
							285
Approximate total..		..	..	38.8	35.05	112.5	958

are determined. With a sheet of this kind before us, we can easily substitute similar foods for those on the list and still keep well within the limit of a child's tolerance. A simple list suitable for a child of 12 to 18 months, weighing 24 pounds, 11 kilograms, is given in Table 4.

This list affords about 90 calories per kilogram of body weight, or 41 to the pound. About 30 gm. of the protein is derived from animal food and 8 gm. from vegetable food. This provides about 1,000 calories. In it, too, the total quantities of protein, fat and carbohydrate are all well within the limits thought to be desirable. It is noted that a small portion of the total protein is furnished from the vegetable kingdom. A diet list for an older child, say between 2 and 4 years of age, weighing 13 kilograms, approximately 30 pounds, could be as given in Table 5.

This list provides about 80 calories per kilogram of body weight, or 38 per pound, and supplies 26 gm. of animal protein and 19 gm. of vegetable origin. It is to be noted that the caloric value of the diet is about the same as that suggested for a younger child, that there is considerably more variety, that the proportion of milk is reduced and that but three feedings are given in twenty-four hours. There is a slight advance in

stitute similar foods for those specified in the table and at the same time give an equally satisfactory diet. In the preparation of food so much is of necessity inaccurate that it is entirely useless to attempt to do more than give approximate values for the quantities of food used. On this account a simple list showing roughly the caloric values of the various foods commonly given to young children will furnish results sufficiently accurate in ordinary practice. Such a table has been suggested by C. H. Smith.⁴ The amounts are calculated to a level tablespoonful, approximately half an ounce, which seems to be the most convenient measure to use in the household, as given in Table 6. With the use of this list the heat units in any ordinary diet can be determined readily.

Table 7 gives a diet on which a boy of 9 years, weighing 66 pounds, 30 kilograms, thrived. This diet

TABLE 6.—CALORIFIC VALUE OF SOME COMMON FOODS

One Level Tablespoonful, About 1/2 Ounce	Calories
Cane sugar.....	60
Cream (16 per cent.).....	50
Butter.....	115
Fruit pulp.....	10
Baked apple.....	15
Cereals.....	10
Mashed vegetables.....	15
Clear soup.....	5
Puree of vegetable.....	15
Meat of fish.....	25
Milk.....	10
Cocoa.....	15
One cracker.....	30
One thick slice of bread.....	75
One piece of toast, thin.....	25
One egg.....	75
Custard, soft.....	20

provided 1,970 calories, about 65 per kilogram, or 30 per pound. In it there is increasingly larger proportions of vegetable protein than in the list for younger children. It is of course understood that there will be considerable daily variations in the nutritive and caloric values of a given diet, depending on what

4. Smith, C. H., quoted by Wachenheim: Infant Feeding, Philadelphia, Lea & Febiger, 1915, p. 316.

particular cereal is used, what meat or what variety of green vegetables, etc. Extreme accuracy has no practical advantage, and if the diet, especially for older children, is varied from day to day, the weekly average will be fairly constant. It is advisable for the physician to have a list of a number of suitable cereals, green and white vegetables, simple desserts and fruits, any one of which can be substituted for another of the same group. There is sometimes an advantage in preparing three or four daily diets, which can be used in succession, rather than to leave the selection entirely to mother or nurse. One delicate child we saw recently did not gain, although careful general directions as to diet had been given, until three varied diet lists, each having about the same number of heat units, were furnished.

It was the object of this paper simply to call attention to such meager data as we have at our disposal concerning the average food requirements of young and growing children, to outline such diets as would

TABLE 7.—DIET ON WHICH A BOY OF 9 YEARS, WEIGHING 66 POUNDS, THRIVED

		Calories
Breakfast.....	Toast, 3 pieces.....	75
	Butter, ½ ounce*.....	60
	Cereal, 3 ounces.....	75
	Egg, 1 ounce.....	75
	Sugar, ¼ ounce.....	30
	Cocoa, 7 ounces.....	200
		— 560
Dinner.....	Broth, 6 ounces.....	60
	Meat, 2 ounces.....	100
	Green vegetables, 3 ounces.....	90
	Potato, 3 ounces.....	90
	Rice, 3 ounces.....	90
	Bread, 2 slices.....	150
	Butter, ½ ounce.....	120
	Dessert (custard), 4 ounces.....	160
		— 860
Supper.....	Toast, 3 slices.....	75
	Egg, one.....	75
	Butter, ½ ounce.....	115
	Milk, 8 ounces.....	160
	Baked apple, 3 ounces.....	90
		— 515

* One level teaspoonful equals one-half ounce.

satisfy these requirements, and to suggest further that it is a simple matter to calculate in a general way the calorific value of a given diet so that at least a child's need may be satisfied and on the other hand that he may escape continuous overfeeding. It is understood, of course, that there are great individual differences in the digestive capacity of young children, and that some children will grow on a diet much lower than the average.

The method outlined enables the physician to check the food of growing children in some such manner as he would do that of an infant, and is a valuable aid in careful feeding at a most important age period in life. Much depends on the quality of the food and on its cooking. The physician must be prepared to give specific directions as to the preparation of the child's food. The alteration of the diet required in various diseased conditions, it is not the intention of this paper to discuss. Certain ailments, such as scurvy, rickets, the various diatheses, indigestion, constipation, diarrhea and anemia may be due entirely to ill-adapted diets and can be cured when these are corrected. In such cases this can be accomplished without seriously lowering the calorific value if the physician knows how to make the proper substitutions. By this natural method a considerable proportion of drugs now freely dispensed can be omitted. It has been pertinently

asked by Professor Mendel why physicians take so much care in measuring their doses of drugs, which are administered only occasionally, and so little care in measuring their food prescriptions, which are to be followed daily.

211 Wendover Road.

Therapeutics

BLOOD PRESSURE

(Continued from page 359)

BLOOD PRESSURE AND PREGNANCY

Evans²⁵ of Montreal studied thirty-eight pregnant women who had eclampsia, albuminuria and toxic vomiting, and found the systolic pressures to vary from 200 to 140 mm. He did not find that the highest pressures necessarily showed the greatest insufficiency of the kidneys, but that the blood pressure must be considered in conjunction with other toxic symptoms. In thirty-two cases he was compelled to induce labor when the blood pressure was 150 mm. or under, while in four cases with a blood pressure over 150 mm., the toxic symptoms were so slight that the patients were allowed to go to term and had natural deliveries.

A rising blood pressure in pregnancy, when associated with other toxic symptoms, is indicative of danger, and Evans believes that a systolic pressure of 160 mm. is ordinarily the danger limit.

Newell²⁶ has studied the blood pressure during normal pregnancy, and finds that when the systolic pressure is persistently below 100, the patient is far below par, and that the condition should be improved in order for her to withstand the strain of parturition. When the systolic pressure is above 130, the patient should be carefully watched, and he thinks that 150 is the danger line. Some pregnant women have an increasing rise in blood pressure throughout the pregnancy, without albuminuria. In other cases this rise is followed by the appearance of albumin in the urine. Thirty-nine of the patients studied by Newell had albumin in the urine without increase in blood pressure; hence he believes that a slight amount of albumin may not be accompanied by other symptoms. Five patients had a blood pressure of 140 or over throughout their pregnancy, and in only one of these patients was albumin found. All passed through labor normally, showing that a blood pressure below 150 may not necessarily be indicative of a serious condition; but a patient who has a systolic pressure over 135 must certainly be carefully watched. A fact brought out by Newell's investigations is very important, namely, that a continuously increased blood pressure is not as indicative of trouble as when a blood pressure has been low and later suddenly rises.

Hirst²⁷ also urges that a high blood pressure in pregnancy does not necessarily represent a toxemia, and also that a serious toxemia can occur with a blood pressure of 130 or lower, although such instances are rare. Hirst believes that when a toxemia is in evidence in pregnancy while the blood pressure is low, the cause of the toxemia is liver disturbance rather than kidney disturbance, and he thinks this form of toxemia is more serious and has a higher mortality than the nephritic type. Therefore in a patient with eclamptic symptoms

25. Evans: Month. Cyc. and Med. Bull., November, 1912, p. 649.

26. Newell, F. S.: The Blood Pressure During Pregnancy, THE JOURNAL A. M. A., Jan. 30, 1915, p. 393.

27. Hirst: Pennsylvania Med. Jour., May, 1915, p. 615.

and a low blood pressure, the prognosis is more unfavorable than when the blood pressure is high. He believes that if high blood pressure occurs early in the months of pregnancy, there is preexisting, although perhaps latent, nephritis. In these conditions the diastolic pressure is also likely to be high.

With the patient eclamptic and stupid, whatever the date of the pregnancy, Hirst would do venesection immediately in amount from 16 to 24 ounces, depending on what amount seems advisable. If venesection is done before actual convulsions have occurred, the blood pressure falls temporarily but rapidly rises again. He finds that if a patient is past the eighth month, rupture of the membranes will usually bring a rapid fall of from 50 to 90 points in systolic pressure. Usually, of course, such rupture of the membranes will induce labor. He finds that the fluidextract of veratrum viride is valuable when eclampsia is in evidence or imminent. He gives it hypodermically, 15 minims at the first dose and 5 minims subsequently, until the systolic pressure is reduced to 140 or less. He admits that this is rather strenuous treatment. He does not speak of treatment by thyroid extracts, which has been regarded as valuable by some other workers.

In these patients who show eclamptic symptoms, he maintains a milk diet, and purging and sweating. It should be remembered that venesection or profuse bleeding during induced parturition is more valuable than sweating in all eclamptic cases and in all nephritic convulsions. Profuse sweating does little more than take the water out of the blood, and even concentrates the poisons in the blood.

Hirst causes purging by 2 ounces of castor oil and a few minims of croton oil. He also advises large doses of magnesium sulphate. In such serious disturbances as eclampsia, it is not necessary to give a magnesium salt, which, it has been shown, can have unpleasant action on the nervous system. Sodium sulphate is as valuable and is not open to this danger.

Hirst urges that whatever the blood pressure, with albuminuria, as soon as persistent headache occurs, and especially if there are disturbances of vision, the pregnancy must be terminated at once. On this there can be no other opinion. Temporizing with such a case is inexcusable.

After labor has been induced there is an immediate fall of blood pressure, which lasts some hours. The pressure will again rise, and usually is the last sign of toxemia to disappear, and he finds that this increased pressure may last from two to three weeks when there is not much nephritis, and several months when there is nephritis.

Although he says he has found no bad action from ergot, either by the mouth or hypodermically in these eclamptic cases, it would seem inadvisable to use ergot, which may raise the blood pressure. He finds that pituitary extract "can cause dangerous rise of blood pressure."

Pellissier²⁸ believes that when there is prolonged vomiting in early pregnancy, with an increase in systolic blood pressure, and with an increased viscosity of the blood, the outlook is serious, and active treatment should be inaugurated.

Irving²⁹ reports, after a study of 5,000 pregnant women, that in 80 per cent. the systolic blood pressure

varied from 100 to 130; in 9 per cent. it was below 100, at least at times, but a pressure below 90 does not mean that the woman will suffer shock; in 11 per cent. the pressure was above 130, and high pressure in young pregnant women more frequently indicates toxemia than when it occurs in older women; high pressure is more indicative of toxemia than is albuminuria; a progressively increasing blood pressure is of bad omen, and most cases of eclampsia occur with a pressure of 160 or more, but eclampsia may occur with a moderate blood pressure. Irving believes that with proper preliminary preventive treatment most eclampsia is preventable.

(To be continued)

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

FIBRIN FERMENT AND THROMBOPLASTIC SUBSTANCES (KEPHALIN)

The clotting of blood (that is, the transformation of the fibrinogen of circulating blood into the insoluble fibrin of blood-clot) has been shown to be due to the action of the fibrin ferment (thrombin) on the fibrinogen of the blood. The fibrin ferment or thrombin exists in the blood in the form of its forerunner (prothrombin) which is acted on by the calcium salts and converted into thrombin. Besides calcium salts, however, another factor is necessary. In spite of a sufficient supply of calcium salts, blood does not clot spontaneously within the vessels. This other factor may be furnished from the breaking down of blood cells or blood platelets or from the pieces of tissues that are cut or badly injured. It has been designated as "zymoplastic" substance by Schmidt, as "thrombokinase" by Morowitz, and as "thromboplastic substance" or "thromboplastin" by Howell (*Am. Jour. Physiol.*, 1912, xxxi, 1). Howell believes that the reason that blood does not coagulate within the vessels is that the prothrombin exists there in combination with an antithrombin, which prevents it from acting. He believes that when blood is shed or flows over injured tissue the thromboplastin derived from blood cells, blood platelets or tissue cells combines with this antithrombin, liberating the prothrombin from combination with the latter. The prothrombin thus liberated now combines with the calcium salts, is converted into thrombin and converts the fibrinogen of the plasma into fibrin, causing coagulation to set in. Howell has shown that thromboplastin or "thromboplastic substance" from every source in which he has investigated it gives the reactions of the lipoid kephalin—the main lipoid of the brain. It is soluble in ether, but insoluble in water, alcohol and acetone, and kephalin prepared from the brain possesses the same action.

Actions and Uses.—Preparations containing thromboplastin are said to be useful when applied locally in the treatment of hemorrhages, especially hemorrhages from oozing surfaces, scar tissues and nosebleeds, and in surgery of the bones, glands, nose and throat. When injected subcutaneously or intravenously such preparations are said to

28. Pellissier: *Archiv. mens. d'obst. et de gynec.*, Paris, 1915, iv, No. 5.

29. Irving, F. C.: *The Systolic Blood Pressure in Pregnancy*, THE JOURNAL A. M. A., March 25, 1916, p. 935.

shorten the coagulation time of the blood for a period of about twenty-four hours, but there may be a certain danger of a negative phase setting in. Such injections are contraindicated in cases in which there is a tendency to thrombosis or embolism; for example, in arteriosclerosis, aneurysm, heart weakness, phlebitis, certain stages of syphilis, and in varicose veins. Injections of kephalin seem to have little effect in hemophilia (Hurwitz and Lucas: *Arch. Int. Med.*, 1916, xvii, 543). Preparations should be standardized by testing on specimens of blood in vitro, which should be able to bring the coagulation time to about one third of its original length; they should be proven sterile, particularly if intended for intravenous use.

BRAIN LIPOID.—Impure Kephalin.—An ether extract of the brain of the ox, or other mammal, prepared according to the method of Howell as applied in practice by Hirschfelder (*Lancet*, 1915, ii, 542) (see below).

Actions and Uses.—See general article, fibrin ferments and thromboplastic substances (kephalin).

Dosage.—Brain lipoid may be smeared on gauze sponges, pledgets, or on the tissues themselves; or an emulsion in sodium chloride may be prepared by shaking up with physiologic saline solution and used in the same way or sponged over the tissues.

For use in an office or dispensary, the ether extract suffices and can be kept ready for use for some time (several weeks) in a sterile dropper bottle from which an opalescent emulsion in salt solution can be prepared at a moment's notice by dropping 10 to 30 drops into an ounce of physiological saline solution and then shaking up. This solution can also be dispensed from drug stores, provided the opening in the stopper of the dropper bottle is kept slightly open to prevent blowing off of the ether on shaking or heating.

Brain lipoid (impure kephalin) is prepared from ox brain which is run through a hashing machine, then covered with three volumes of alcohol, shaken up two or three times, and the excess of alcohol then poured off and squeezed out gently through linen, care being taken to avoid great force in wringing out the alcohol, as this tends to break up the brain tissue into very finely divided particles which pass through the filter. The residue is then covered with three volumes of ether, shaken vigorously and filtered first through cotton and then through filter paper. The clear filtrate thus obtained is evaporated to dryness over a water bath and a yellow residue of fatty appearance and consistency remains. (This residue consists largely of kephalin, but though the latter is not in the pure state, it is extremely active in accelerating the clotting of blood in vitro).

The method of preparation renders it sterile. It can be transferred on a sterile spatula or knife blade to sterile vessels. It retains its activity for several weeks.

(The impurities present, largely the lecithins and myelins, do not materially detract from the activity of the kephalin, but, on the contrary, facilitate its emulsification in saline solution and thus facilitate its intimate miscibility with blood.)

SOLUTION BRAIN EXTRACT.—Solution Thromboplastic-Hess.—An extract of ox brain in physiological salt solution prepared by the method of Hess (*THE JOURNAL A. M. A.*, xvi, 558, Note 2).

Actions and Uses.—See general article, fibrin ferment and thromboplastic substances (kephalin).

Dosage.—The solution may be applied directly to the bleeding tissues or sprayed on them, or a sponge or tampon may be immersed in it and then pressed on the bleeding surface.

Ox brains are obtained fresh from the slaughter-house, stripped of their membranes, washed in running water and weighed. They are then passed through a meat chopping machine three times, and an equal amount of normal salt solution is added. This suspension is allowed to remain in the refrigerator for forty-eight hours, and it is then twice pressed through cheese-cloth. This extract, which contains fine suspension of tissue in addition to tissue juice, is diluted with one half its quantity of salt solution. Cresol is then added in proper proportion so that the finished preparation contains 0.3 per cent. It maintains its hemostatic potency for some time (several weeks). (Since cresol is not a perfect antiseptic the sterility of this preparation cannot be guaranteed.)

GALACTENZYME TABLETS.—Tablets *Bacillus Bulgaricus*-Abbott.—Tablets containing a practically pure culture of *Bacillus bulgaricus* (Type A).

Actions and Uses.—Galactenzyme tablets are designed for internal administration in the treatment of intestinal fermentative diseases by the Bulgarian bacilli, with the design of obtaining the growth in sufficient number of the bacilli in the alimentary tract, so as to secure their characteristic action against putrefactive fermentation by the production of lactic acid.

Dosage.—One, two, or three tablets three times a day with meals. The diet should be regulated to meet the condition which may be present.

Galactenzyme tablets are marketed in bottles, each containing 100 tablets. The tablets must be kept in a cold place and are not guaranteed beyond the date stamped on the label.

Manufactured by the Abbott Laboratories, Chicago. No U. S. patent or trademark.

Cultures of a pure and virile strain of *Bacillus bulgaricus* (Type A) are grown on sterilized milk. This milk culture of the organism is mixed with purified milk sugar. The mixture is dried in a stream of sterile, filtered air, at low temperature, and the dried product compressed into tablets under aseptic conditions.

GALACTENZYME BOUILLON.—Suspension of *Bacillus Bulgaricus*-Abbott.—A pure culture in vials of *Bacillus bulgaricus* (Type A), each vial containing about 6 Cc.

Actions and Uses.—Galactenzyme bouillon is designed for internal administration in the treatment of intestinal fermentative diseases with the design of obtaining the growth in sufficient number of the bacilli in the alimentary tract so as to secure their characteristic action against putrefactive fermentation. It is also used for topical applications in nasal, aural, throat, urethral and other affections when the use of such a culture is indicated.

Dosage.—The contents of one vial in a little sweetened water or milk, once or twice daily, preferably on an empty stomach. A small quantity of carbohydrate food should be included in the dietary.

Galactenzyme bouillon is supplied in packages of twelve vials. It must be kept in a cold place, and is not guaranteed beyond the date stamped on the label.

Manufactured by the Abbott Laboratories, Chicago. No U. S. patent or trademark.

Cultures of a pure and virile strain of *Bacillus bulgaricus* (Type A) are grown in a specially prepared bouillon.

MERCURIC SALICYLATE (see N. N. R., 1916, p. 195).—The following dosage form has been accepted:

Ampuls Mercuric Salicylate-Squibb, 0.065 Gm.—Each ampule contains mercuric salicylate 0.065 Gm. (1 grain) in 1 Cc. of sterile suspension. Prepared by E. R. Squibb & Sons, New York.

QUININE DIHYDROCHLORIDE (see N. N. R., 1916, p. 260).—The following dosage forms have been accepted:

Ampoules Quinine Dihydrochloride-Squibb, 1 Gm.—Each ampule contains quinine dihydrochloride 1 Gm. (15½ grains) in 2 Cc. of sterile solution. Prepared by E. R. Squibb & Sons, New York.

Ampoules Quinine Dihydrochloride-Squibb, 0.5 Gm.—Each ampule contains quinine dihydrochloride 0.5 Gm. (7½ grains) in 2 Cc. of sterile solution. Prepared by E. R. Squibb & Sons, New York.

Ampoules Quinine Dihydrochloride-Squibb, 0.25 Gm.—Each ampule contains quinine dihydrochloride 0.25 Gm. (3¾ grains) in 2 Cc. of sterile solution. Prepared by E. R. Squibb & Sons, New York.

QUININE AND UREA HYDROCHLORIDE (see N. N. R., 1916, p. 262).—The following dosage forms have been accepted:

Ampoules Quinine and Urea Hydrochloride-Squibb, 1 Gm.—Each ampule contains quinine and urea hydrochloride 1 Gm. (15½ grains) in 2 Cc. of sterile solution. Prepared by E. R. Squibb & Sons, New York.

Ampoules Quinine and Urea Hydrochloride-Squibb, 0.5 Gm.—Each ampule contains quinine and urea hydrochloride 0.5 Gm. (7½ grains) in 2 Cc. of sterile solution. Prepared by E. R. Squibb & Sons, New York.

Ampoules Quinine and Urea Hydrochloride-Squibb, 0.25 Gm.—Each ampule contains quinine and urea hydrochloride 0.25 Gm. (3¾ grains) in 2 Cc. of sterile solution. Prepared by E. R. Squibb & Sons, New York.

Ampoules Quinine and Urea Hydrochloride-Squibb, 1 per cent.—Each ampule contains 5 Cc. of a sterile 1 per cent. solution of quinine and urea hydrochloride. Prepared by E. R. Squibb & Sons, New York.

SODIUM CACODYLATE (see N. N. R., 1916, p. 49).—The following dosage forms have been accepted:

Ampoules Sodium Cacodylate-Squibb, 0.13 Gm.—Each ampule contains sodium cacodylate 0.13 Gm. (2 grains) in 1 Cc. of sterile solution. Prepared by E. R. Squibb & Sons, New York.

Ampoules Sodium Cacodylate-Squibb, 0.05 Gm.—Each ampule contains sodium cacodylate 0.05 Gm. (¾ grain) in 1 Cc. of sterile solution. Prepared by E. R. Squibb & Sons, New York.

Requisites of Conversation.—In conversation, humor is more than wit, easiness more than knowledge; few desire to learn, or to think they need it; all desire to be pleased, or, if not, to be easy.—Sir William Temple.

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SATURDAY, AUGUST 5, 1916

THE PROTECTION OF MICRO-ORGANISMS

"If ever there was a romantic chapter in pathology, it has surely been that of the story of phagocytosis." So said the late Lord Lister in his presidential address to the British Association in 1896, and so we, with equal fervor, say today when many more pages of the story have been turned over.¹ The term "phagocyte" was coined to designate the ameboid cells capable of seizing and digesting micro-organisms, red blood corpuscles and other formed structures. The property of phagocytosis is an attribute of a considerable number of different varieties of cells besides the more familiar representatives present in the circulating blood and tissue fluids. Zinsser² states that among the fixed cells of the body it is probable that phagocytosis may be carried on by cells of many different origins, though the identification of cells in tissues is often a purely morphologic problem, and therefore fraught with many possibilities of error. Probably the most active fixed tissue cells are the endothelial cells of the blood vessels and those which line the serous cavities and the sinuses of the lymph nodes and of the spleen. In addition to these, however, there are many other cells which may be phagocytic. Zinsser and Carey have observed the active phagocytosis of leprosy bacilli by cells, probably of connective tissue origin, growing from plants of rat spleen in plasma. Phagocytosis by the cells lining the alveoli of the lungs has been observed by Briscoe. This author made the interesting observation that in cases of mild infection such cells can free the lungs of micro-organisms entirely without aid from the leukocytes of the circulating blood. It is these cells, too, which, in the ordinary conditions of life, take up the inhaled particles of dust and are often spoken of, therefore, as dust cells. These flattened cells are probably of epithelial origin, and as such are probably the only epithelial cells which act as phagocytes under ordinary conditions. Although no positive general statement is justified, we can yet say with reasonable accuracy that

among the phagocytic fixed tissue cells the most important are the connective tissue and endothelial cells.

The dominant conception in the minds of those who have dealt with these phagocytic phenomena has been the purposeful character of the process with the end of destruction of the ingested organism in view. Rous and Jones,³ of the Rockefeller Institute for Medical Research, have pointed out that the possibility that in certain instances cells not only fail to kill the organisms they ingest, but actively protect them from circulating antibodies, seems not to have been considered. In illustration of the significance which this topic may have, it is pointed out that there are a number of important diseases, among them leprosy, tuberculosis, gonorrhea and leishmaniosis, caused by microbic parasites which live more or less habitually within tissue cells.

The New York investigators have contributed important facts which should be taken into consideration in the study of diseases caused by infectious agents capable of living within tissue cells. They have demonstrated definitely that living phagocytes are able to protect ingested micro-organisms from the action of destructive substances in the surrounding fluid, and even from a strong homologous antiserum. There is evidence that the protection by the phagocytes is largely if not entirely conditioned on their being alive. It remains to be determined, Rous and Jones write, how far the protection of micro-organisms by living tissue cells, especially cells incapable of killing the micro-organisms, is important in disease processes. The phenomenon may have much to do with the survival in the animal body of organisms such as the leprosy bacillus, which is so often found living within cells of the fixed tissues; and it may serve to explain in part the therapeutic difficulties in such instances. It may throw light, the writers further add, on the formation of new disease foci at points of injury in individuals of high general resistance. For if an infective agent can be "walled off" from the action of the body fluids by the protoplasm of a single cell containing it, there is no reason, as Rous and Jones conclude, why it should not be carried unharmed wherever this cell goes.

THE REACTION OF THE PANCREAS AND THE PANCREATIC JUICE

It is generally accepted that the chemical reaction of living tissues, like that of the blood, is slightly alkaline or neutral. On impairment of circulation and oxidation, or on death of the tissues, an acid reaction quickly develops, owing to the accumulation of acid metabolites and waste products. In life the organs, like the blood, appear to have the power to maintain practical neutrality even under quite varied physiologic conditions. As applied to the pancreas, this general conception has recently been called in question in a

1. The quotation is from Fraser, Elizabeth T.: *A Manual of Immunology*, Glasgow, 1912, p. 57.

2. Zinsser, Hans: *Infection and Resistance*, The Macmillan Company, New York, 1914, p. 278.

3. Rous, Peyton, and Jones, F. S.: *The Protection of Pathogenic Micro-Organisms by Living Cells*, *Jour. Exper. Med.*, 1916, xxiii, 601.

eries of papers by Long and Fenger.¹ These investigators report that the living pancreas of all animals so far investigated has an acid reaction, whether tested by indicators, by titration, or by the electrical conductivity methods. The acidity is practically constant, and does not vary with the seasons or the animal's diet.

Most of the tests were made on press juice from the macerated organ, separated by the centrifuge. Applying this method to other organs, they found that the liver, spleen and salivary glands usually give an acid reaction, but much less than the pancreas, while the press juice of the fresh thyroid gland is neutral in reaction. They conclude that "the acid reaction of the pancreas is undoubtedly a normal one, and it has been overlooked, because the outflow from the fistula (the pancreatic juice) is so plainly alkaline." In the first paper it is suggested that "during the normal activity of the pancreas the work of the cells results in sending an excess of alkaline phosphates to the intestines, while an excess of the acid phosphates is retained to make the gland tissue slightly acid." This is a new conception of the mechanism of alkalinity of the pancreatic juice. It is well known that the alkalinity of normal pancreatic juice is equal to about 0.5 per cent. sodium carbonate, and it has been generally held that it is actually due to the excess of alkaline carbonates, the trace of phosphoric acid hitherto reported in the juice not being sufficient to account for the alkalinity on the basis of alkaline phosphates. In their second paper the authors show by chemical (quantitative) analyses that the marked acid reaction of the pancreas is due to the presence of acid phosphates and acid nucleoproteins. But practically no evidence is adduced to show that the alkalinity of the pancreatic juice itself is due primarily to alkaline phosphates rather than to carbonates. The reason advanced for the accumulation of acid phosphates in the gland itself in the course of normal activity remains, therefore, an interesting hypothesis.

When the minced pancreas is centrifugalized, the material separates into three layers: a top layer of fatty material, a middle layer of clear fluid, and a bottom layer of proteins and debris. Most of the trypsin is found in the bottom layer, while the lipase and the diastase pass mainly to the clear liquid. When the pancreas is thus treated, the trypsinogen is activated. This is in harmony with reports of previous investigators to the effect that trypsinogen is activated by standing, and by weak acids, etc. They also find that the trypsin thus obtained acts best in a slightly alkaline medium, just as is the case with normal pancreatic juice, "while the fluid itself in which the ferments are elaborated is distinctly acid." This applies, of course, not to the normal living cell, or to the normal pancreatic juice, but only to the pancreas press

juice of Long and Fenger. And it would perhaps be more correct to speak of the liberation rather than the elaboration of the ferments in the press juice.

The fact that, with the methods employed, an organ like the spleen having no external secretion also gives an acid reaction seems to show that the theory of Long and Fenger of a balance between cell secretion and cell retention is inadequate to explain their high acid findings in the pancreas. In any event, there must be a continuous adjustment of chemical reaction between the tissue cells and the blood, for the pancreas, in health, is secreting pancreatic juice continuously, and on the theory of Long and Fenger, this should lead to an increased storage of acid phosphates within the cells themselves. The problem of the mechanics of the change in chemical reaction of body fluids under the influence of lining cells, as in the case of the urine and the gastric juice, is as yet far from solution. The work of Long and Fenger may be the starting point of its solution for the pancreas and the pancreatic juice.

THE DIARRHEA OF CHILDHOOD

The diarrheas of childhood are important because of their urgency, and attract attention because of certain features which make them somewhat distinct from the comparable gastro-intestinal disturbances of later years. Errors of diet may not be more common in infancy and childhood than at subsequent periods of life, and the cause of diarrhea in the earlier years may be essentially the same as later; but somehow they appear to be attended with more serious consequences. A consideration of literature of recent years will bring to mind numerous investigations tending to associate some of the types of infantile diarrhea with the presence of well recognized bacteria, for example, the *Shiga bacillus*, in the digestive tract. There is little doubt, however, that clinically indistinguishable forms of diarrhea are related to other micro-organisms, if not caused by them, so that it has even been thought probable that, after all, there may be no specific bacillus responsible for this common disorder of childhood. Furthermore, inasmuch as various foods or indiscretions in diet have often appeared to bear some relation to the onset of the symptoms, it has repeatedly seemed not unlikely that products of bacterial decomposition either arising in the food or formed from it in the intestinal tract must share the chief responsibility for the production of the diarrhea and vomiting.

With such thoughts in mind, Mellanby¹ working at the London Hospital Medical College under the auspices of the Local Government Board, has attempted to elucidate the pathogenesis of diarrhea in children along chemical lines rather than by the conventional study of its purely bacteriologic aspects. This procedure certainly seems justifiable in view of the failure

1. Long, J. H., and Fenger, E.: On the Reaction of the Pancreas, *Proc. Am. Chem. Soc.*, 1915, xxxvii, 2213; *ibid.*, 1916, xxxviii, 1114. Long, J. H.: Hull, Mary, and Atkinson, H. V.: *Ibid.*, 1915, xxxvii, 2427.

1. Mellanby, E.: An Experimental Investigation of Diarrhoea and Vomiting of Children, *Quart. Jour. Med.*, 1916, ix, 165.

of previous research to associate the disorder definitely with any causal factor, either bacterial or chemical. In searching for a possible chemical cause for symptoms such as diarrhea and vomiting, depression of the respiratory center, fall of blood pressure, and coma, encountered in children who are affected, Mellanby selected betaimidazolethylamin. This substance has been discovered in recent years not only as an extremely active and toxic substance isolated by Barger and Dale² from ergot, but also as an occasional constituent of the alimentary tract of animals. It owes its origin in the latter case to the bacterial disintegration of the amino acid histidin derived from proteins. Micro-organisms capable of producing the amin from the amino acid have actually been isolated from the intestine.

Employing betaimidazolethylamin, then, as a representative toxic product of alimentary bacterial origin, Mellanby has studied the conditions which may favor or retard its formation or absorption. Among the results which may have a practical bearing on the subject of diarrhea and vomiting of children, it was found that there is a marked delay in the absorption of toxic substances, normally in the intestine, when animals are injected with large quantities of fluid. During the digestion of foodstuffs generally there is a similar delay; likewise the presence of water and the presence of bile in the bowel delay the absorption of toxic substances. The resistance against such products is greatly increased by injection of fluid into the circulation, and diminished with a decreased amount of fluid, particularly after the loss of blood. Without entering into the hypothetic details as to how such consequences may arise, it will suffice to point to Mellanby's conclusions by analogy: A child suffering from diarrhea and vomiting owing to loss of fluid and loss of bile salts, with an empty intestine and in a starving condition, is in an ideal position for allowing toxic substances ordinarily present in the alimentary canal and mucous membrane to be absorbed rapidly and have their full toxic action. Perhaps the association of this disease with a high atmospheric temperature in an epidemic form is to be explained largely by the additional loss of fluid due to evaporation of water in the body's attempt to keep its temperature normal.

In the light of the artificial conditions obtaining in the experiments cited, the first essential of treatment ought to consist in restoring the normal volume of body fluids or even exceeding the usual condition in this respect; otherwise undesirable absorption will be increased, and with a suppressed production of alimentary secretions, food will be decomposed rather than digested in the intestine. Water should be freely administered to diarrheic children, by mouth if possible. Drugs like morphin and opium are to be avoided. Feeding is not contraindicated, since it brings the secre-

tory apparatus into play. Such suggestions are admittedly tentative and, being evolved through scientific inquiry, deserve quite as careful consideration as do the therapeutic procedures which have been dictated by empiric methods. Some account will doubtless need to be taken of the acidosis factor which Howland has emphasized. Where uncertainty exists, any rational suggestion must be welcomed. As Mellanby remarks, if the methods evolved from laboratory work are radically inefficient when applied to the specific clinical cases, one can only assume that the experimental conditions omit some essential factor — they do not sufficiently resemble the pathologic condition encountered in the disease.

THE METABOLISM IN ANEMIAS AND DYSPNEIC CONDITIONS

The helpful service which clinical calorimetry is performing in the development of scientific medicine is not confined to one or two diseases to which reference was recently made.¹ Pernicious anemia, likewise still a puzzling malady, has claimed a share of attention from the investigators of the Russell Sage Institute of Pathology, in affiliation with the Second Medical Division of Bellevue Hospital, New York.² This newer work differs from many of the earlier investigations in that the observations on the metabolism of the disease were made on patients instead of animals. Most anemias in the latter have been induced artificially by hemorrhage. When we come to the application of experimental methods to clinical anemia, the problem at once becomes decidedly more complicated. In addition to the simple anemias, there is the unique type of pernicious anemia. Chlorosis and leukemia may be included in the category because of their low hemoglobin content. Any difference that the clinical forms show may, quite apart from refinement of technic, be ascribed to essential differences between anemias artificially induced and anemias arising from pathologic agencies.

It is a natural assumption that a paucity of hemoglobin, such as one finds in anemias, must seriously impair the oxidative processes in the body and thus alter the metabolism. A decline in metabolic functions might even be expected. The facts are, however, that a reduction in the hemoglobin does not preclude the possibility of either a normal or an augmented metabolism. There is no evidence that metabolism runs its course on a lower plane in anemia. The demand for oxygen may far exceed the demand in health. But the compensatory processes in uncomplicated cases of pernicious anemia are capable of meeting the demand in

1. The Basal Metabolism in Obesity, and Its Significance, editorial, THE JOURNAL A. M. A., July 22, 1916, p. 288; Clinical Calorimetry, July 22, 1916, p. 286; New Studies of Exophthalmic Goiter, July 29, 1916, p. 360.

2. Meyer, A. L., and Du Bois, E. F.: Clinical Calorimetry, Fifteenth Paper, The Basal Metabolism in Pernicious Anemia, Arch. Int. Med., June, 1916, p. 965.

2. Barger, G., and Dale, H. H.: Jour. Physiol., 1910, xl, Proc. 37; *ibid.*, 1910-1911, xli, 499.

spite of a greatly diminished hemoglobin content. What these are, beyond the usual surplus of oxygen in normal tissues, is not yet clear.

The increase in metabolism shown in severe cases of pernicious anemia is commented on by Meyer and Du Bois in the way of a possible explanation through reference to well-known researches showing that muscles poorly supplied with oxygen are functionally less efficient. Accessory muscles are called on to cooperate in the accomplishment of any task. The mechanism of the vital function of respiration and circulation becomes more complex. Proper breathing requires the activity of muscles which ordinarily play no rôle in respiration. Again, the respiratory muscles may serve in securing a more efficient circulation. In general, activity implies unusual effort, and hence the demand for additional oxygen. Thus Meyer and Du Bois conclude that there is some ground for the belief that the height of metabolism is a measure of the severity of the clinical pictures.

Another instance wherein an increased metabolism due to augmented muscular activity might be expected is furnished by dyspneic patients who must do additional muscular work in their labored breathing. Of five patients with moderately severe dyspnea, studied in the Sage calorimeter by Peabody, Meyer and Du Bois,³ all but one showed a distinct increase in metabolism. Other patients, among the cardiorenal cases, with slight dyspnea also showed some increase. To these most recent investigators the increases seem too large in many cases to be attributable to the extra muscular activity alone. They add that evidently in complex groups of cardiacs and nephritics there are many factors at work, no one of which at present can be called on to account for the definite increase in metabolism found in dyspneic subjects. Individuals with compensated cardiac lesions or with mild nephritis, however, showed a metabolism within normal limits.

Current Comment

THE POISONOUS PRINCIPLE OF POISON OAK

Poison oak, *Rhus diversiloba* T. and G., of the Pacific slope is closely related botanically to the poison ivy, *Rhus toxicodendron* L., of the Eastern states. The toxic effects produced by these plants are believed to be identical and are familiar to most physicians. Two other closely related plants, the Japanese poisonous sumac, *Rhus vernicifera* D. C., and the American poisonous sumac, *Rhus vernix* L., produce similar toxic effects. These sumacs are related to poison ivy and poison oak, though the relationship is not so close as that between the two plants last mentioned. A number of chemists have studied the toxic principles

of these two sumacs, but until recently no investigation of the chemistry of the poisonous principle of poison oak had been undertaken. It has been pretty definitely settled that the poisonous principle of the sumacs is an amber colored, nonvolatile liquid resin which has acidic and phenolic properties, and which may be readily oxidized to a black, lustrous, durable varnish. Stevens and Warren¹ have shown that there is considerable likelihood that the poisonous principle of poison ivy is identical with that in poison sumac. The results of their investigations were in accord with those of Pfaff,² but did not agree with those of Syme and Acree,³ who believed that the poisonous principle of ivy was a complex glucosid of rhamnose, gallic acid and fisetin. McNair,⁴ in an investigation of the toxic constituent of poison oak, found no evidence of fisetin, rhamnose or gallic acid, but does not offer any explanation of the nature of the active principle. In view of the close botanic relationship between poison oak and poison ivy it seems probable that the active principles of the two plants are identical; it is regrettable that McNair's investigations have not settled this question.

ANALYSES OF NORMAL HUMAN BLOOD

In emphasizing, in a recent number of THE JOURNAL,⁵ that the shifting of interest in metabolism to a study of the chemistry of the blood calls for elaborate fundamental data on the normal composition of the circulating fluid, we scarcely expected this requirement to be met within a few days. However, it is gratifying to record evidence of an independent appreciation of this point of view from the Laboratory of Pathological Chemistry at Bellevue Hospital, New York. To the valuable statistics on the nonprotein nitrogen content of blood secured by Folin and Denis,⁶ Myers and Fine,⁷ McLean and Selling,⁸ Taylor and Hulton,⁹ Greenwald,¹⁰ Hohlweg,¹¹ and more recently Bang,¹² among others, there are now available exceptionally complete chemical and physical analyses of blood¹³ in thirty normal persons of both sexes and ages ranging from 17 to 60. Realizing that the values given in the literature disagree more or less and that in few cases have the various determinations been made on the individuals under strictly comparable conditions or on the same sample of blood, Gettler and Baker decided to adhere to some standard conditions which could easily be maintained in similar work on patients in the hospital. The plan included a uniform hospital breakfast, blood withdrawal three hours thereafter, and the prompt

1. Stevens and Warren: Am. Jour. Pharm., 1907, lxxix, 518.
2. Pfaff: Jour. Exper. Med., 1897, ii, 188.
3. Syme and Acree: Am. Chem. Jour., 1906, xxxvi, 301.
4. McNair: Jour. Am. Chem. Soc., 1916, xxxviii, 1417.
5. The Nonprotein Nitrogenous Components of the Blood, editorial, THE JOURNAL A. M. A., June 3, 1916, p. 1781.
6. Folin, O., and Denis, W.: Jour. Biol. Chem., 1913, xiv, 29; 1914, xvii, 487.
7. Myers, V. C., and Fine, M. S.: The Post-Graduate, New York, 1914-1915.
8. McLean, F. C., and Selling, L.: Jour. Biol. Chem., 1914, xix, 31.
9. Taylor, A. E., and Hulton, F.: Jour. Biol. Chem., 1915, xxii, 63.
10. Greenwald, I.: Jour. Biol. Chem., 1915, xxi, 61.
11. Hohlweg, H.: Med. klin. Wehnschr., 1915, xi, 331.
12. Bang, I.: Biochem. Ztschr., 1915, lxxii, 104.
13. Gettler, A. O., and Baker, W.: Chemical and Physical Analysis of Blood in Thirty Normal Cases, Jour. Biol. Chem., 1916, xxv, 211.

3. Peabody, F. W.; Meyer, A. L., and Du Bois, E. F.: Clinical Calorimetry, Sixteenth Paper, The Basal Metabolism of Patients with Cardiac and Renal Disease, Arch. Int. Med., June, 1916, p. 980.

initiation of the analysis by standard microchemical methods. No less than twenty-eight determinations were made on each sample, requiring in all only 70 c.c. of blood. The range of the results may be summarized briefly as follows: The values for nonprotein nitrogen tend toward a higher level (from 30 to 45 mg.) than those given by previous workers; the normal range of urea nitrogen should also be considered higher (from 15 to 25 mg.) than previously reported by many workers. Uric acid may reach as high as 3 mg. in 100 c.c. of blood in many normal individuals, and surprisingly low figures were consistently obtained for creatinin (0.1 mg. or less in 100 c.c. of blood). According to Gettler and Baker, any value for creatinin above 1 mg. should be considered as possibly indicating a pathologic condition. In this respect they propose to establish a standard somewhat lower than that suggested by their predecessors.¹⁴ With respect to the normal content of sugar in the blood, the values obtained range between 50 and 120 mg. per hundred c.c. of blood—figures in general accord with those recorded by the majority of many recent investigators of this physiologic constant.

THE PROTEIN OF MUSCLE

Every physiologic chemist realizes the difficulties which at the present time attend the estimation of proteins in biologic tissues and products. The quantitative statements in regard to this important group of proximate principles everywhere distributed in living matter are most frequently based on indirect determinations—on calculations made on the basis of estimations of nitrogen or in some similar way. For example, the nitrogen content of a product is ascertained by some convenient method, such as the Kjeldahl procedure, and by the use of a factor (usually $N \times 6.25$) the corresponding yield of protein is approximated. This is the way in which the composition of muscle tissue is ordinarily ascertained. Animal muscle, however, contains other nitrogenous compounds besides proteins. They are included among the so-called extractives of meat and represented by creatin, purin derivatives, etc. Inasmuch as meat furnishes some of the most important items in the dietary of man and represents the foremost source of animal protein for most persons, the desirability of having accurate facts regarding the protein content of muscular tissues is apparent. This is further accentuated by a growing recognition of the fact that protein and nonprotein nitrogenous compounds have an unlike significance in nutrition, so that the metabolism of each group demands separate consideration. The perfection of an improved method of estimating the substances here referred to in muscle¹⁵ has enabled Janney to revise our standards of the composition of muscle, in the interest of greater accuracy. His newer work¹⁶ shows that the amount of protein as calculated in the conventional

ways for the more familiar types of muscle exceeds that determined by actual analysis by about 15 to 20 per cent. in nearly all cases. According to Janney the following figures represent average corrected values for muscle proteins: chicken, 16.6 per cent.; fish (halibut), 16.5; ox, 16.6; rabbit, 16.3; cat, 17.8; dog, 17.4; man, 16.4; whereas heretofore the published figures ($N \times 6.25$) ranged from 18 to 21 per cent. The data bring out the interesting fact that the actual protein content of muscle usually is quite constant for the various species. Janney asserts that in wasting diseases among human beings, values as low as 12 per cent. are obtained, so that, according to his view, in such muscular disorders as myasthenia gravis the amount of protein muscle substance present might be found to bear a definite relation to the specific muscular seat of the disease.

POISON LAWS AND ORDINANCES

Reprint 330,¹ just issued by the United States Public Health Service, is a digest of laws and regulations relating to poisons and habit-forming drugs enacted during 1914 and 1915. It is the third supplement to Public Health Bulletin 56,² issued November, 1912, in which were presented all the federal, state and municipal laws and regulations on poisons and habit-forming drugs then in force. The other supplements, reprints 146³ and 240,⁴ completed the compilation and brought the material up to the dates of publication. The third supplement follows the plan of arrangement and classification established in Public Health Bulletin 56 and the two preceding supplements, the four pamphlets forming a complete and uniform compilation of laws and regulations on this subject. Increasing attention on the part of legislators is being given to the regulation of poisons and habit-forming drugs. Lack of uniformity in the various state laws, and lack of a standard definition of a poison are two of the most serious defects at present. The enactment of the Harrison Narcotic Law, while it has led to the amendment of several state laws, has "in some instances at least increased rather than diminished the problems involved," in the opinion of the author, Martin I. Wilbert. As a practical result of the enactment of the Harrison law, those familiar with wholesale trade conditions assert that the sales of the proscribed drugs have been reduced fully 50 per cent. Wilbert thinks that the elimination of the guaranty clause in medicine labels, under the national Food and Drugs Act, will remove a potent possibility for misleading the public. Laws regulating occupational intoxications were enacted during 1914 and 1915 in two states, while laws restricting the use of wood alcohol are increasing in number and comprehensiveness. Eight states enacted laws prohibiting the manufacture and sale of alcoholic liquors. The laws regulating pharmacy have been amended in eleven states, while four states have

14. Folin, O., and Denis, W.: *Jour. Biol. Chem.*, 1913, xiv, 29; 1914, xvii, 487. Myers, V. C., and Fine, M. S.: *The Post-Graduate*, New York, 1914-1915.

15. Janney, N. W.: *The Quantitative Determination of the Total Protein and Non-Protein Substances of Muscle—Improved Technic*, *Jour. Biol. Chem.*, 1916, xxv, 177.

16. Janney, N. W.: *The Protein Content of Muscle*, *Jour. Biol. Chem.*, 1916, xxv, 185.

1. Reprint 330, a supplement to Public Health Bulletin 56, U. S. P. H. S., 1916.

2. Digest of Laws and Regulations . . . Relating to . . . Poisons and Habit-Forming Drugs, Pub. Health Bull. 56, U. S. P. H. S., 1912.

3. Reprint 146, a supplement to Public Health Bulletin 56, 1913.

4. Reprint 240, a supplement to Public Health Bulletin 56, 1915.

legally adopted the Pharmacopeia and National Formulary as standards. Naturally, such a compilation is largely a record of details which it is impossible to enumerate. This pamphlet and the two preceding supplements, with the original bulletin, form a complete collection of laws and ordinances on poisons and habit-forming drugs with comments, tables and much additional illuminating material.

CHEMOTHERAPEUTIC TREATMENT OF TUBERCULOSIS

The newspapers on Wednesday morning of this week announced again the discovery of a specific treatment for tuberculosis and leprosy. This announcement was based on the fact that the current issue (August) of the *Journal of Experimental Medicine* is devoted wholly to reports of work by Japanese investigators, Koga, Otani and Takano, on this subject. Since Ehrlich's and Hata's discovery that a chemical combination might be of particular value in the treatment of syphilis, various investigators have attempted to apply chemotherapy to tuberculosis. Some evidence is available to indicate that copper and cyanid exert a special influence on the tubercle bacillus. Briefly, Koga found that the treatment of animals inoculated with tuberculosis with a preparation of copper and potassium cyanid produces, after repeated injections, healing changes in tuberculous lesions. The extent of the healing, however, has not been determined. Emulsions were made of lungs, liver, spleen and other organs of some of the animals, apparently healed, and injected into the abdominal cavity of guinea-pigs. Some of the guinea-pigs receiving the emulsion developed tuberculosis, and further studies are being made. Koga's experimental report is supplemented by a clinical report on sixty-three treated human cases, including the various stages of tuberculosis. He believes, from his results, that the preparation, which has been named "cyanocuprol," greatly improves, or apparently cures, pulmonary tuberculosis in the first and second stages, and that it seems also to produce beneficial effects on the disease in the third stage. Otani reports the results of treatment in eighteen cases of tuberculosis. He considers "cyanocuprol" remarkably effective, and states that it may be more generally used than tuberculin. He also defines the indications and the various conditions governing the use of the preparation. Takano used the "cyanocuprol" in six cases of leprosy with what appeared to be beneficial effects. There is an element of secrecy connected with the preparation itself: Koga states that it is a double salt of copper and potassium cyanid diluted 1:2,000 and treated "with a specific manipulation in order to prevent the formation of free hydrogen cyanid and the subsequent chemical changes to potassium and ammonium formate, which process is accelerated by heating." No statement is made as to what this "specific manipulation" is or consists of; at the same time Koga insists that unless this manipulation is carried out, the injection of the double salt of copper and potassium cyanid is not safe for human beings. Further, nothing definite is said as to the pro-

portions in which the various elements in the preparation are combined. On the whole, however, these reports appear to be a scientific statement of the results of experiments by enthusiastic, yet at the same time conservative, investigators. It will be interesting to watch the progress of what appears to be a scientific attempt to do for tuberculosis what salvarsan has done for syphilis.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Personal.—Dr. Lloyd Noland, Birmingham, superintendent of the department of health of the Tennessee Coal, Iron and Railroad Company, sailed from New York for Europe, July 8. Dr. Noland will do medical research work and study in the war hospitals of France.—Dr. William T. Cocke has been appointed health officer of Demopolis, succeeding Dr. Thomas C. Savage, M. R. C., U. S. Army, who has been ordered to Fort Sam Houston, Texas.

Typhoid Fever.—Since June 1, between 500 and 600 cases of typhoid have been officially recorded in the Birmingham district, and with the unreported cases, of which undoubtedly many exist, the number of cases in the district will be near 700. In the city alone 350 cases were reported during the first twenty-five days of July, with twenty-five deaths. The epidemic has, it is believed, been definitely checked.—Surg. Leslie L. Lumsden, U. S. P. H. S., who was called to Birmingham to investigate the situation, stated in his report that the cause of the recent outbreak was ice cream manufactured by a single manufacturer. Of 300 cases examined, 163 patients had eaten ice cream manufactured only by this manufacturer. A city wide clean-up campaign is being undertaken in Birmingham.

ILLINOIS

Red Cross Hospital at Springfield.—The Red Cross membership campaign committee at Springfield announces, as a result of the recent campaign, a membership of 1,200 in the local chapter.

Ambulance Corps Being Formed.—A meeting was held in Springfield, July 20, at the offices of Dr. Jay T. Wood, to form an ambulance company of Springfield physicians which will offer its services to the Illinois National Guard.

Personal.—Dr. Jesse G. Maxon, Harvard, who has been on duty at the mobilization camp at Springfield, has been ordered to duty as a member of the Medical Reserve Corps, at Fort Sam Houston, San Antonio, Texas.—Dr. Cora J. Kipp, Mineral, who is the head of the Methodist Hospital at Brindaban, India, is on furlough in this country and will return to India in January.—Dr. George P. Gill, Rockford, spoke before the Elks Club of Freeport, July 18, on "Experiences of the European War."—Dr. William J. Uppendahl, Peoria, who has been serving with the allies in a field hospital for the past year, has returned to the United States.

Conference of Charities and Correction.—The twenty-first annual state conference of charities and correction will be held in Alton, October 20 to 22, and in connection with this conference the Illinois Association for the Prevention of Tuberculosis, the State Association of County Home Superintendents, and the State Probation Officers' Association will meet. The general meeting on the first evening will be under the auspices of the Committee on Mental and Physical Efficiency. The same subject will also be considered at the Saturday morning session; on Saturday afternoon, "Probation and Prevention of Crime" and "Labor and Compensation" will be the subjects for discussion; on Saturday evening there will be a mass meeting at which "Probation and Prevention of Crime" will be considered; Sunday afternoon there will be a mass meeting on "Labor and Compensation," and the conference will close Sunday evening with a program on "Child Hygiene."

Chicago

Hospital Purchases Property.—The Augustana Hospital has purchased property at Garfield Avenue and Sedgwick

Street, 379 by 267 feet. It is proposed to erect a hospital building to cost from \$200,000 to \$300,000 on the site.

Transfer of County Institutions to State.—The act of the state in assuming charge of the Cook County Hospital for the Insane, Dunning, giving it the title of the Chicago State Hospital, is believed to have set the precedent for the transfer of the Cook County Detention Hospital and Psychopathic Institute to state control. A committee of the board of administration met with the Cook County board in Chicago, July 26, to consider ways and means of the transfer.

INDIANA

Society Transfers Hospital to City.—The Kendallville Medical Society has turned the Lakeside Hospital over to the people of Kendallville as a public institution. The property includes the hospital building, a second house which will be used as a maternity, and 3 acres of land.

Red Cross Organization Formed.—At a meeting of the charter members of the Indianapolis Red Cross, July 19, held in the Chamber of Commerce, directors were elected and the organization was perfected. Drs. Alois B. Graham, James H. Taylor and Herman G. Morgan are ex-officio directors of the organization, and Dr. Frank B. Wynn was elected a member of the board of directors.

Water Examinations.—H. E. Barnard, Indianapolis, state food and drug commissioner, states that water samples are coming in for examination by the state board of health at the rate of twenty-five a day. It has been found that about 60 per cent. of the well water sent in is polluted. Water from city supply sources is not found to be polluted so frequently. Samples of ice are also being sent in. In most cases the ice is found to be all right. These samples are sent in by health officers and citizens.

New Medical School Building.—Trustees of the University of Indiana have recommended that a new medical school building, power house, laundry, and nurses' home be erected on the grounds of the Robert W. Long Hospital, Indianapolis. A committee was appointed, including the president of the university, Drs. Samuel Smith, Richmond; Charles P. Emerson, John H. Oliver, and Frank F. Hutchins, Indianapolis, to formulate plans for the proposed building and report as soon as possible to the board.

Cornerstone Laid.—The cornerstone of the new Marion County Tuberculosis Sanatorium near Oaklandon was laid with appropriate ceremonies, July 22, by Dr. John N. Hurty, secretary of the state board of health, and Dr. George Thomas Palmer, Springfield, Ill., delivered the principal address. After the exercises, a visit was paid to Cherryvale, the fresh air farm of the Indianapolis *News*.—Drs. Alfred Henry and John A. MacDonald have been appointed members of the board of managers for the institution, the appointment to take effect November 1.

Medico-Military Assignments.—The officers of the Medical Corps, Indiana National Guard, have been assigned and reassigned as follows: Maj. Larue D. Carter, Indianapolis, commanding officer, Field Hospital, Company No. 1; Capt. John W. A. Emhardt, Indianapolis; First Lieut. Simon Reisler, Indianapolis; First Lieut. Harold W. Nimal, Indianapolis; First Lieut. Clint C. Sourwine, Brazil; Capt. Archibald G. Chittick, Frankfort, commanding officer, Ambulance Co. No. 1; Capt. James W. Hadley, Frankfort; First Lieut. Arett C. Arnett, LaFayette; First Lieut. Donald C. McClelland, LaFayette; First Lieut. Cecil E. Johnson, Rensselaer; Maj. Frank B. Humphreys, Angola, commanding, Regimental Infirmary, Third Infantry; Capt. George W. Twomey, New Albany; First Lieut. Leonard J. Ostrowski, Indiana Harbor; First Lieut. Butron A. Thompson, Kokomo; Maj. Earle S. Green, Muncie, commanding, Regimental Infirmary, Second Infantry; Capt. Geo. F. Holland, Bloomington; First Lieut. Edwin G. Kyte, Seymour; First Lieut. Mitchell O. De Vaney, Indianapolis; Maj. Frank W. Foxworthy, Indianapolis, commanding, Regimental Infirmary, First Provisional Regiment; Capt. N. Austin Cary, Crawfordsville; First Lieut. Renos H. Richards, Patricksburg; First Lieut. Leonard P. Collins, Winamac; Capt. Frank C. Robinson, Martinsville, Artillery Battalion.

KENTUCKY

Date of State Society Meeting Changed.—The date for the annual meeting of the Kentucky State Medical Association in Hopkinsville has been changed from September to October 17-20.

Smallpox at Fort Thomas.—A case of smallpox appeared among the National Guard at the mobilization camp at Fort

Thomas, July 18. The patient was a member of Company F, Second Infantry, Jackson. The reservation was closed and all contacts were placed under surveillance and vaccinated.

Personal.—Dr. William Hall Hawkins has resigned as city physician of Lexington and will locate in New York.—Dr. Wallis W. Durham, Crofton, has been appointed second assistant physician of the Western State Hospital for the Insane, Hopkinsville, succeeding Dr. Roy F. Robinson, Hopkinsville, resigned.—Dr. Ben L. Bruner has been elected temporary chairman of the Optimists Club of Louisville.

Twelve Counties Join for Sanatorium.—Representatives of the fiscal courts of Boone, Campbell, Carroll, Kenton, Bracken, Pendleton, Gallatin, Grant, Harrison, Mason, Owen and Robertson counties, comprising the Seventh Tuberculosis District, met in Covington, July 23, and considered the erection of a tuberculosis sanatorium on the hills between Covington and Newport. The sanatorium will be designed to accommodate 350 patients.

MARYLAND

Personal.—Dr. J. Clement Clark has been reelected superintendent of the Springfield State Hospital for the Insane, Sykesville.—Dr. Stewart V. Irwin, Baltimore, returned to America, July 11, after a partially successful attempt to inspect prison camps in Germany.

Baltimore Roentgenologists Dine.—The recently organized Baltimore Roentgenological Society, of which Dr. Frederick H. Baetjer is president and Dr. Henry J. Walton, secretary, held its first annual dinner at the Baltimore Country Club, June 23. Capt. Arthur C. Christie, M. C., U. S. Army, and Drs. Thomas A. Groover, John H. Selby and Harry E. Simons of Washington, D. C., were the out-of-town guests.

On Guard Against Paralysis.—The health department is conducting a house-to-house inspection of the section about South Bond and Thames Streets, from which the latest case of infantile paralysis was reported. The decision to make this careful examination of conditions in that neighborhood followed an inspection by several of the city officials. The neighborhood is in the heart of the foreign quarter of the city and the sanitary conditions leave much to be desired. The inspection will be for the purpose of impressing on the people the importance of taking precautions against an outbreak of infantile paralysis.

NEW YORK

State to Open Laboratories.—It was announced at the state health department, on July 23, that three temporary state laboratories will be established immediately to aid in the fight against infantile paralysis. Two of these laboratories will be on Long Island and the other probably at Kingston.

Clinic Endowed.—Announcement is made that the Psychopathic Clinic for Mentally Deranged and Feeble-minded Persons at the State Prison, Sing Sing, has received an endowment of \$10,000 from John D. Rockefeller. The clinic was opened August 3, and the advisory board is composed of Drs. Terry M. Townsend, George S. Burns and William Seaman Bainbridge.

New York City

Personal.—Dr. Timothy D. Lehane, while performing a necropsy on a stowaway who died of a tropical fever, suffered a wound of the arm which has become infected and may result in loss of the arm.—Dr. Carl F. A. Eggers, who has spent almost two years working in German military hospitals, has returned to this city for a short vacation, after which he will again return to Germany.

Brooklyn Disposes of Stray Cats.—As a part of the clean-up connected with the epidemic of infantile paralysis, about 50,000 cats have been caught and killed by the Brooklyn police since the epidemic began. Practically no cats are seen in the streets except about the water fronts, where the residents have objected to parting with cats, fearing that the rats from incoming vessels may be more dangerous than the cats.

Psychologic Laboratory Established.—A psychologic laboratory has recently been established at Bellevue Hospital, New York, under the direction of Dr. Menas S. Gregory, chief of the psychopathic and alcoholic services. Facilities will be provided for both clinical and research work. As these services admit about 15,000 patients annually, the opportunities for research will be exceptional. Dr. Leta S. Hollingworth, formerly psychologist in the Department of Public Charities in New York, has been placed in charge of the laboratory.

Convalescent Hospital Opened.—Directors of the Neustadeter Foundation, established by Mrs. Henry Neustadeter, announced, July 20, that a temporary convalescent hospital for the care of infantile paralysis patients, to be known as the Neustadeter Home, would be opened by the foundation. The home will be equipped with the most modern devices and will accommodate fifty patients, for whom treatment will be provided from eight to ten months. Dr. Sigismund S. Goldwater, formerly health commissioner, is a member of the board of directors of the institution.

A Conference on Infantile Paralysis.—Health Commissioner Dr. Haven Emerson has announced that a conference of pathologists and workers in experimental medicine will be held in the faculty rooms of the College of Physicians and Surgeons of Columbia University, commencing August 3. Among those from a distance invited to attend are the following: Drs. Victor C. Vaughan, Ann Arbor, Mich.; Milton J. Rosenau, Boston; James W. Jobling, Nashville, Tenn.; Paul A. Lewis, Philadelphia; William H. Welch, Baltimore; Ludvig Hektoen, Chicago; Charles C. Bass, New Orleans; Theobald Smith, Princeton, N. J.; John Anderson, New Brunswick, N. J.; Richard M. Pearce, Philadelphia; Francis W. Peabody, Boston, and John Adami, Montreal, Que. Reports to July 28 show that there have been 3,562 cases of infantile paralysis in this city, with 744 deaths. It has been observed that the age incidence of the disease has advanced with the progress of the epidemic. Of twenty-one Brooklyn patients listed according to ages by the end of last May none was more than 5 years of age. Of 1,108 Brooklyn patients similarly listed by July 28, 142, or 12.8 per cent., were more than 5 years of age and about 3 per cent. were more than 10 years of age.

NORTH CAROLINA

Sanatorium Opened.—The Anson County Sanatorium, Wadesboro, was formally opened, July 5. In the morning clinics were held; after luncheon there was a short scientific session at which papers were presented and discussed, and in the evening a general reception was given to the physicians and the public, together with a linen showed for the benefit of the institution.

Personal.—Dr. James A. Speight, Nashville, Tenn., has succeeded Dr. James C. Braswell, Jr., as whole time health officer of Nash County. Dr. Braswell has accepted the position of health officer for the city of Rocky Mount.—Dr. Joseph J. Kinyoun, Washington, D. C., a native of the state, for many years past one of the ablest of the physicians in the U. S. Public Health Service, has returned to North Carolina and assumed the duties of city health officer of Winston-Salem.

OKLAHOMA

Hospital Opened.—The City and County Hospital, Hobart, was opened for the reception of patients, June 21.

New Board Officers.—At the annual meeting of the State Board of Medical Examiners, held in Oklahoma City, July 12, W. Le Roy Bonnell, Chickasha, was elected president; B. L. Denison, Garvin, vice president, and Dr. Ralph V. Smith, Tulsa, secretary.

Personal.—Dr. Amos Avery has been appointed city physician of Sapulpa.—Dr. Timothy J. Butler, M. R. C., U. S. Army, Weatherford, has been ordered to report for duty at Ft. Sam Houston, Texas.—Dr. John A. Brooke, Oklahoma City, has moved to Philadelphia.

Health Education.—Householders of Tulsa have been supplied with a free booklet dealing with modern sanitation and municipal health requirements. In this pamphlet are covered various problems of milk supply, garbage disposition, menace of the fly and kindred subjects.

PENNSYLVANIA

Personal.—Dr. Clyde Hazlett, Pittsburgh, who has been on duty in Persia with the Russian Red Cross, is reported to be with typhus fever at Khoi, Northwest Persia. Dr. Hazlett is being cared for by Dr. Edward S. Dickey, also of Pittsburgh, and also on duty with the Russian Red Cross.

Infantile Paralysis Increases.—Two new cases were reported in Philadelphia, July 27, and since the epidemic in one death has occurred. The total number of new cases reported throughout the state, July 27, was seven and the epidemic began about July 1, seventy-six cases have been reported to the health department.

Increased Entrance Requirement.—An official communication just received from Jefferson Medical College states that the premedical class has been abandoned and that beginning with the session of 1917-1918 all matriculants will be required to present credentials showing the completion of two years of college work, including courses in physics, chemistry and biology, with laboratory work, and a modern language, either French or German.

Philadelphia

More Nurses for Health Stations.—Eight more nurses have been appointed with the new health center established and others are to be started. It is planned to increase the number to twenty-two nurses. This action was recently taken by councils. The salary paid nurses in this work is \$900 a year.

Personal.—Dr. Enrique Sepulveda of Valparaiso, Chile, has visited this city and purchased hospital equipment for St. John's Hospital, Valparaiso. Dr. Sepulveda is chief of the eye, ear, nose and throat clinic of that institution.—Dr. Edward A. Treacy has been appointed assistant in gynecology in St. Joseph's Hospital.

Ban on Public Drinking Cups.—A ban will be placed on the public drinking cups in Fairmount Park, according to the department of health and charities. Dr. Wilmer Krusen will enforce the law which prohibits the use of public drinking cups in this state. It is said the park commission will act in accordance with the law.

Pauper Patients to Have Summer Clothes.—Through arrangements completed July 25, the director of the department of health and charities has arranged to supply the pauper inmates of Blockley with real summer clothing. One thousand two-piece suits have been ordered for the inmates. Heretofore these people were compelled to get along as best they could with whatever clothing they had. Heavy clothing was frequently worn throughout the entire summer.

Babies' Health Centers.—Following the plan of the municipal authorities in establishing health centers in congested parts of the city, private organizations, as mentioned in THE JOURNAL last week, have taken up that character of work in the campaign to reduce the mortality. The Babies' Hospital established a branch system at Ninth and Pine Streets. Mothers and their children will be given medical care, and arrangements will be made for them to sleep on roof gardens. About \$50,000 has been subscribed for the project. Another new health center has been opened at 1136 North Second Street. A physician and a corps of nurses are in attendance. Three additional centers will be opened at points in South Philadelphia.

WASHINGTON

Personal.—Dr. Benjamin S. Cerswell, Toppenish, has been appointed full time health officer of North Yakima, succeeding Dr. Thomas Tetreau, resigned to become city health officer of Portland, Me.—Dr. William B. Abbott, Sunnyside, has been appointed deputy health officer of North Yakima.

Medical Postgraduate Course.—One hundred and one physicians of the state have registered for the first medical postgraduate course offered by the University of Washington extension division, Seattle. The lectures in the course are being given in the council chamber of the city hall, and are given by Dr. Charles L. Mix, Chicago, who also will give clinical courses at the various hospitals of the city.

Sanitary District for State.—At the closing session of the Association of State, County and City Health Officers at Seattle, July 11, the organization unanimously approved the draft of the bill to create fifteen sanitary districts in the state with a full time health officer in charge of each district. This legislation will do away with the part time health officers and will substitute full time men trained in public health work and who will receive a salary of not less than \$2,000 or more than \$3,000.

State Association Meeting.—The Washington State Medical Association held its twenty-seventh annual meeting in Seattle, July 12 to 14, under the presidency of Dr. John R. Brown, Tacoma. The following officers were elected: president-elect, Dr. George M. Horton, Seattle; president, Dr. John M. Semple, Spokane; vice presidents, Drs. Charles S. Wilson, Tacoma, and Herman P. Marshall, Spokane; secretary-treasurer, Dr. Curtis H. Thompson, Seattle (reelected), and assistant secretary-treasurer, Dr. John H. O'Shea, Spokane; trustees for the first district, Drs. Wilbur N. Hunt, Burlington; Luther M. Sims, Kalama; Richard J. O'Shea, Seattle; Horace J. Whitacre, Tacoma; trustees for the second district,

Drs. Cornelius J. Lynch, North Yakima; Henry H. McCarthy, Spokane; Frederick Epplen, Spokane, and Frank E. Culp, Wenatchee; general trustees, Drs. Wilson R. Johnston, Spokane; Edwin W. Janes, Tacoma, and Peter D. McCornack, Spokane; delegates to the American Medical Association, Drs. Don H. Palmer, Seattle, and Donald E. McGillivray, Port Angeles, and alternates, Drs. Charles F. Eikenbary, Spokane, and Edward A. Rich, Tacoma. The next meeting will be held in Spokane in 1917. At the annual banquet Dr. Philip V. von Phul, Seattle, presided as toastmaster, and a silver loving cup was presented to Dr. Curtis H. Thomson, for the past eight years secretary-treasurer of the association.

CANADA

Association Meeting.—The Canadian Public Health Association, The Canadian Association for the Prevention of Tuberculosis, and the Sanitary Services of the Province of Quebec will meet in Quebec City, Sept. 13 and 14, 1916.

Summer Course at Queen's.—The summer session of Queen's Medical College, Kingston, which is being held on account of the need for doctors at the front, will close for two weeks on July 29. The summer session has been a very successful one, and there are over 100 students who have taken advantage of it to complete their course.

Personal.—Dr. Ephraim E. Kells, Regina, Sask., is in Chicago taking graduate work.—Dr. J. W. H. Huykman, Jansen, Sask., a graduate of the University of Amsterdam, has commenced practice in Balgonie, Sask.—Dr. Warren A. Dakin has returned from active service and resumed his duties as medical superintendent of the Regina, Sask., General Hospital.—Dr. Charles E. Tran, Kamsack, Sask., has enlisted for overseas service.—Dr. Arthur W. Tanner, Moosomin, Sask., was recently killed in action while on active service at the front.

Colonel Primrose Returns.—Lieut.-Col. Alexander Primrose, chief surgeon with the University of Toronto Base Hospital, which has been stationed at Saloniki, has returned to Toronto on short furlough. The hospital was capable of housing 1,040 patients, but in the early days of its location in Greece, 1,500 was generally its full complement. The hospital was recently moved to a new site and is now housed in huts, having been all winter in tents. Splendid and efficient service has been done by this hospital unit, which is under the command of Brigadier-General James A. Roberts, Toronto.

Infantile Paralysis in Ontario.—Maj. John W. S. McCullough, Toronto, chief medical officer of health for Ontario, and Capt. John G. Fitzgerald, Toronto, of the provincial board of health, have visited Windsor, Ont., where there have been reported several cases of infantile paralysis, and in conjunction with Dr. George R. Cruickshank, Windsor, the medical officer of health, have taken the situation in hand. Dr. Fitzgerald is to proceed to New York and Boston to study means for the prevention of the disease. Although the medical officer of health of Toronto denies there are any cases in that city, there are said to be two or three cases in the immediate suburbs.

GENERAL

Military Surgeons Meeting Postponed.—On account of the military activities on the Southern border, the meeting of the Association of Military Surgeons of the United States, which was to have been held at the Hotel Sherman, Chicago, October 2 to 4, has been postponed indefinitely.

Appropriation for Medical Department.—The secretary of war has submitted a supplemental estimate of appropriation of \$7,000,000 required for the service of the fiscal year, 1917, by the medical and hospital department for the medical needs of an active military force of 400,000 men, in addition to amounts heretofore estimated for such purpose.

Meeting of the American Association for the Study and Prevention of Infant Mortality.—The official program for the annual meeting of this association, which takes place October 19-21, in Milwaukee, has just appeared. Special sessions are announced devoted to obstetrics, propaganda, pediatrics, governmental activities, public school education and rural communities.

Women Doctors in War.—At a recent meeting in Boston to organize a unit of women doctors for service in case of war, Med. Insp. Norman J. Blackwood, U. S. Navy, urged the necessity of organization in advance. When war comes, the places of the men will have to be filled by the women. Women might learn how drugs are made. Professional

women could organize classes for instruction in first aid diet for the sick, join the Red Cross, learn of its various activities and find out what they are best fitted to do. What Americans need, in the way of preparedness, said Dr. Blackwood, is discipline which will engender a finer sense of patriotism.

Medical Reserve Officers Interrogated as to Availability for Service.—Officers of the Medical Reserve Corps, inactive list, have received a circular in which inquiry is made as to their readiness for service. Each officer is asked to state whether or not he is a member of the National Guard; whether he would prefer service in the Southern department; whether he would prefer service in the Philippine Islands, Canal Zone, Hawaii, Alaska, etc., and how soon after notification he could report. It is presumed that the intention is to recall regular army officers from the foreign posts mentioned as needed and to replace them with the medical reserve officers who indicate their willingness to accept such service.

Increase of Army Medical Corps.—On the basis of 130,000 men in the army under the new law, there will be 910 commissioned medical officers, which would include twenty-eight colonels, fifty lieutenant colonels, 225 majors and 607 captains and first lieutenants. On the basis of 100,000 men there would be about 250 vacancies in the junior grade. There is always a difficulty in obtaining qualified candidates under the existing age limitation of 30 years (which really means 29, when the term at the Army Medical School is taken into account), as medical students are now being graduated late in life. The proposed amendment to the existing law making the maximum age 32 instead of 30 may afford a possible relief, and render it possible to fill the corps with acceptable mature men.

Infantile Paralysis.—Five more public health service surgeons have been ordered to New York to aid in the campaign to prevent spreading of the infantile paralysis epidemic. Twenty of the experts of the service are already there. Those now ordered out are Surgeon William J. Pettus, Charleston, S. C.; Surgeon Henry W. Wickes, Detroit; Surgeon Dana E. Robinson, Ellis Island (on leave); Pay Assistant Surgeon R. A. Herring, Louisville, Ky., and Senior Surgeon Parker C. Kalloch, Portland, Me. All leave of absence has been cancelled by the service, it is said, on account of the imperative demand for surgeons. Assistant Surgeon-General William C. Rucker states that while the local authorities in New York seemed to have the situation pretty well in hand, the fight to prevent the disease from spreading to other parts of the country was just beginning.

Fraudulent Infantile Paralysis Cures.—Officials of the Department of Agriculture, charged with the enforcement of the Food and Drugs Act, have issued special instructions to inspectors to be particularly alert for interstate shipment or importations of medicines, the makers of which allege cure or alleviation of infantile paralysis. In times past it has been known that whenever a serious epidemic exists unscrupulous dealers prey on the fear and ignorance of the public by flooding the market with worthless preparations for which they claim curative properties. The Department of Agriculture warns that the Federal Food and Drugs Act applies only to products which are shipped from one state to another or offered for import or export, and that products which are made and consumed wholly within a single state are subject only to state laws. Persons, therefore, buying or using a so-called remedy made in their own state must rely on the protection accorded them by their local health authorities.

Congressional Notes.—The following bill was introduced in the Senate by Mr. Shafroth, July 7:

A Bill to adopt the weights and measures of the metric system as the standard weights and measures in the United States.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that on and after the first day of January, 1918, all the departments of the government of the United States, in the transaction of all business requiring the use of weight and measurement, except in completing the survey of public lands, shall employ and use only the weights and measures of the metric system; and on and after the first day of January, 1920, the weights and measures of the metric system shall be the legal standard weights and measures of and in the United States.

The bill was referred to the committee on standards, weights and measures.—The following joint resolution was introduced in the House of Representatives, July 11, 1916, by Mr. Siegel:

Joint resolution authorizing the president of the United States to pay \$100,000 and to present a gold medal suitably engraved to the discoverer of a specific preventive or remedy for infantile paralysis.

WHEREAS, The spread of infantile paralysis has at various times seriously endangered the health of the people of the United States; and

WHEREAS, It is freely admitted by the most eminent physicians of the United States that they do not know the cause thereof or the proper method of eradicating or preventing same; and
WHEREAS, It is to the best interests of the welfare and health of the people of the United States that a specific preventive or remedy for infantile paralysis be found; therefore be it
Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That the president of the United States be, and he is hereby, authorized to pay \$100,000 and to send a gold medal suitably engraved to the discoverer of a specific preventive or remedy for infantile paralysis, and the money for making the payment and the cost of said gold medal are hereby appropriated out of any money in the treasury not otherwise appropriated.

The resolution was referred to the committee on appropriations.

The Gary System.—The general education board announces that it is about to complete a study of the public school system inaugurated at Gary, Ind., that a full and authoritative account of this interesting experiment in public education may be available for study and use throughout the country. The board has a staff of educational experts who have already devoted five months to a first hand study of the purposes, methods and costs of the system at Gary and the results actually achieved there. The investigation has been under the charge of Abraham Flexner of the board, assisted by Frank P. Bachman, formerly associate superintendent of schools in Cleveland. The specialists who have dealt with particular fields are: Prof. C. R. Richards, director of Cooper Union, vocational and industrial instruction; Mrs. Eva W. White, director of the extended use of public schools of Boston, domestic science and arts; Prof. George D. Strayer, Teachers' College, Columbia University, administration, organization and supervision; S. A. Courtis, director research in the schools of Detroit, classroom testing; L. K. Hanmer, director of the department of recreation and playgrounds of the Russell Sage Foundation, physical training and recreation; Prof. Otis W. Caldwell, University of Chicago, science; Frank L. Shaw, recently with the Cleveland School Survey, statistical work; Ralph Bowman, formerly of the bureau of municipal research, cost accounting. In addition the board has made an appropriation to Prof. Guy M. Whipple of the University of Illinois for a systematic and thorough study of the talented child. The board has also authorized a study of the junior high school, which includes the seventh and eighth grades of grammar school and the first year of high school. This study will be made by Prof. Thomas H. Briggs of the Teachers' College, Columbia University.

FOREIGN

Deaths Abroad.—Sir James Frederick Goodhart, Bart., M.D., D.Sc., Aberdeen; F.R.C.P., London; aged 70; consulting physician to Guy's Hospital and Evelina Hospital for Children, London; died at his home in Portland Place, May 28. Sir James was an authority on diseases of children; Goodhart lecturer at the Royal College of Physicians in 1905, on "Morbid Arterial Tension," and Harveian orator in 1912, when his subject was "Common Neuroses," and narrated the triumphs of pathology for the past forty years.

Ten Thousand Dollar Prize for Best Mechanical Substitute for the Hand.—An anonymous donor has offered a prize of 10,000 (50,000 francs) to be handed over to the maker of a mechanical apparatus best supplying the place of the hand. All competitors must belong to allied or neutral nations. They are to demonstrate before the French Surgical Association mutilated men who have been using their apparatus for at least six months. The surgical association will experiment with each apparatus on mutilated men for the length of time it thinks fit. The apparatus rewarded is to remain the property of its inventor. The competition will be held two years after the end of the war. Any person wishing to compete should write M. le Secrétaire Général de la Société Nationale de Chirurgie, 12, rue de Seine, Paris, France.

Headship of Peking Medical College.—The China Medical Board of the Rockefeller Foundation announces that the trustees of Union Medical College, Peking, have appointed Franklin Chambers McLean, New York, formerly of the Rockefeller Institute, professor of internal medicine, a position carrying with it the headship of the college. Dr. McLean is now on his way to the Orient, where he will carry out the work of the China Medical Board in Peking and Shanghai. After an inspection tour of about three months he will return to collect his staff and study the administration of the outpatient department of some large hospital in the United States. On his way to China, Dr. McLean will spend about a fortnight studying the hospitals and laboratories of Japan.

Death of Neisser.—The cable announces the death at Berlin of the discoverer of the gonococcus, Albert Neisser, professor of skin and venereal diseases at the University of Breslau. Ludwig Siegmund Albert Neisser was born at Breslau sixty-one years ago, studied there, and became assistant to Simon, professor of dermatology, and at his death in 1882 succeeded him in this chair and in the charge of the dermatologic clinic, to which he remained loyal to his death. His discovery of the gonococcus dates from 1879, and he was one of the first to insist on the tuberculous nature of lupus, but his publications embraced almost the entire field of dermatology and syphilology, and especially the revolution in treatment, in diagnosis and sociologic consequences which followed the discovery of the causal agent of gonorrhea. He was particularly active in studying the prophylaxis of venereal diseases in general and the prostitution question from the sociologic, national-economic and ethical standpoints. He attacked the question with new vigor after the war broke out; one of his latest articles on the subject was summarized in THE JOURNAL, March 4, 1916, p. 777. He was one of the publishers of the *Archiv für Dermatol. und Syphilis*, of the *Bibliotheca medica*, and was the founder and editor of the *Stereoskopisch-med. Atlas*. His father was a physician at Breslau before him and translated several American works into German, including G. M. Beard's "Neurasthenia."

Typhus in Mexico City.—The report from the Mexican national public health service for the month of March, just received, states that 1,936 new cases of typhus were recorded at Mexico City in the five weeks ending April 1. The isolation hospital at Tlalpam had had 2,182 cases by that date since December 26, and the mortality had been 16.88 per cent. among the 977 men, and 15.16 per cent. of the 1,205 women. Mexico City has a force of 270 to fight the epidemic; seventy-three do house-to-house visiting; twenty-seven watch over the theaters and movies; eleven over the churches; sixteen have charge of special disinfections, and forty watch over the street cars, to keep notoriously dirty persons from boarding the cars. During the month, over 15,000 were thus kept out of the cars. The presence of the agents on all the tram lines was utilized further for enforcement of the antisputting ordinances. Twenty-four of the agents have the task of convoying the "notoriously dirty" to the disinfecting baths. During the month the hair of 17,529 persons was cut, 5,523 had their beards shaved and 263 had their heads shaved. Disinfecting baths were given to a total of 57,783, and 89,148 garments were disinfected. Eleven agents, with an additional fifty on Sundays, guarded the eighty-two churches against the entrance of the dirty (733), the sick (141), beggars (154), and persons carrying lunch (1,022). Of the forty-six places of amusement, thirty-eight were disinfected and 4,111 notoriously dirty persons were refused admissions. Overcrowding was also guarded against. Over 400 houses were disinfected, 530 rooms, and unlousing was done on 807 individuals. Two of the "agents" succumbed to typhus within two months. In the house-to-house visiting, 511 sick persons were found, seventy-eight of whom had typhus. Flying brigades were also organized and sent through the poorer quarters of two neighboring towns. Circulars were distributed and placarded advising the public to report to the authorities every case of sickness, even simple fever, among their neighbors. The expense of these circulars was shared by the medical inspectors as there were no funds for that purpose. The total expense of the antityphus campaign for the month is said to have been \$144,026.98. The chief of the national public health service is Dr. J. M. Rodriguez, but Dr. A. Pruneda is in charge of the typhus campaign.

WAR NOTES

Canadian Militia Needs More Doctors.—Through the director of medical service of the Canadian Militia Department, a call has been made for an unlimited number of surgeons to serve with the Canadian Army Medical Corps. The physicians must be British subjects, physically fit for active service, not more than 40 years of age and graduates in medicine from a Canadian university. All who are accepted will be given the rank of lieutenant in the Royal Army Medical Corps.

OUR TROOPS ON THE BORDER

Red Cross Hospital.—The American Red Cross has already equipped eight base hospitals of 500 beds each, and others which will altogether accommodate about 15,000 patients are in process of organization. About 6,000 Red Cross nurses are holding themselves in readiness to go when needed.

Red Cross Hospital Bases.—Plans for the enrollment of physicians of Philadelphia and for the establishment of free hospital bases in that city were discussed, July 14, at a joint conference of executive officers of the Southeastern Pennsylvania Chapter of the American Red Cross and representatives of the Philadelphia County Medical Society. Dr. Wilmer Krusen presided. Dr. Alfred Stengel advocated the appointment of recruiting committees in all the county medical societies, with a view to enrolling the local physicians as members of the Southeastern Pennsylvania Chapter. The three classes are: 1, those who volunteer to go wherever the government may choose to send them, including service in time of war and in foreign possessions; 2, those who volunteer to serve anywhere within the United States; and 3, those who volunteer to serve only within their own community. The value of an efficiently organized Red Cross in combating community epidemics was also mentioned.

Health and Sanitation.—Dr. Thomas Darlington, formerly health commissioner of New York, has been making an exhaustive study of camp conditions on our southern border on behalf of the Civic Federation. He reports that the camps at Fort Sam Houston, Brownsville, Laredo, Eagle Pass and Del Rio are well located and well managed. He commends the work of the medical corps of the army, and finds the food supply excellent in quantity and variety and has found no conditions that should produce disease. Dr. Eugene A. Crockett, Boston, special agent of the American Red Cross in El Paso, Tex., reports that he has thoroughly inspected the camps in the vicinity of El Paso, Columbus, N. M., and on the line of communication south as far as Colonia Dublan, Mexico. He finds the general condition of troops excellent; that the sanitation of camps at Columbus, Ojo Fredrico, and Colonia Dublan is as near perfect as is possible to attain; that the health of the troops is excellent, and that there are plenty of available beds in all hospitals except at Fort Bliss, where there has been an immense number of volunteer troops. There is nowhere a lack of medical supplies or hospital necessities. He reports the need of books, magazines and reading material.

Red Cross Base Hospitals.—The American Red Cross has announced a list of mobile base hospitals, each of which has been organized or is being organized at an initial cost of \$25,000, and also two field columns which connect the evacuation or transfer hospitals of the army with the base hospitals; each of these columns having been established at a cost of about \$15,555. Each division of troops requires at least one base hospital which will accommodate 500 patients, and the professional staff of which consists of twenty-three medical officers, two dental surgeons, a chaplain and fifty trained nurses assisted by twenty-five volunteer aids. The enlisted personnel numbers 153, and about fifteen civilian employees. The hospitals already organized are as follows:

Presbyterian Hospital, New York (equipment subscribed): Director, Dr. George E. Brewer, also Chief of Surgical Service; principal assistant, Dr. Alfred Stillman; chief of medical service, Dr. Warfield T. Longcope; chief of laboratory service, Dr. Karl M. Vogel; chief nurse, Miss Anna C. Maxwell.

Mount Sinai Hospital, New York (Equipment subscribed): Director, Dr. Nathan E. Brill; chief of surgical service, Dr. Howard Lilienthal; chief of medical service, Dr. Richard Weil; chief of laboratory service, Dr. George Baehr; chief nurse, Miss Elizabeth A. Greener.

Bellevue Hospital, New York (Equipment subscribed): Director, Dr. George David Stewart, also chief of surgical service; chief of medical service, Dr. Van Horne Norrie; chief of laboratory service, Dr. Charles Norris; chief nurse, Miss Clara D. Noyes.

New York Hospital, New York (Equipment subscribed): Director, Dr. Charles L. Gibson, also chief of surgical service; chief of medical service, Dr. Lewis A. Conner; chief of laboratory service, Dr. William J. Elser; chief nurse, Miss M. H. Jordan.

New York Postgraduate Hospital, New York (Equipment subscribed): Director, Dr. Samuel Lloyd; chief of surgical service, Dr. Edward W. Peterson; chief of medical service, Dr. Arthur F. Chace; chief of laboratory service, Dr. Ward J. MacNeal; chief nurse, Miss Amy Patmore.

Brooklyn, for Navy (Equipment subscribed): Director, Dr. William B. Brinsmade, also chief of surgical service; chief of medical service, Dr. Luther F. Warren; chief of laboratory service, Dr. Robert F. Barber; chief nurse, Miss Frances Van Ingen; assistant, Mrs. Lillian H. Read.

Massachusetts General Hospital, Boston (Equipment subscribed): Director, Dr. Frederic A. Washburn; chief of surgical service, Dr. George W. W. Brewster; chief of medical service, Dr. Richard C. Cabot; chief of laboratory service, Dr. J. Homer Wright; chief nurse, Miss Sara E. Parsons.

Boston City Hospital, Boston (Equipment subscribed): Director, Dr. John J. Dowling; chief of surgical service, Dr. Edward H. Nichols; chief of medical service, Dr. John Jenks Thomas; chief of laboratory service, Dr. Ariel W. George; chief nurse, Miss Emma M. Nichols.

Harvard University, Massachusetts (Equipment subscribed): Director, Dr. Harvey Cushing, also chief of surgical service; chief of medical service, Dr. Roger I. Lee; chief of laboratory service, Dr. Richard P. Strong; chief nurse, Miss Carrie M. Hall.

Lakeside Hospital, Cleveland (Equipment subscribed): Director, Dr. George W. Crile; chief of surgical service, Dr. William E. Lower; chief of medical service, Dr. Charles F. Hoover; chief of laboratory service, Dr. Howard T. Karsner; chief nurse, Miss Grace Allison.

Rochester, N. Y.: Director, Dr. John M. Swan; chief of surgical service, Dr. Charles W. Hennington; chief of medical service, Dr. William V. Ewers; chief of laboratory service, Dr. Charles C. Sutte; chief nurse, Miss Emma Jones; assistant, Miss Jessica Heal.

Johns Hopkins Hospital, Baltimore: Director, Dr. Winford H. Smith; chief of surgical service, Dr. John M. T. Finney; chief of medical service, Dr. Theodore C. Janeway; chief of laboratory service, Dr. Thomas R. Boggs; chief nurse, Miss Bessie E. Baker.

Harper Hospital, Detroit: Director, Dr. Angus McLean; chief of surgical service, Dr. Clark D. Brooks; chief of medical service, Dr. Burt R. Shurly; chief of laboratory service, Dr. Preston M. Hick; chief nurse, Miss Emily McLaughlin.

University of Pennsylvania, Philadelphia: Director, Dr. Edward Martin; chief of surgical service, Dr. John B. Deaver; chief of medical service, Dr. Alfred Stengel; chief of laboratory service, Dr. Allen Smith; chief nurse, Miss Irwin.

Pennsylvania Hospital, Philadelphia (Equipment subscribed): Director, Dr. Richard H. Harte; chief of surgical service, Dr. John H. Gibbon; chief of medical service, Dr. George W. Norris; chief of laboratory service, Dr. Edward B. Krumbhaar; chief nurse, Miss Elizabeth Dunlop.

Barnes Hospital, Washington University, St. Louis (In process of organization): Director, Dr. Fred T. Murphy; chief of surgical service, Dr. Malvern B. Clopton; chief of medical service, Dr. Walter Fische; chief of laboratory service, Dr. Eugene L. Opie; chief nurse, Miss Julia Stimson.

Chicago, St. Joseph, St. Mary and Augustana Hospitals (Equipment subscribed): Director, Dr. Albert J. Ochsner, also chief of surgical service; chief of laboratory service, Dr. Oscar E. Nadeau; chief nurse, Mrs. Julie Flekke.

Chicago, Mercy and Wesley Hospitals (Equipment subscribed): Director, Dr. Frederic A. Besley; chief of surgical service, Dr. Joseph F. Jaros; chief of medical service, Dr. Milton Mandel; chief nurse, Miss Daisy Urch.

Cincinnati: Director, Dr. Charles A. L. Reed.

University of Pittsburgh, Pittsburgh: Director, Dr. Robert T. Miller.

Chicago, Presbyterian and County Hospitals (Equipment subscribed): Director, Dr. Frank Billings; chief of surgical service, Dr. Arthur Dea; chief of medical service, Dr. Ernest E. Irons; chief of laboratory service, Dr. Homer K. Nicoll; chief nurse, Miss Mabel K. Adam.

Chicago, St. Luke's and Michael Reese Hospitals (Equipment subscribed): Director, Dr. Lewis L. McArthur.

Lincoln Hospital, N. Y. (Equipment subscribed): Director, Dr. Frederick Gwyer, New York City.

Rochester, Minn., Mayo Clinic: Director, Dr. Edward S. Judd.

German Hospital, New York: Director, Dr. Frederick Kammerer.

FIELD COLUMNS (AMBULANCE COMPANIES)

New York (\$10,000 subscribed for equipment): Director, Dr. T. M. Strong.

Berkeley, Calif.: Director, Dr. Robert T. Legge.

LONDON LETTER

LONDON, July 17, 1916.

The War

THE WOUNDED FROM THE BATTLE OF THE SOMME

The excellent preparations of dealing with the wounded have improved with the experience gained in the war. The means of transport are so efficient that during the first stage of the Battle of the Somme the military hospitals in England began to receive men within twenty-four hours of their being wounded. This rapid evacuation was carried out as the fighting was only begun, and it was necessary to keep the hospitals in France as empty as possible in case of pressure. The casualties were mostly light and due to machine guns, the German artillery having been withdrawn before the British advance.

THE STARVATION OF PRISONERS AT RUHLEBEN CAMP

The thing which causes most concern in this country—more than the heavy loss of life and limb in the war—is the treatment of the British prisoners in the hands of the Germans. In a previous letter I gave the report of the American physician, Dr. Taylor, to the American embassy at Berlin, which confirms what needed no confirmation, the evidence from many sources. In a second report Dr. Taylor states that since his last visit to the Ruhleben camp a sharp reduction has been made in the amount of foodstuffs allotted to the camp and that the diet now falls below that of the military prisoners in other camps. One result of the present ration allotment is already seen in the fact that some of the Jews are appearing at the camp kitchen to secure food which is to them not ritually clean. Sir Edward Grey on receiving this statement from Mr. Page, the American ambassador, expressed the view that if the German government were not in a position to feed prisoners of war in their hands properly it was their duty to release them. He stated further that "the German government is detaining a number of British civilians who are in a state of health entitling them to repatriation under the agreement relating to invalid civilians. The German prisoners of war in this country, both combatant and noncombatant, are, as Mr. Page is aware, adequately fed without the aid of parcels from abroad, and his majesty's government is therefore entitled to demand reciprocal treatment for the British prisoners in Germany or if this is not possible their release." In a third report Dr. Taylor states that the food allowed to the prisoners falls below the figures officially established for the month of June for prisoners of war by Professor Backhaus, head of the

nutrition department of the German ministry of war. Dr. Taylor gives the accompanying table, which shows the terrible deficiency of the Ruhleben diets.

COMPARATIVE DIETS

	Calories	Protein Gm.	Fat Gm.	Carbo- hydrate Gm.
English laborer	3,655	184	71	570
German farm laborer (Ranke).....	4,696	143	108	788
Standard diet for a man of moderate activity	2,820	100	100	360
Military prisoners of war in Germany...	2,700	80	29	500
Ruhleben diet before reduction.....	1,580	59	12	308
Diet actually taken when increased by food left by other prisoners receiving supplies	2,725	98	24	523
Ruhleben diet since reduction.....	1,220	39	6	255
Reduced diet when increased by food left by others.....	1,930	55	10	410

It will be seen that both the flesh-forming protein and the heat-forming carbohydrates are much lower in the Ruhleben diet than in the prisoner-of-war diet, which is a bare minimum itself. In the case of the fats, the situation is well nigh desperate. Dr. Taylor writes: "All the fat present in the diet is incidentally contained in the several foodstuffs, and the diet is as fat-free as it is practically possible for a diet to be. These figures indicate that the food supplied by the authorities to the interned civilians in Ruhleben during the past week, if applied to all the men, represented less than half of the requisite food units." A notable feature of the diet is the absence of vegetables, a very serious matter, and the substitution of saccharin for sugar, a substitution which was absolutely prohibited in Germany before the war. Dr. Taylor strongly protests against this and points out that less and less food has been coming in from the prisoners' friends abroad, and that, though the number of parcels has increased, the amount of food has gone down. Also much of the bread received has been moldy. The quality of the bread received from Switzerland has greatly deteriorated.

WOMEN MEDICAL STUDENTS AT THE LONDON HOSPITALS

Before the war, women medical students were trained in London only at the Royal Free Hospital, the medical school of which is entirely devoted to that purpose. The war has caused a deficiency of the medical students attending the various hospitals, many of whom have joined the army either as combatants or as ambulance men, while at the same time the want of physicians in the country has greatly increased the number of women entering the profession. The consequence is that a number of the London medical schools—King's College, St. Mary's, and St. George's—which previously received only men have now been thrown open to women, and so far the experiment has been completely successful. It is hoped that other hospitals will follow the example set.

Raw Versus Boiled Milk

The question whether the protection against infection obtained by boiling milk is more than counterbalanced by loss of nutritive properties is still unsettled. A woman physician, Dr. Janet E. Lane-Claypon, who is well known for her researches in regard to milk, has just issued a work under the authority of the Medical Research Committee of the national insurance act. Her conclusions are in favor of boiling, though she is unable entirely to exclude disadvantages. She is inclined to discount any vitalistic theory of the efficiency of natural milk as a constructive in infant feeding. Thus she refers to the "so-called biologic properties of milk," to the "alleged" production of Barlow's disease (infantile scurvy) and rickets by the use of heated milk for infants, and to vitamin theories, which give results that are "somewhat fragmentary." However, she admits that milk contains substances of unknown composition essential for life when milk is the sole diet. But she considers that there is no evidence to show that these substances are destroyed by boiling, especially when the heat is not applied for prolonged periods and when a temperature not exceeding the boiling point is used. The loss of vitamin, she says, if it occurs, is evidently not sufficient to affect the nutritive value of milk. On the other hand, Dr. Lane-Claypon admits that some children thrive better on raw milk, others on boiled milk, and therefore individuality is an important factor.

The Treatment of the Stiff Joints of Soldiers

A new clinic for the physical treatment of stiff joints and wounds has been opened in London under the management of a committee of eminent physicians and surgeons. The

arrangements are modeled on those at the Grand Palais in Paris, an institution which, it is stated, has saved the French government a very large sum in pensions—the figure is put as high as \$5,000,000 per year. On the ground floor are the "whirlpool baths," the latest modification of which is a bath in which water and air are pumped in together, giving a rushing, torrent-like effect. Upstairs in a large room are mechanical appliances for exercising stiff limbs. These are very ingenious, and comprise foot and hand machines and machines for the body. There will be accommodation for sixty patients a day, and it is hoped soon to extend the scope.

PARIS LETTER

PARIS, July 6, 1916.

The War

EXTRACTION OF BULLETS FROM THE BRAIN

Dr. Cazamian, a naval surgeon, has just reported to the Société de chirurgie de Paris two cases in which he has practiced late extraction of projectiles from the brain at one sitting with the help of roentgenoscopy. The following is the technic employed: Two roentgenograms are made to locate the projectile. The latter's position being thus approximately ascertained, trephining is performed on the nearest part of the cranium. The dura mater having been incised, the Roentgen-ray screen is brought into action. The foreign body, once detected, is seized by forceps introduced into the brain substance and is thus extracted. The operation takes very little time and is very simple, as is proved by Cazamian's two cases in each of which perfect recovery resulted. In the first a shrapnel bullet penetrated, from the right side, the posterior frontal region, and, traversing the two hemispheres, lodged 1 cm. below Broca's convolution. The bony fragments at the orifice of entry were removed in the ambulance. Right facial paralysis with aphasia of a subcortical type persisted. Three months after the injury, the bullet was extracted, as described, by trephining from the left side. Immediately after the operation, complete aphasia was manifested for several days, but four months afterward there was no sign of any motor or speech trouble. In the second case a rifle bullet penetrated behind the ramus of the left lower jaw and lodged on the upper border of the left petrous bone near the gasserian ganglion. The patient suffered from very severe neuralgia of the trigeminal, rendering life scarcely bearable. Trephining above the auditory meatus, Cazamian was easily able to extract the bullet, and the pains disappeared, as well as certain visual troubles which had previously been noted.

This question of extraction of bullets lodging in the brain is still under discussion. Dr. Rochard is of the opinion that the operation is indicated only when the presence of the foreign body causes motor or sensory nervous troubles, or in case of infection.

Professor Quénu thinks, on the contrary, that the mere absence of symptoms does not justify abstention, for the patient is always at the mercy of untoward happenings which, after months or years, may suddenly occur and cause death. This is not the same thing as saying that one should always remove foreign bodies lodged in the brain. One must take into consideration the volume of the body and its situation. If it is deeply placed and the operation promises to be difficult and serious, it is better to abstain. If the projectile is extremely small and its presence causes no symptoms, one may leave it alone. If the projectile is large and within reach, and if its extraction does not present too many difficulties, it is better to attempt it.

Dr. Walther is entirely of Quénu's opinion. Dr. Routier thinks that all foreign bodies of the brain should be removed, if the operation can be done without causing too much risk to the patient, because sudden death is frequently the result of leaving these foreign bodies. It must be remembered, however, that, even after the removal of foreign body, there may be serious sequelae. Thus a long time ago Routier removed a revolver bullet from the anterior cerebral lobe of a wounded man. Five years afterward the patient, who had been in good health, died suddenly.

Dr. Chaput stated that after localizing an intracerebral projectile by the Roentgen rays, he practices trephining at the point nearest to the projectile and then explores the cerebral substance with a small director. When he detects, by this means, the bullet, he passes the forceps along the sound, seizes the projectile and extracts it. The same subject was discussed at the Réunion médico-chirurgicale de la IV^e armée where Dr. Potherat, surgeon of the hospitals of Paris, remarked that, in view of the evidence of frequent late infec-

tion often causing the death of patients in whose brain a projectile is lodged, many surgeons have gone so far as to recommend the extraction of bullets whenever it is materially possible. Potherat communicated four such cases in which the operation had not been attended with any great difficulty. In one of these cases the removal had been practiced early. The patient recovered and remained well. In the three others extraction was a secondary operation and was called for by complications occurring after an interval of from a few weeks to a month. One of these last three recovered and two died, giving for four cases 50 per cent. of recoveries. On the whole, the results are such as to encourage surgeons to intervene. The operation should be performed as soon as possible, and before the development of complications which may prove fatal.

THE WAR AND THE SURGICAL CONGRESS

At its annual meeting, which has just taken place, the committee of the Association française de chirurgie decided that the French surgical congress will not be held during the war, and the Austro-German, Bulgarian and Ottoman members of the association were dropped from membership.

THE FRENCH WOUNDED EMERGENCY FUND

The French Wounded Emergency Fund is an organization which took rise during the early part of the war, just after the retreat from Belgium and the battle of the Marne. It has its headquarters at London, and is under the honorary presidency of the marchioness of Linlithgow. The membership list includes the greatest names of the English aristocracy and those of a certain number of rich Americans who have contributed generously to its funds. The work is officially approved by the French government, and is under the patronage of the British ambassador. In France the honorary presidents are the Duchess of Rohan and M. Etienne, former minister of war. Very large sums are spent monthly on goods for the military hospitals such as dressings, bandages, clothes and supplies of all kinds. The delegates visit every day the hospitals of the different regions to which they are assigned, and, with the assistance of the surgeons in chief of these establishments, draw up lists of their needs, which lists are sent to London. Here a large staff of women volunteers packs and dispatches, as quickly as possible, these objects, thus demanded, to the French hospitals. In 1915 more than 550 military hospitals were thus kept provisioned through the agency of fourteen delegates working in these regions. May 31, the number of hospitals thus supplied was 1,198, and the total of the gifts exceeded in value 2,000,000 francs (\$400,000).

THE BETTER UTILIZATION OF PHYSICIANS AND PHARMACISTS IN THE ARMY

Deputy Le Rouzic, having requested the minister of war to have drawn up for each region, by the directors of the health service, a list of physicians and pharmacists who have been mobilized and who were members of the departmental health commissions, with a view to utilizing their special competency in military life as it had been used in civil life, has received the following answer: "The military health service does its utmost to utilize special competences in the interests of the sick and wounded. Thus to each regional direction have been attached: one assistant director, whose principal mission is to inspect the military establishments, hospitals, etc., and to take such measures as are necessary from the point of view of hygiene; assistant pharmacists attached to the directors; technical medical advisers, and assistant advisers whose rôle consists in studying and proposing such measures of prophylaxis as in the course of their inspections they have found necessary. The list will be drawn up for each regional direction, and this will permit making use of the special knowledge of the persons whose names appear on this list. They will, however, not be employed in their usual place of residence as long as they belong to classes which have not been discharged from military obligation.

Personal

At its last sitting, the Académie de médecine elected two foreign associate members, Dr. E. Perroncito, professor of bacteriology at the University of Turin, and Professor Kitasato, director of the bacteriologic institute at Tokyo.

At the sitting of June 26, the Académie des sciences elected two foreign corresponding members. Dr. Ramon y Cajal of Madrid was elected to fill the place of M. Perez in the section of anatomy and zoology. Dr. Morat, professor of physiology at the Faculté de médecine de Lyon was elected for the section of medicine and surgery to succeed Dr. Zambaco Pasha.

Marriages

MARY ADELAIDE GASTON, M.D., Cerro Gordo, Ill., to Mr. Walter Malcolm McLeod of Vega Baja, P. R., at Cerro Gordo, July 19.

WALLACE S. PETTY, M.D., Rutledge, Mo., to Miss Helen Larson of Oshkosh, Wis., at Excelsior Springs, Mo., June 28.

CLIFFORD CLINTON HARTMAN, M.D., Pittsburgh, to Miss Carlotta Barnes Bailey of Aberdeen, Md., May 23.

ADRIEL CLARK WEAKLEY, M.D., to Miss Evelyn Guthrie, both of Shelbyville, Ky., in Louisville, Ky., July 6.

KLINE V. MENEFFEE, Cincinnati, to Miss Fay Rogers of Falmouth, Ky., at Louisville, Ky., July 20.

ROBERT BENONI FLEEGER, M.D., Lead, S. D., to Miss Maude Morrison of Vancouver, B. C., June 26.

ROBERT JENNINGS HANLEY, M.D., to Miss Cathron Smith, both of Billings, Mont., July 15.

DAVID CORBIN STREETT, M.D., to Miss Ferebe Buion Westcott, both of Baltimore, July 19.

WILLIAM AUSTIN TOMES, M.D., to Miss Gertrude A. Ryno, both of Brooklyn, December 15.

BERTRAM ARTHUR RICHARDSON, M.D., to Miss Ethel Wyllie, both of Emington, Ill., July 5.

EDWARD JOHN MILLER, M.D., to Miss May Janice Shannon, both of Chicago, July 26.

GEORGE ARNOLD MOLEEN, M.D., to Mrs. May Luff Conway, both of Denver, July 20.

JOSEPH LEWIS HUTTON, M.D., to Miss Anna Jost, both of St. Louis, July 17.

Deaths

George Louis Painter, M.D., Berkeley and San Francisco, University of California, San Francisco, 1896; aged 45; a member of the Medical Society of the State of California; acting assistant surgeon, U. S. Army, and later assistant surgeon, U. S. V., with rank of captain, who went to the Philippine Islands with the First California Infantry on the first expedition and served acceptably with that command and on the general staff; was marching in the Preparedness Parade in San Francisco, July 22, when a bomb was exploded and a jagged piece of metal struck him in the abdomen, causing injuries from which he died in the Emergency Hospital, a short time later.

Surgeon Emlyn Harrison Marsteller, Lieutenant-Commander, U. S. Navy (ret.), Washington, D. C.; University of Virginia, Charlottesville, 1872; aged 65; a Fellow of the American Medical Association and a member of the Association of Military Surgeons of the United States; who entered the Navy, Jan. 12, 1876, and after participation in the Battle of Manila Bay as surgeon of the *Raleigh*, and fifteen years and three months of sea service and thirteen years and eight months of shore or other duty, was retired Sept. 15, 1908, on his own application after thirty years' service; died at his home in Washington, July 23, from heart disease.

John A. McKlveen, M.D., Chariton, Iowa; Bennett Medical College, Chicago, 1872; aged 81; local surgeon for the Burlington System; formerly state senator for the Fourth Iowa District; formerly president of the Iowa Eclectic Medical Society and of the Provincial and National Boards of Health; formerly president of the state board of health and of the State Board of Medical Examiners; vice president of the State Savings Bank, Chariton, and director of the Lucas County National Bank; died at his home, July 17, from cardiac asthma.

William Abbott Phillips, M.D., Evanston, Ill.; Harvard Medical School, 1887; aged 55; a member of the Illinois State Medical Society; at one time lecturer on comparative anatomy in Northwestern University Medical School, Chicago; curator of the ethnologic museum of Northwestern University; a member of the American Association for the Advancement of Science; an archeologist of repute; chief of the medical staff of the Evanston Hospital; died at his home in Evanston, July 24.

Asa Stearns Wilcox, M.D., Minneapolis; Hahnemann Medical College, Philadelphia, 1885; aged 57; professor of prac-

ce of medicine and diseases of women in the University of Minnesota College of Homeopathic Medicine and Surgery, Minneapolis; a member of the medical staff of the Minneapolis City Hospital and gynecologist to the Homeopathic Hospital; died at the home of his sister in Minneapolis, July 17, from pneumonia.

Price Emerson Murray, M.D., Atlanta (Ga.) Medical College, 1886; aged 62; who retired from medicine on account of his business interests, several years ago; a director of the Iberian Building and Loan Association and Germania Savings Bank, Atlanta; and for several years local superintendent of the Western Union Telegraph Company and part owner of the *Chattanooga Times*; died in a sanatorium in Atlanta, July 20.

Melville George McHugh, M.D., Chicago; Creighton Medical College, Omaha, 1900; aged 38; formerly a member of the Illinois State Medical Society; a specialist on tuberculosis and connected at one time with the Tuberculosis Hospital at Lansing; died in the Swedish Covenant Hospital, Chicago, July 24, from peritonitis following a surgical operation.

Daniel Yingling, M.D., Huntington, Ind. (license, Indiana, 1897); practitioner since 1866; aged 76; for several terms president and secretary of the Huntington (Ind.) Board of Health; a member of the school board and of the board of public works; he fell several months ago, sustaining a fracture of the hip; died at his home, July 17, from heart disease.

Charles H. Johnson, M.D., Austin, Minn.; McGill University, Montreal, 1884; aged 57; formerly a Fellow of the American Medical Association; a member of the Minnesota State Medical Association; twice mayor of Austin; died in the Great Northern Hotel, Chicago, July 25, from exhaustion.

John Thomas Longino, M.D., Fairburn, Ga.; Southern Medical College, Atlanta, Ga., 1893; aged 47; a member of the Medical Association of Georgia; formerly senator from the thirty-Sixth Senatorial District and representative from Campbell County in the legislature; died at his home, July 19, from nephritis.

Louis Augustus Woodbury, M.D., Groveland, Mass.; Harvard Medical School, 1872; aged 71; a member of the Massachusetts Medical Society and of the New Hampshire Association of Army Surgeons; a veteran of the Civil War; a practitioner and druggist of Groveland; died at his home, July 17.

Alvah Conant Lewis, M.D., Salt Lake City; College of Physicians and Surgeons in the City of New York, 1877; aged 56; formerly a member of the Utah State Medical Association; died about July 14, at Ocean Beach, Calif., where he had gone in the hope of regaining health.

James William Ashford, M.D., Canyon City, Ore.; Cooper Medical College, San Francisco, 1878; aged 59; formerly a member of the American Medical Association; for many years county physician of Grant County, Ore.; died at his home, July 11, from chronic myocarditis.

Preston G. Stebbings, M.D., Chico, Calif.; formerly of Bradley, Ill.; Rush Medical College, 1871; aged 83; for sixty-two years a practitioner, and for the last eight years a resident of California; died at his home, July 18, from cerebral hemorrhage.

Joshua S. Wood, M.D., Irwinton, Ga.; Atlanta (Ga.) Medical College, 1875; aged 72; also a druggist; for several years county commissioner of Wilkinson County, Ga., and senator from the twenty-first district in 1888 and 1889; died at his home, July 20.

John Martin, M.D., Caldwell, Ohio; Miami Medical College, Cincinnati, 1869; aged 86; assistant surgeon of volunteers during the Civil War; for more than fifty-two years a practitioner of Caldwell; died at his home, July 23, from heart disease.

William Henry Erwin, M.D., Oak Grove, Mich.; Long Island College Hospital, Brooklyn, 1877; aged 64; for nearly fifty years a practitioner of Oak Grove; died at the home of his son in Howell, Mich., July 16, from carcinoma of the bladder.

George Frederick Schug, M.D., Williamsburg, Iowa; Jefferson Medical College, 1904; aged 35; formerly a member of the Iowa State Medical Society; died in the Mayo Brothers Hospital, Rochester, Minn., July 24, after a surgical operation.

Thomas P. Reville, M.D., Folkston, Ga.; College of Physicians and Surgeons, Baltimore, 1887; aged 56; a Fellow

of the American Medical Association and a physician of Charlton County, Ga.; died at his home, June 20, from heart disease.

Romulus Alonzo Whitaker, M.D., Kinston, N. C.; College of Physicians and Surgeons, Baltimore, 1885; aged 59; a member of the Medical Society of the State of North Carolina; died at his home, July 18, from cerebral hemorrhage.

Leon Lewis Patterson, M.D., Arapaho, Okla.; University of Oklahoma, Norman and Oklahoma City, 1911; aged 35; a Fellow of the American Medical Association; died in the Clinton (Okla.) Hospital, July 22, from typhoid fever.

Clarence Appleton Kirkpatrick, M.D., Namkham, Burma; University of Pennsylvania, Philadelphia, 1910; aged 29; a medical missionary of the Baptist board at Namkham, Northern Shan States, Burma; died at his station, recently.

Thomas C. Elmendorf, M.D., Portchester, N. Y.; New York Homeopathic Medical College, New York, 1875; aged 62; formerly president of the village health board; died at his home, July 18, from cerebral hemorrhage.

Boswell Henson Stillyard, M.D., Wheeling, W. Va. (license, West Virginia, 1882); aged 69; for forty years a practitioner; a member of the second branch of the Wheeling City Council; died at his home, July 17, from nephritis.

James Smiley Bush, Jr., M.D., Saranac Lake, N. Y.; Atlanta (Ga.) College of Physicians and Surgeons, 1912; aged 31; formerly of Colquitt, Ga.; died in Albuquerque, N. M., July 14, from tuberculosis.

Herman G. Tarter, M.D., Chilhowie, Va.; Medical College of Virginia, Richmond, 1911; aged 31; a member of the Medical Society of Virginia; died at his old home in Wytheville, Va., July 15.

Roscoe Smith, M.D., Auburn, Me.; Harvard Medical School, 1870; aged 79; a veteran of the Civil War; representative from Turner Center in the Maine legislature in 1891; died at his home, July 8.

William W. Rambo, M.D., Alston, Ark. (license, Arkansas, 1903); aged 63; a member of the Arkansas Medical Society; a practitioner since 1884; died suddenly at his home, July 16, from heart disease.

John J. Arnold, M.D., Thicket, Texas (license, Ninth Judicial Board, Texas, 1900); aged 43; physician and surgeon to the Foster Lumber Company, and the Arnold Mill; died at his home, July 19.

Isaiah Titchanall Prickett, M.D., Parkersburg, W. Va.; Miami Medical College, Cincinnati, 1876; aged 79; died at his home, May 18, from carcinoma of the intestines and bladder.

Robert Benjamin Chisholm, M.D., Summitt, Miss.; Tulane University, New Orleans, 1903; aged 52; a member of the Mississippi State Medical Association; died at his home, July 16.

Herman Gasser, M.D., Platteville, Wis.; Northwestern University Medical School, 1883; aged 59; formerly a Fellow of the American Medical Association; died at his home, July 6.

Norman Webb Chance, M.D., Little Falls, Minn.; Rush Medical College, 1888; aged 57; formerly a member of the Minnesota State Medical Association; died at his home, July 2.

George W. Goodner, M.D., Chicago; Northwestern University Medical School, 1869; aged about 75; died at his home in Chicago, in May, from the result of accidental burns.

Clarence V. Gray, M.D., Batavia, N. Y.; University of Buffalo, N. Y., 1887; aged 50; proprietor of the Primrose Sanitarium, Batavia; died at his home, July 6, from diabetes.

Henry H. Stimson, M.D., Saugatuck, Mich.; Bennett Medical College, Chicago, 1870; aged 92; a practitioner of Saugatuck for more than sixty years; died at his home, July 14.

Charles Marcus Sandford, M.D., Brighton, Ont.; Trinity Medical College, Toronto, Ont., 1886; aged 53; died in Brighton Village, Ont., from diabetes, April 11.

Armistead Burt, M.D., Pinon, N. M.; Tulane University, New Orleans, 1861; aged 78; a veteran of the Civil War; died at Orange, N. M., June 7.

Freeman Austin Durkee, M.D., East Andover, N. H. (license, New Hampshire, 1897); aged 83; died in his home, April 29, from cerebral hemorrhage.

Aaron L. Bowman, M.D., Rochester, Ind.; Illinois Medical College, Chicago, 1908; aged 40; died at his home in Talma, Ind., July 5.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

WINE OF CARDUI SUIT

(Continued from page 385)

June 6, 1916, Morning

The Court met pursuant to adjournment. Mr. Williams, attorney for the plaintiff, the Chattanooga Medicine Co., announced that by mutual agreement depositions which had not been read would be treated as read and as in the record. It is the intention of the plaintiffs to close their case by Thursday, June 8, at noon.

TESTIMONY OF DR. THOMAS G. ATKINSON

Dr. Thomas G. Atkinson was called as witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. WALKER

Dr. Atkinson testified that he is a physician and medical journalist.

Q.—From what school, doctor, did you graduate, and please tell us the various positions you have held. A.—In 1887—I think I am right on the date—I took what is called the Intermediate Bachelor of Science at the University of London. I then took four years' medical course partly in St. Bartholomew's and partly in St. Mary's London, but of course English Medical Schools don't graduate one as they do over here. One simply gets a license from the Royal College of Physicians to practice.

Immediately after that I spent a year in Paris, which, however, was nothing but informal, unsystematic attendance at the hospital clinics at the Hotel Dieu and the Hotel Charlotte and a few others.

Later I came to this country and took a special course in homeopathic medicine at a school in Cleveland which I believe at that time was called the Cleveland Homeopathic Hospital College. It has changed its name since.

Later I graduated at the Chicago College of Medicine and Surgery in this city, with the degree of M.D.

Q.—What is your age, please? A.—About 46.

Q.—Now, doctor, what schools have you been connected with as a teacher, if any, and in what branch of your profession? A.—I was Professor of Physiology for two or three years in the Chicago College of Medicine and Surgery for one year. I was professor of physiology at the American Medical College in St. Louis for three years. I was associate professor in neurology in both these places at the same time and I was professor of therapeutics for two years in the Jenner Medical College.

I am at present the editor of the *Medical Standard*, published in this city, and the *Medical Brief*, published in St. Louis, and I was formerly Associate Editor of the *American Journal of Clinical Medicine*, but I am no longer associated with that.

Q.—Are you in the practice of your profession, also, doctor? A.—Yes, sir.

Q.—Where is your office? A.—At 14 W. Washington Street.

Q.—How long, or over what period of time have you been engaged, as a part of your labor, as the editor of medical journals, or associate editor, or writing on medical subjects? A.—Since 1906, about 10 years.

Q.—And are you connected with that work now? A.—Yes, sir.

Dr. Atkinson stated that in the last three years he has confined himself to ophthalmology and has had the clinical experience which comes with his teaching positions. He defined a therapist as a man who has some expert knowledge of the application of drugs and other remedial measures to disease. He lectured as a full professor on this subject for two years, and also lectured at the Chicago College of Medicine and Surgery in Dr. Funck's department. In his journalistic work was included review of scientific works, articles and books. He is familiar with the diseases of women.

The witness testified that Mr. Hough engaged him as a special expert to look up literature and make researches on the subject of the drugs at issue about a year ago last March. He has never used *carduus benedictus* in his practice. He looked it up in the literature. He was asked to state the history of *carduus benedictus*. Objection was made, the Court stating that if the witness could give the bibliography on the subject the question might be competent. The Court, after discussion, ruled that the witness could not answer questions as to the use of *carduus benedictus* as a

medical agent as read from books. The same ruling was made on *viburnum prunifolium*.

Dr. Atkinson stated that he is familiar with the pelvic organs of the female. He defined a pharmacologist as a laboratory man of the therapist who furnishes him with just one of the data on which a therapist bases his therapeutic judgment and knowledge.

The witness stated that he has never done any experimenting in pharmacology. He has seen it done and has directed its experimentation in the physiologic laboratory. He stated that a negative pharmacologic test as pharmacology at present stands would certainly not indicate the therapeutic value or valuelessness of the drug. A therapeutic test, he stated, includes a pharmacologic test and a clinical test, and he believes there is a difference between the action of drugs on a well person and on a sick person. He has used the fluidextract of *viburnum* in his practice in any condition in which he thought a uterine tonic and sedative was indicated, chiefly in dysmenorrhea, menorrhagia, threatened abortions, and in any diseases of the female pelvic organs in which there was pain or tenseness. It would also be indicated in various inflammations.

From his reading Dr. Atkinson believes that *carduus benedictus* has therapeutic value. He regards it as being in the same class as *viburnum*, and, therefore, having the same indications as *viburnum*. He considers the two drugs as synergistic—namely, when two drugs of similar action are combined and given in combination the joint action, so far as their similarity goes, is greater than the added sum of the two.

Dr. Atkinson defined a medicinal wine as a preparation of an extract of a drug made either with the wine itself, or in a weak solution of alcohol, whose alcoholic content is approximate to that of the wine. He considered that the medicine known as Wine of Cardui, assuming that it contained the extractives of 30 grains of *carduus benedictus* and three grains of *viburnum prunifolium* in each dose, in a solution of 20 per cent. alcohol, to have therapeutic value in diseases peculiar to the female. He believes that certain drugs have a selective action on certain parts of the body. He stated there were certain tonics which have such action—he could not tell how they act, but he knows that they do act. There are certain drugs, he believes, which have a selective action on the uterus of the female; that is, they show their greatest effect on the uterus, but they also have effect on other organs. He mentioned ergot, hydrastis, helonias, *viburnum prunifolium*, *viburnum opulus*, *sepia* and *carduus benedictus*. He stated that the medicine name (Wine of Cardui) would be of value in amenorrhea, menorrhagia, metrorrhagia and dysmenorrhea.

Q.—Are medicines ever given—what I am trying to get at is this amenorrhea is suppression? A.—Yes.

Q.—And menorrhagia is excessive flow? A.—Yes.

Q.—Will you explain—you said it would in all of them—how medicine can be of value in suppression and in an excessive flow, that is, in what appears to be opposite conditions. Please tell the jury will you? A.—Well, for one thing—

Q.—Doctor, when you hold your head down, you drop your voice. A.—For one thing, the two opposite manifestations may be due to the same underlying cause. For instance, just as an illustration, an endometritis, which is an inflammation of the inside of the womb, may, in different women, and even in the same woman at different times, produce at one time an amenorrhea, a suppression of the menses, and at another time a flooding or menorrhagia. At other times, neither one nor the other, but a dysmenorrhea, a painful menstruation, and inasmuch as it is the inflammation of the womb that lies at the root of all these three troubles, the same remedy may and probably will help them all. That is one reason why such a thing may happen.

I think there is a broader reason that we ought to bring out, and that is, that medicines don't do the thing at all. Medicine don't walk into a body and pick up an organ and move it around. Medicine don't go in and cure disease. Medicines simply stimulate the proper agencies within the body—

Q.—Naturally there you mean? A.—The recuperative and defective agencies of the body itself, to do its own recovery, and the body is very intelligent in its recuperative work. I think that must be quoted as one reason why drugs often seem to help seemingly opposite conditions.

Q.—When you use that second phrase, this second reason that you give, does that apply generally to all drugs? A.—Yes. Oh, there are a few instances where we give drugs for the direct mechanical—what we call it, physiological action of the drug. We sometimes give enormous doses of irritative cathartics out of which we expect to get

st the direct irritative effect of the drug. But, as a rule, the giving of medicines is not with any idea that the medicine itself is going there to do something wonderful, but that the medicine is going to stimulate the natural recuperative and defective agencies of the body to do its own recovering.

The witness named several conditions of sterility in which the medicine indicated might be of value. He stated that the medicine is indicated in puberty when there is suffering. In his opinion 80 per cent. of women suffer at the time of puberty. He believes that the medicine named would be of therapeutic value in these cases. In his judgment general and special tonics are indicated in pregnancy to aid childbirth. In his opinion Wine of Cardui is a general and a special tonic. He does not see how it could mask a cancer in a woman at the time of the menopause. He considers Wine of Cardui a helpful tonic and a good combination for a woman during the menopause.

There was described to the witness the experiment performed by Dr. John Clarence Webster. He considered this experiment as having absolutely no value as a test for the therapeutic value of a medicine when given through the mouth to a woman suffering with female troubles. The fact that, injected into the circulation, it did not produce any effect on the respiration or the circulation would not, in his opinion, show anything with reference to the therapeutic value of the same drugs given by the mouth to women suffering with female trouble because there are dozens of valuable drugs that would not influence the circulation or respiration under those circumstances.

Q.—Well, will you tell us, then, if you please, how such drugs could act, if taken through the mouth, where they do not affect the respiration or the circulation; and, if you can, illustrate that? A.—Well, just as one illustration, we will take iron. Iron, whether it is taken through the mouth, or whether it is injected, as you suggested in your hypothetical question, would not have made the slightest difference in the tracings of the respiration and the blood and the pulse; and yet, I suppose, everybody admits the therapeutic value of iron taken through the mouth.

There was called to the attention of the witness a query and minor note published in THE JOURNAL as to the use of alcohol in medicine and the witness was asked to interpret the statement from this query. The Court ruled that the statement was perfectly plain and the jury could interpret it for themselves.

The witness stated that at least an ounce of alcohol could be taken by an adult during twenty-four hours, without harm if taken through a period of twenty-four hours and properly diluted. He stated that he could not see how Wine of Cardui taken in the dosage indicated would tend to heighten the passions of a young girl at puberty, nor could he see how it would give her an alcoholic habit. He did not believe it would produce disease in a pregnant woman or give the woman or the child an alcoholic habit.

Dr. Atkinson stated that there are many drugs used by physicians in alcoholic preparation. He believes that the inclusion of a drug in the pharmacopeia means that it is in common use at the time the pharmacopeia is made up; its inclusion in the dispensary does not mean anything.

Objection was made and sustained on questions as to the inclusion of carduus benedictus in various pharmacopeias.

The witness stated that he has read the Home Treatment Book for Women issued by the Chattanooga Medicine Company in 1913.

Dr. Atkinson stated that he is not competent to say what proportion of women suffering with female troubles are surgical cases. There are cases that are nonsurgical and he believes that Wine of Cardui in the dosage named would be indicated in such cases. He could not say how the medicine acts in remedying displacements. The medicine does not do it, but stimulates the body process so that they do it. There is no doubt that under the influence of medicine many of these cases of displacement do become righted, he believes. There are, in his opinion, displacements which do not give rise to symptoms.

The witness defined vaginitis and inflammation of the vagina and stated that this medicine would be of therapeutic value in such cases. He also believes it would be of therapeutic value in cases of leukorrhea or whites.

An adjournment was taken until 2 o'clock the same day.

June 6, 1916, Afternoon

The cross-examination of Dr. Thomas George Atkinson was suspended temporarily.

TESTIMONY OF MR. HENRY CLAY EVANS

Mr. Henry Clay Evans was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. WILLIAMS

Mr. Evans testified that he has resided in Chattanooga for fifty-two years. He has been commissioner of education, alderman several times, mayor twice, a member of congress, first assistant postmaster general, commissioner of pensions, counsel general to London, commissioner of the city, and commissioner of education and health of Chattanooga. He has known Mr. John A. Patten and Mr. Z. C. Patten, Jr., ever since they were boys. The witness was asked as to the reputation of John A. Patten and of Z. C. Patten, Jr., prior to April, 1914, for honor, integrity and fair business dealing in that community. Objection was made to the question.

After considerable argument the Court stated that he had announced the presumption that, until the contrary is shown, these men are good citizens, and he had decided to let the evidence in on that basis. Exception to the ruling was made by the defendants.

The witness stated that the reputations of the Messrs. Patten were very good. He never heard their reputations questioned.

TESTIMONY OF MR. FOSTER W. BROWN

Mr. Foster W. Brown was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. WILLIAMS

Mr. Brown testified that he has been practicing law in Chattanooga for thirty years. He has been living in Chattanooga for twenty-five years. He was a member of Congress one term; attorney general to Porto Rico two years and attorney general of his Chattanooga District for eight years. He testified to the same extent as the last witness regarding the reputation of Messrs. John A. and Z. C. Patten, Jr.

Cross-examination was waived.

Objection to the testimony was made, overruled and exception taken.

TESTIMONY OF MR. J. M. LITTLETON

Mr. J. M. Littleton was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. WILLIAMS

Mr. Littleton testified that he has lived in Chattanooga for five years. He is the mayor of Chattanooga. He testified to the same extent as the two previous witnesses.

CROSS-EXAMINATION BY MR. SCOFIELD

Q.—What is your business, Mr. Littleton? A.—Beg pardon?

Q.—What is your business? A.—I am a lawyer.

Q.—Is there any other business you are engaged in? A.—I am mayor of Chattanooga.

Q.—Are you engaged in any business besides that? A.—No, sir.

Q.—You are not? A.—No, sir.

Q.—Never have been? A.—Well I am—I have owned a farm, I am a pretty good farmer.

Q.—Your name is J. L.? A.—J. M.

Q.—J. M.? A.—Yes, sir.

Q.—Have you been connected with any manufacturing companies?

A.—Why, I have had small stock in manufacturing companies, not enough to bring forth great dividends, different companies.

Q.—What companies have you been in? A.—Well, I do not know that I could name them, sir, several small ones.

Q.—Have you been associated with any chemical company? A.—Oh, yes, I own some stock in a chemical company.

Q.—What is the name of that company? A.—Anedcmin Chemical Company; I own stock in it.

Q.—What is the business of that company? A.—That company manufactures a medicine.

Q.—Who is your partner down there in the practice of law? A.—My partners are my nephews, my brother's two sons, Littleton & Littleton.

Q.—Is there a man down there by the name of Estil? A.—Estil?

Q.—Yes. A.—My father-in-law, Judge Estil, was my partner when I lived at Winchester, yes, sir.

Q.—This chemical company has their offices right above yours? A.—No, sir; they had here in Winchester, in a building that was owned by me.

Q.—That was a proprietary medicine that they were making and selling? A.—Yes, sir.

Q.—A secret formula? A.—Yes, sir.

The attorneys for the plaintiff moved that the cross-examination be stricken out. The motion was denied and exception taken.

TESTIMONY OF MR. ALBERT L. KEY

Mr. Albert L. Key was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. WILLIAMS

Mr. Key testified that he is retired from the U. S. Navy and is at present vice president and general manager of the Volunteer State Life Insurance Company, at Chattanooga. He has resided in Chattanooga since 1860. He testified to the same extent as the previous witnesses.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness testified that Mr. Z. C. Patten, Sr., is president of this insurance company.

TESTIMONY OF MR. DWIGHT PRESTON MONTAGUE

Mr. Dwight Preston Montague was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. WILLIAMS

Mr. Montague testified that he has resided in Chattanooga since 1875. He testified as to character in the same way as previous witnesses.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness named the companies in which he is interested and stated that neither of the Pattens had stock in any of these companies.

TESTIMONY OF DR. THOMAS G. ATKINSON (continued)

Dr. Thomas George Atkinson resumed the stand for the plaintiff.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

Q.—Doctor, do you know what Wine of Cardui is composed of? A.—No, not of my own knowledge.

Q.—You know what some of the contents of Wine of Cardui are, do you not? A.—I know, of course, that it contains alcohol, of my own knowledge.

Q.—Well, you know more than that, don't you? A.—No, only from being told.

Q.—You know what the Chattanooga Medicine Company relies upon, do you not, for the action which they claim for Wine of Cardui? A.—Oh, yes.

Q.—What is that? A.—Viburnum prunifolium and carduus benedictus.

Q.—You have been in the employ of the Chattanooga Medicine Company for some time, haven't you, doctor? A.—Yes, sir.

Q.—You have been in the employ of the company for something over a year? A.—Yes, sir.

Q.—What compensation do you receive?

Mr. Walker:—That is objected to.

Mr. T. J. Scofield:—Have you a stipulated, agreed compensation, with the Chattanooga Medicine Company, or their representatives, for your services? A.—Yes, sir.

Q.—What is that, doctor?

Mr. Walker:—That is objected to.

THE COURT:—He may answer. This is an agreed compensation.

To which ruling of the Court the plaintiff, etc., excepted.

A.—During the time that I was working on research work I received \$35 a week. During the time that I am in court, I receive \$50 a day.

Mr. T. J. Scofield:—Now, what length of time were you engaged in research work? A.—I don't quite catch what you mean, Mr. Scofield? Do you mean how much actual time?

Q.—You say you were to receive \$35 a week while doing research work. Now I am asking you how much time you put in, in research work, on research work? A.—I want to answer your question the way you want it.

THE COURT:—No, you got \$35 for a certain kind of work. How much of that kind of work did you do? That is the question. A.—Oh, it varied from week to week. Some weeks I would do very little, and some weeks I would put in whole days on it.

Mr. T. J. Scofield:—The question I am asking you, is how many weeks of research work you did. You say you were receiving \$35 a week for it. A.—No, I said I was receiving a fixed stipend of so many dollars a week to hold myself at the disposal of the Chattanooga Medicine Company.

Q.—That is, while you were doing research work? A.—Yes.

THE COURT:—Was that all the compensation you received for all kinds of service? A.—Yes, except when I was in court.

Mr. T. J. Scofield: Q.—Or when you were away from home, attending court for them? A.—Yes.

Q.—For instance, you went down to Chattanooga on the 29th of January, didn't you? A.—Yes, sir.

Q.—And from that day on, until you returned to Chicago, you were receiving \$50 a day? A.—Yes, sir.

Q.—And your expenses? A.—Yes, sir.

Q.—And this case was called on the 21st day of March here in this court? A.—Yes, sir.

Q.—And since that time, you have been receiving \$50 a day, for your services? A.—Yes, sir.

Q.—Now, in addition to the research work, you have done considerable correspondence, haven't you, in connection with this case here, or in behalf of your client in this case here? A.—Oh, I do not think you can call it considerable; I have done some correspondence, but I should say very little.

Q.—You have written around to doctors, haven't you, over the country, trying to interest them to come here and testify in this case? A.—Yes, sir.

Q.—Well now, did you do that as research, or as under what employment? Or was that special work? A.—No, that was all in the same group. I should rather change the word "research."

Q.—Well, change it then. A.—I should say that I was paid to prepare the medical end of the case to a certain extent.

Q.—Then it is true that you prepared the medical end of this case? A.—Partly, yes; to a great extent.

Q.—What say? A.—To a great extent.

Q.—In other words, the procuring of witnesses and the consideration of the medical phases of this case, has been under your control and direction largely, has it not? A.—Very largely, yes, sir.

Q.—Now, doctor, you say you have not been practicing medicine for three years? A.—Not general medicine, no.

Q.—Well, what have you been doing during that time? I mean, you say in general practice — not general practice, and I am asking you what you mean by that? A.—I mean that I have been doing nothing but special work, eye work.

Q.—Then, so far as the treatment of disease is concerned, aside from the eye, you have not been engaged in the practice of your profession for three years? A.—No, sir; that is true.

Q.—Did you ever practice your profession? A.—Oh, yes.

Q.—Where? A.—I practiced down in Republic, Ohio, in a —

Q.—How large a place is Republic, Ohio? A.—It is a little country place, about 700 or 800 inhabitants.

Q.—What year were you at Republic, Ohio, or years? A.—I think it was in around 1893, '94 or '95; somewhere around in there.

Q.—Did you practice your profession down there through those three years according to your present recollection? A.—Yes.

Q.—Is that right? A.—Yes.

Q.—Where did you go to from Republic, Ohio? A.—I went to Cleveland, Ohio.

Q.—How long were you in Cleveland? A.—I cannot exactly remember, but I should think until about 1900 — I mean the next ten after that, 1910, somewhere along in there.

Q.—Then you left Republic along in 1895? A.—As far as my recollection goes, yes, sir.

Q.—1895. A.—I am giving the dates as near as I can remember them.

Q.—I don't mean to ask you to say exactly, probably you cannot do that; but give your best recollection. A.—Yes.

Q.—Then you left Republic you think in 1895, and went to Cleveland? A.—Yes, sir.

Q.—You were in Cleveland for 10 years, ten or 15 years? A.—No, I said, the next ten number, the next ten number. I was in Cleveland about five years.

Q.—About five years? A.—Yes, I should say so.

Q.—So that you left Cleveland in about 1900? A.—I think so, yes, sir.

Q.—Did you practice medicine while you were in Cleveland? A.—No, sir.

Q.—What were you doing while you were there? A.—I was engaged in business.

Q.—What kind of business, doctor? A.—Oh, two or three kinds of business; I was just earning money, that is all.

Q.—How were you earning it? A.—I think I worked for a railroad company; I think I worked for a firm of lawyers. I may have worked for somebody else, but I don't remember.

Q.—Don't you know what you did while you were in Cleveland for five years? You say you think you worked for a railroad company? A.—I know I did that.

Q.—Then you say you think you worked for a firm of lawyers? A.—Well, I know that.

Q.—Did you or didn't you? A.—I did, yes; that is true.

Q.—What firm of lawyers did you work for there? A.—Williams, Cushing & Clark, they were in those days. I think they are changed now.

Q.—Did you do anything else during the five years you were there other than work for the railroad company, and Williams, Cushing & Clark? A.—I don't remember that I did.

Q.—If you did, you don't remember it? A.—No, sir.

Q.—But anyhow you know you did not practice any medicine? A.—Oh, I know that; that is certain, I did not practice any medicine.

Q.—Now, while you were down in Republic, Ohio, three years, did you do any practicing there? A.—Oh, yes.

Q.—What? A.—Yes, sir.

Q.—Did you engage altogether during the time you were at Republic, in the practice of your profession? A.—As far as I remember, yes.

Q.—Well, you know you were not doing anything else, don't you? A.—As far as I remember I was not.

Q.—Did you have a pretty good practice there, doctor? A.—Oh, yes; pretty good country practice.

Q.—In a town of 700 or 800 inhabitants? A.—Yes, and the country-ile.

Q.—Yes, you rode around the country some? A.—Yes.

Q.—Were you associated with any one in the practice of medicine ere? A.—No, sir.

Q.—When you left Cleveland, where did you go? A.—Came to Chicago.

Q.—What did you do after you came to Chicago? A.—I still worked.

Q.—What? A.—I still worked.

Q.—What kind of work were you doing, doctor? A.—Clerical work.

Q.—Well, you say you were not practicing medicine? A.—What?

Q.—You were not practicing medicine? A.—I was not practicing medicine, no sir.

Q.—Were you licensed to practice down in the State of Ohio, then? —If I remember rightly, there was no license required.

THE COURT:—The question is, were you licensed? A.—No, sir.

Mr. T. J. Scofield:—I am asking you if you were licensed to practice? —No.

Q.—You were practicing down in Ohio in 1893, and 1894 and 1895 without any license? A.—That is my recollection, yes.

Q.—When you came to Chicago you did clerical work here? A.—Yes.

Q.—You did not practice medicine? A.—Yes.

Q.—Now, did you continue to do clerical work? How long did you continue that? A.—Till about 1904.

Q.—So you were four years doing clerical work? A.—Yes.

Q.—And that means you were nine years out of your profession? —Yes.

Q.—Now, the clerical work which you did here, was it exclusively clerical work, your work? A.—I don't know exactly what you mean.

Q.—Well, did you do anything else than clerical work? A.—Not that I remember of, no.

Q.—Whom did you work for? A.—I worked for the St. Louis, Iowa & Northern Railway, and I worked for a coal company, I think.

Q.—What coal company? A.—The Mindink Coal Company.

Q.—What did you do for the railroad company? A.—Clerical work, and tariff work.

Q.—In whose office were you? A.—In the office of J. N. Faithorn's name, but I forget his name.

Q.—What else did you do besides those things, after you came to Chicago? A.—Nothing that I know of.

Q.—Did you work in the evenings those days? A.—I may have, I do not know.

Q.—You don't remember whether you did or not. Commencing in 1904, what did you do? A.—Commencing in 1904, I became the editor, I think, that year of the *Medical Standard*.

Q.—The *Medical Standard*? A.—Yes.

Q.—Where was it published? A.—In Chicago here, on Dearborn Street.

Q.—Did you own it? A.—Oh, no.

Q.—Who owned it and operated it? A.—George P. Engelhard.

Q.—What kind of a publication was it? A.—A medical journal, I don't know how else to describe it.

Q.—Is it in existence at the present time? A.—Yes, sir.

Q.—How long did you continue editor of that journal? A.—Until 1904.

Q.—Well, did you commence as editor in 1904? A.—My recollection it was 1904.

Q.—Or 1905? A.—Yes, sir; 1904 or 1905.

THE COURT:—And you started right in as editor? A.—Oh, yes.

Mr. T. J. Scofield:—You started to work as editor right away. —Yes.

Q.—What medical experience had you had before that warranted your becoming editor of the medical journal at that time?

Mr. Walker:—That is objected to.

THE COURT:—Objection sustained.

To which ruling of the Court the defendants, etc., excepted.

Mr. Walker:—I withdraw the objection.

THE COURT:—You gentlemen will have to settle that among yourselves. Two of you object, and one withdraws it.

Mr. Walker:—I withdraw it, as far as I am concerned.

Mr. T. J. Scofield: Q.—Now, doctor, did your work as editor of the journal require all your time? A.—No, because I was at that time attending school.

Q.—You were what? A.—I was at that time attending school.

Q.—What school did you attend? A.—The Chicago College of Medicine and Surgery.

Q.—You graduated there, didn't you? A.—Yes, sir.

Q.—When did you graduate there? A.—I think in 1905.

Q.—You matriculated in 1905 too, didn't you? A.—Yes, sir.

Q.—Now, when you say you matriculated, what do you mean by that? —Entered the college.

Q.—You were also professor there at that time, were you not, in 1905? A.—No, sir.

Q.—What? A.—No, sir.

Q.—You were not? A.—No, sir.

Q.—Did you graduate the same year you matriculated? A.—I did, sir.

Q.—Did you attend lectures there? A.—Yes, sir.

Q.—Did you deliver lectures during that year? A.—No, sir.

Q.—When did you commence delivering lectures there? A.—I think about 1907. I am not sure, it might have been 1906.

Q.—Let us see; the catalogue of that institution for the years 1905 and 1906 represented what part of those two years? A.—Well, one

catalogue would represent, of course, from the September of 1904 to the spring of 1905, and the other catalogue would represent from the fall of 1905, on until the spring of 1906.

Q.—1905 and 1906? A.—Yes, sir.

Q.—Well, you were instructor in physiology, were you not, and so indicated in the catalogue of the American College of Medicine and Surgery in 1905 and '06? A.—If the catalogue says so, that is true.

Q.—I am asking you.

THE COURT:—Let the witness see it; it may refresh his memory. [See Footnote 1.]

Mr. T. J. Scofield: Q.—I am asking you if it is not a fact, if that is not a fact, and I will hand you this catalogue? A.—That seems to be true, yes, sir.

Q.—And that same catalogue shows that you matriculated that year, don't it? A.—No, it shows that I graduated that year.

Q.—Doesn't it show that you matriculated and graduated, and isn't that all shown in this catalogue of 1905 and 1906? A.—I don't know whether it is or not.

Q.—Well, take it and look it up and see whether or not it is not. A.—No, it shows here that I was a matriculant in 1904 and '05 session, which was previous to this.

Q.—When does it show you graduated? A.—1905.

Q.—1905? A.—Yes.

Q.—Then in 1905 and 1906 you were lecturing on physiology? A.—Yes, sir.

Q.—So that if I understand you right now, you practiced medicine down in Republic, Ohio, a little town of 800 or 900 inhabitants, for three years and then you passed out of the practice of medicine in 1905, and did not resume it, and you were engaged then in clerical work of different kinds? A.—Yes.

Q.—Until the year 1904 when you matriculated in this institution, and also became the editor of the *Medical Standard* or the *Standard Journal*, is that right? A.—Yes, sir.

Q.—You matriculated in 1904-1905 and you graduated in 1905, did you not? A.—Yes, sir.

Q.—And in that year you were put down in this catalogue as a lecturer there? A.—Yes, sir.

Q.—Now, had you ever practiced medicine before you went to Republic, Ohio? A.—No, sir.

Q.—Had you ever taught physiology before you taught it here? A.—I don't remember.

Q.—Well now, think for a moment whether you ever did or not. A.—I don't remember.

Q.—Had you ever taught physiology before? A.—I cannot remember, Mr. Scofield.

THE COURT:—Did you ever teach anywhere before? A.—I don't remember now.

Mr. T. J. Scofield: Q.—You don't remember? A.—I don't remember, no.

Q.—Well now, when you teach physiology—I don't distinguish between lecturing and instructing—did you ever lecture or were you ever an instructor in physiology anywhere? A.—I don't remember ever being.

Q.—If you ever have been, you would have remembered that fact, wouldn't you? A.—I don't know whether I would.

Q.—Why doctor, were you not an instructor in physiology in St. Mary's Hospital College of London, England? A.—I believe I did do some instructing in St. Mary's.

Q.—You believe you did? A.—Yes, sir.

Q.—Is that such an insignificant thing that you had forgotten about it? A.—The kind of instructing I did over there would certainly be rather insignificant, yes.

Q.—Is it not true that you were not instructor over there at all? A.—It is not true, no sir.

Q.—How is that? A.—It is not true, no sir.

1. The witness was then handed the Annual Announcement of the American College of Medicine and Surgery published in 1905. This announcement contained Atkinson's name as a member of the faculty, as a matriculant for 1904-1905 and as a graduate of 1904-1905. These items are here photographically reproduced in miniature:

THOMAS GEORGE ATKINSON, L. R. C. P. (Lond.). M. D.,
355 Dearborn Street, Chicago.
Instructor in Physiology. Late Instructor in Physiology St. Mary's Hospital College, London.

Graduates of 1904 and 1905.

Atkinson, Thomas G.

Matriculants 1904 and 1905.

Ackermann, Susan K.....Norway
Alstrom, Ernest.....Illinois
Armstrong, C. H.....Nebraska
Andres, R. G.....Wisconsin
Arnold, S. G.....Illinois
Atkinson, T. G.....London

Q.—How long since you have remembered that you might have been an instructor over there at that institution, in London, England? A.—I don't understand your question.

Q.—I asked you if you had been an instructor in physiology, and you said you did not know whether you ever had before, until you commenced as an instructor here. You said you did not remember whether you had or not. A.—Yes.

Q.—Now then, you say you believe maybe you did do some instructing in London? A.—Yes.

Q.—You knew that when you were an instructor over here didn't you, at this American College of Medicine and Surgery? A.—Perhaps I did.

Q.—You did, and you told them about it and it was put down in the catalogue. Didn't you see that when I handed that to you? A.—No, I did not notice it.

Q.—With that marked on the side? A.—No, sir; I just looked and saw my name.

Q.—Now it comes back to you, that you did at one time act as instructor in St. Mary's College Hospital, over in London, England, in physiology? A.—Yes, sir.

Q.—So that when you said a while ago that you had never been an instructor in physiology, until you became an instructor here, in this institution, you were mistaken, were you?

Mr. Walker:—That is objected to.

THE COURT:—He said he did not remember having been one elsewhere.

Mr. T. J. Scofield: Q.—Now then, doctor, I hand you a letter here [see Footnote 2], and ask you to look at it, and see if you recognize any of the signatures there, or the letterhead and tell me whether or not the matter that is stated in that letter is true or untrue?

Mr. Walker:—That is objected to.

A.—I do not recognize it, and I do not know whether it is true or untrue. I do not recognize the name or the letterhead at all.

Mr. T. J. Scofield:—You read the body of this letter?

Mr. Walker:—That is objected to as immaterial.

THE COURT:—He may answer.

To which ruling of the Court the plaintiff, etc., excepted.

A.—Yes.

Mr. T. J. Scofield: Q.—You read it, but you don't know whether it is true or untrue? A.—No, I do not.

Mr. Hough:—Let me see the letter.

THE COURT:—You had better have it identified by the reporter.

(The paper is marked Defendants' Exhibit A, 6-6-16).

Mr. T. J. Scofield:—I will ask you now, if it is not true, doctor—do you want to see it Mr. Hough?

Mr. Walker:—Not at all, I don't care anything about it.

THE COURT:—Under our local law in Illinois, it might be—

Mr. Walker:—It might be admissible now, because Hough looked at it, I know.

Mr. T. J. Scofield: Q.—Now, doctor, after looking at that letter, which I just showed you, does that refresh your memory in any way, shape or form?

Mr. Walker:—On what?

Mr. T. J. Scofield:—As to anything. As to any experience which you had in London.

Mr. Walker:—World without end, Amen.

A.—No, it does not.

Mr. T. J. Scofield:—Now, if the Court please, let us abstain from any such remarks. I think we had better conduct this case properly.

THE COURT:—Yes, I think the objection was not in proper form, so that it will be overruled.

Mr. T. J. Scofield: Q.—Now then, doctor, I will ask you this question: After having looked at this letter does it refresh your recollection in any way as to whether or not you ever at any time taught physiology in St. Mary's Hospital Medical School in London?

Mr. Walker:—Mr. Hough made an objection, and I second it; it is immaterial, irrelevant and incompetent.

THE COURT:—He may answer.

To which ruling of the Court the plaintiff, etc., excepted.

A.—No, it has no effect on my memory at all.

THE COURT: Q.—Were you ever on the official staff of instructors at St. Mary's? A.—No, sir.

Q.—Were you ever paid for instructing? A.—No, sir; whatever instructing I did, was simply done in an informal way. I never was on the board or list of instructors at all.

Q.—That is, some other student asked you to help him? A.—Well, more than that; I did a little informal instructing.

Q.—As a tutor? A.—Yes.

Q.—Tutoring other boys that were studying there? A.—Exactly.

Mr. T. J. Scofield:—Well then, doctor, when you had placed in this catalogue of the American College of Medicine and Surgery, "Thomas

G. Atkinson, L.R.C.P. London, Instructor in Physiology, Late Instructor Physiology, St. Mary's Hospital College, London," did you mean to put there— A.—I did not write that catalogue, Mr. Scofield, and I am not responsible for it.

Q.—Did you furnish your own qualifications?

Mr. Walker:—That is objected to as immaterial.

THE COURT: Q.—You knew that was in the book? A.—Yes, I knew it was in the book, but I could not help it being in the book.

THE COURT:—You did not disclaim it?

Mr. T. J. Scofield: Q.—How did you find out it was there, doctor?

Mr. Walker:—That is objected to as immaterial.

Mr. T. J. Scofield: Q.—Did you ever see it there?

Mr. Walker:—That is objected to.

THE COURT: Q.—Did you give the editor of the book the information on which that statement was made? A.—I gave the man who got out that book the same information that I am now giving in court on the subject, and he put it in.

Q.—Did it take me as long to get it as it did him? A.—No.

Mr. T. J. Scofield: Q.—Is it also the same way in the subsequent catalogue of that school? A.—I do not know; probably it is.

Q.—Now, doctor, what did you say about your graduation in medicine, your first and original graduation? A.—I said that I attended St. Bartholomew's and St. Mary's and obtained a license from the Royal College of Physicians.

Q.—When you say that, you mean that you are a licentiate of that college? A.—Yes, sir.

Q.—Have you a certificate showing that fact? A.—No, sir.

Q.—Doctor, I hand you here the Medical Register of the Licentiates of that institution, edition of 1916, and ask you to point out your name in that book as a licentiate of that institution.

Mr. Walker:—That is objected to. We do not know anything about what the book is, it is not authenticated, and we know nothing about it.

THE COURT:—Objection sustained.

To which ruling of the Court the defendants, etc., excepted.

Mr. T. J. Scofield: Q.—What is that book that you hold in your hand?

Mr. Walker:—That is objected to. So far as it goes, it shows for itself.

A.—I don't know.

Mr. Walker:—If it is competent to show anything.

Mr. T. J. Scofield: Q.—Do you know what the Medical Register is? A.—Yes, I know what it is.

Q.—What is the Medical Register?

Mr. Walker:—That is objected to.

THE COURT:—He may answer if he knows.

To which ruling of the Court the plaintiff, etc., excepted.

A.—It is a list of physicians who are registered and practicing in the place.

Mr. Walker:—Louder.

A.—It is a list of men, graduates who are registered and practicing in the place.

THE COURT:—What does that registration consist of? After you once are licensed, do you have to register before you get into the list? A.—You need not. It is not necessary that one should be registered at all. For my part I left England immediately after I graduated, and therefore it is quite likely that my name is not in any register there.

Mr. T. J. Scofield: Q.—You don't contend that you are classed here in this register as a licentiate? A.—No, sir.

Mr. Walker:—That is objected to.

THE COURT:—The witness takes different methods. He pauses for me to rule as to some questions, and he answers in spite of the objection, as to others.

Mr. Walker:—I did not hear that there was an answer to this last question.

THE COURT:—Yes, there was an answer.

Mr. Walker:—Well, let it stay there then; I did not know it was in.

Mr. T. J. Scofield: Q.—Doctor, I will ask you whether or not it is not true—if you know whether or not it is true that the book that I have just shown you, or the Medical Register, is published under an Act of Parliament?

Mr. Walker:—That is objected to.

THE COURT:—Sustained; what difference does it make, what the witness knows about it.

Mr. T. J. Scofield:—Well, if he knows, and that is true, I do not understand why it would not be competent.

THE COURT:—What difference does it make whether he knows it is true or not; that is my proposition.

Mr. T. J. Scofield:—I don't see why it would not be competent, if it is competent for any purpose.

THE COURT:—It is competent in spite of what the witness knows, if it is competent for any purpose. What did your license consist of? Did you get any writing or any diploma?

A.—Yes, sir.

Q.—What was the nature of it? A.—I had a certificate.

2. The letter handed the witness was from the secretary of "St. Mary's Hospital Medical School (University of London)," and read: "Dear Sir:—In reply to your letter of the 19th inst. I beg to inform you that the name of Thomas G. Atkinson does not appear upon the roll of Lecturers on Physiology who have held office at this school."

Q.—What? A.—Yes, sir; I got a certificate from them which I lost and never replaced.

Mr. T. J. Scofield: Q.—I don't know whether I understood you doctor. Did you say you had a certificate? A.—No, I did not say —
THE COURT:—Which he lost.

Mr. Walker:—And which he never replaced.

Mr. T. J. Scofield: Q.—And it was never replaced? A.—No, sir.

Q.—So that you have no evidence of the fact that you are a licentiate of that institution? A.—I have none about me, no.

Q.—I will hand you a letter, doctor, which I will first have the reporter mark Defendants' Exhibit B of this date, and ask you to read it. [See Footnote 3.]

Mr. Walker:—I object to it.

THE COURT:—Objection overruled. Not out loud, though, read it to yourself.

To which ruling of the Court the plaintiff, etc., excepted.

A.—I have read it.

Mr. T. J. Scofield: Q.—Did you read the signature on the back? Look at it. A.—Yes, sir.

Q.—Do you recognize that signature? A.—No, sir.

THE COURT:—What is the answer? A.—No, sir.

Mr. T. J. Scofield: Q.—Now, doctor, having read this letter which submitted to you, do the contents of this letter refresh your recollection in any way as to whether or not you are a licentiate of this institution?

Mr. Walker:—That is objected to.

THE COURT:—He may answer.

To which ruling of the Court the plaintiff, etc., excepted.

A.—No, sir.

Mr. T. J. Scofield: Q.—It does not? A.—No, sir.

Q.—Are you a licentiate of that college? A.—Yes, sir.

Q.—For what year? A.—'92.

Q.—1892? A.—Yes, sir.

Q.—You came then pretty nearly, or very soon after that to Republic, Ohio? A.—Yes, sir; almost immediately.

Q.—You never practiced any in London? A.—No, sir.

Q.—How long was it after you became a licentiate, as you say, that you left England? A.—I left England the same year, in 1892. I left Europe about a year after.

Q.—What year were you born, Doctor? A.—1870.

Q.—Did you ever graduate at any other institution in London? A.—Only, as I stated. I matriculated, and took what is known as the intermediate Bachelor of Science at London University. There are no Bachelors of Science given at London, intermediate and final.

Q.—What year did you study there? A.—You don't study at the London University. London University is simply an examining body, was in those days.

Q.—When was it that you took this degree of Bachelor of Science? A.—I think in 1886 or '87.

Q.—Have you the certificate? A.—No, I have not got that any more.

Q.—What became of that, did you lose that, too? A.—It may be home, if I look it up, I don't know.

Q.—What did you do, did you matriculate merely? A.—No, I took an intermediate examination.

Q.—What? A.—No, I took the intermediate examination.

Q.—So you did not attend at all? A.—No.

Q.—You just simply took the examination? A.—No, I did not attend at all.

Q.—You made application, didn't you, for the examination to take a degree of Bachelor of Science? A.—I presume I did, I don't remember any more what the detail of the routine is.

Q.—When was that, in 1888 or when? A.—No, it was before that, out 1887.

Q.—Now, doctor, coming down to the year 1904 and 1905, you say you continued to be the editor of the *Standard* journal until that time? A.—Until 1912.

Q.—What else were you doing besides acting as editor of that journal? A.—Teaching and practicing medicine.

Q.—Well, where did you practice medicine? A.—Well, now, let me think. My recollection is that I had my office in the same place where I had the journal, where I edited my journal.

Q.—Where was that, Doctor? A.—On Dearborn Street in those days, the Ellsworth Building.

Q.—Did you have an office anywhere else? A.—I don't think so.

Q.—How long did your office continue there? A.—Up until the time I went to St. Louis. I went to St. Louis in 1910.

Q.—Did you still continue to do editing of this journal here? A.—Yes, sir.

Q.—For two years? A.—Yes, sir.

Q.—Did you come to its editorial office every day here in Chicago? A.—Yes, sir.

Q.—What hours did you keep there, all day long? A.—Practically,

clear up to the year 1910? A.—Yes, sir.

Q.—Except such time as you say you were teaching? A.—Yes, sir.

3. The letter handed the witness was from the secretary of the "Medical Defence Union" of London, and read in part: "Dear Sir:—I have been making further enquiries re Atkinson and find that Thomas George Atkinson is not, and never has been, L.R.C.P.Lond., and further, that an exhaustive search has been made by the Authorities at St. Mary's Hospital Medical School, and no trace can be discovered of any person ever having been either Teacher or Student."

Q.—When you went to St. Louis, what did you do? A.—Edited the *Medical Brief*, taught in school, and took care of a great deal of clinical work.

Q.—You were not in the practice of medicine, were you? A.—Why, not for the first two years—no, I don't think I ever was in St. Louis, not in private practice, no.

Q.—That is what I mean, in St. Louis? A.—No, sir.

Q.—What school were you in there? A.—The American Medical College.

Q.—What did you teach there? A.—I taught neurology and physiology.

Q.—What is neurology? A.—Diseases of the nervous system.

Q.—Did you attend any clinics there? A.—Oh, yes.

Q.—What kind of diseases? A.—Diseases—nervous diseases.

Q.—Nervous diseases? A.—Yes, sir.

Q.—Nervous and mental? A.—Yes.

Q.—Did you attend any other class of clinics? A.—No.

Q.—That was the character of clinics that you attended? A.—Yes, sir.

Mr. Walker:—You are speaking of St. Louis now?

Mr. T. J. Scofield:—What?

Mr. Walker:—That is, at St. Louis?

Mr. T. J. Scofield:—At St. Louis, yes.

Q.—Did you make a specialty of neurology? A.—I did in the clinics, yes.

Q.—How long did you continue to specialize in mental and nervous troubles? A.—Until I came back from St. Louis in 1912.

Q.—When was that? A.—1912.

Q.—When you came back from St. Louis, what did you do? A.—Then I began to limit myself to the eye.

Q.—Then you commenced to— A.—Then I began to confine myself to the eye.

Q.—What experience had you had in the study of the eye, any special work? A.—Yes, one gets a great deal of special study in the eye, during his study of nervous diseases, that is what led me into it.

Q.—So that you then became an eye specialist, did you? A.—Oh, I confine myself to the eye.

Q.—You confine yourself to that? A.—Yes, sir.

Q.—That was commencing in 1913? A.—About 1912.

Q.—You have confined yourself to that specialty since, have you? A.—Yes, sir.

Q.—For the last four years? A.—Yes, sir.

Q.—Three years ago you dropped out entirely of the general practice of medicine? A.—Yes, sir.

Q.—That was in 1913? A.—Yes, sir.

Q.—So that after you came back from St. Louis in 1912, you commenced to give attention to the eye, and in 1913, you quit making any pretense to practice medicine, and confined yourself to the eye? A.—That is right.

Q.—Now, doctor, you have mentioned, I suppose, the different institutions that you have been connected with, have you? A.—I mentioned the medical institutions I have been connected with, yes.

Q.—Were you connected with any other institutions? Before we pass away from that, you have detailed your experience as a practitioner of medicine now, have you? A.—Yes.

Q.—In neurology and all that? A.—I believe I have, yes.

Q.—All right. Now, what other institutions have you been connected with for the last two or three years? A.—What kind of institutions do you mean?

Q.—Well, I mean along the line of your work, any kind. You say you have been studying nervous conditions, and paid attention especially to the eye. A.—I am now connected with the School of Refraction.

Q.—By School of Refraction, what do you mean? A.—I mean that I teach the fitting of glasses, the refraction of the eye, and the fitting of glasses.

Q.—In other words, you are teaching the young or students how to fit spectacles and glasses? A.—Fit glasses, yes, sir.

Q.—Well, Dr. Von Zelinski is one of the professors in that institution, isn't he? A.—Yes.

Q.—Is Dr. Funck connected with it in any way? A.—No, sir.

Q.—Now, you teach students how to fit eye glasses by mail, correspondence, don't you? A.—Oh, no.

Q.—Not at all? A.—No, sir.

Q.—You have no correspondence work at all? A.—Yes, I have correspondence work which teaches the theoretical—

THE COURT:—You do your teaching perhaps by mail, but you don't teach them to fit glasses by mail; they don't fit glasses by mail. Your question was ambiguous.

THE WITNESS:—That is not exactly true, either, your Honor.

Mr. T. J. Scofield: Q.—What is the fact, then, doctor? A.—The fact is that I teach that part of refraction, which can be taught by mail, by mail.

Q.—What part is that doctor? A.—Oh, the physics and mathematics can be taught by mail.

Q.—That is about all there is to the fitting of glasses, the question of refraction and mathematics? A.—That is all there is to theoretical optometry, and that is what I teach by mail.

Q.—So that that part of it, the figuring out the lenses, and the condition of the eye, and what is needed to correct it, you teach by mail? A.—I teach the mathematics and physics of it by mail. I may say, however, in passing that it has been shown me by practical experience, that it is not practicable, and we have abandoned that altogether.

Q.—So that you have finally come to the conclusion that the statement you made a while ago that such things could be taught by mail,

was an error? *A.*—No, it is other practical obstacles that have come in my way, not that. I still think that it can be taught by mail, so far as possibly the teaching of it is concerned.

Q.—When did you abandon that way of teaching? *A.*—Well, a month or so ago, I should say, three or four weeks ago.

Q.—Since this suit has been started? *A.*—Quite a long while after it, yes.

Q.—You were still teaching it as late as January, 1916, by mail, were you not? *A.*—Oh, yes, we were teaching that part of it by mail, yes, sir.

Q.—You are still teaching it are you not, by mail, to some extent? *A.*—I do not think we have got a single student. Of course we had to arrange for the shutting off of those that were already on a correspondence course, but I do not think there is one student left on that. There may be, but I do not think so.

Q.—Doctor, you are the same Dr. Atkinson, are you not, who was employed by Mr. Fletcher Dobyns of this city in the defense of the Jiroch Medical Company case, which was on trial before Judge Landis here a few weeks or months ago? *A.*—I was retained by him, but I cannot say that I was ever employed by him.

Q.—You were retained by him? *A.*—Yes, sir, I was retained by him.

Q.—And you consulted with him, didn't you? *A.*—I think I did, yes.

Q.—You were paid money by him, were you not? *A.*—Yes. When I said I was not employed, I meant that we never went into court, because the case never reached court.

Q.—That is, it never reached your part of it? *A.*—Yes, that is what I mean, exactly.

Q.—But you were employed in the Jiroch Medical Case before Judge Landis? *A.*—Oh, yes.

Q.—And you received pay for it? *A.*—Yes.

Q.—Now, just a few questions which I wish to ask you. Did you ever treat a case of gonorrhea? *A.*—Oh, yes.

Q.—How many cases did you treat, do you think? *A.*—Oh, not very many, of course, but what falls to the ordinary lot of the practitioner.

Q.—Now, then, in the treatment of gonorrhea, did you advise your patients to abstain from the use of alcohol? *A.*—As a beverage, yes.

Q.—Did you advise them to cut out wine and beer, and spirituous liquors generally? *A.*—Yes, sir.

Q.—Why did you give them that advice, doctor? *A.*—Because, in large quantities, I do not think that alcohol is a good thing for a gonorrheal patient.

Q.—Doctor, do you believe that there are medicines, which, if applied locally, will destroy the gonococcus? *A.*—That is a question I do not feel competent to express an opinion about, but I will say that I believe there are drugs, which, applied locally, at least render them harmless, inhibit them.

Q.—Well, you have used that sort of medicine in the treatment of gonorrhea, haven't you? *A.*—Oh, yes.

Q.—Do you think that gonorrhea, in a healthy individual, is a self limiting disease?

Mr. Walker:—I am going to make this objection. I did not ask this witness anything about gonorrhea at any time. If this is to test his knowledge, that is another thing. But I did not ask this witness a single thing about gonorrhea.

THE COURT:—It is not cross-examination.

Mr. T. J. Scofield:—Oh, yes, your Honor.

Mr. Walker:—I did not ask him one thing, your Honor, about that.

THE COURT:—As a matter of fact it is not.

Mr. T. J. Scofield:—What say?

THE COURT:—I say, it is not cross-examination. You are asking this witness to contradict what some other witness has said.

Mr. T. J. Scofield:—Oh, no, in his examination, he called attention—he asked the doctor about vaginitis.

Mr. Walker:—Yes, but I did not ask anything about gonorrhea.

Mr. T. J. Scofield:—And the various causes for it, and one of the common causes—

THE COURT:—I think the word "gonorrheal" was not mentioned.

Mr. Walker:—I never asked him anything about it at all.

Mr. T. J. Scofield:—I do not think it was either, but the subject which he introduced had relation to the subject which was discussed in the Home Treatment Book for Women, and the advice which was given in the treatment of gonorrheal vaginitis.

Mr. Walker:—Not at all. I did not ask him anything about gonorrheal vaginitis.

THE COURT:—No.

To which ruling of the Court the defendants, etc., excepted.

Mr. T. J. Scofield: *Q.*—Is vaginitis ever caused by gonorrhea, doctor? *A.*—Yes, sir.

Q.—Well, is that form of vaginitis, or of gonorrhea, is it one which is self limiting, if a person is otherwise healthy?

Mr. Walker:—That is objected to.

THE COURT:—He may answer.

To which ruling of the Court the plaintiff, etc., excepted.

A.—I think that that is pretty hard to answer. In the main, of course, gonorrhea, in my opinion, is a self limited disease, but—

Mr. T. J. Scofield: *Q.*—What do you mean by that?

Mr. Walker:—Let him finish; he has not finished.

Mr. T. J. Scofield:—All right.

The Witness:—I mean that if it is let alone, the gonococcal part of it any way will disappear.

Q.—Well, now, you say in the main. What do you mean by that, you mean that is sometimes true, and sometimes not? *A.*—That is just exactly what I was going to explain. I say, in the main, it is self limited, but there may be forms of gonorrhea, which by anatomical and pathological reasons tend to perpetuate themselves and become very chronic.

Q.—And extend upward, do they not, also? *A.*—Yes, sir.

Q.—Sometimes, I suppose, it gets around in the ureter and in the bladder, and then sometimes up through the womb and into the fallopian tubes and ovaries? *A.*—Yes, sir.

Mr. Walker:—This is objected to. What is this? A test of his medical knowledge or what. I did not ask him anything about those subjects.

THE COURT:—He has a right to test his medical knowledge. He is an expert here, and was put on for that purpose.

Mr. Walker:—I did not put him on as an expert on gonorrhea, and I did not ask about it.

To which ruling of the Court the plaintiff, etc., excepted.

Mr. T. J. Scofield: *Q.*—Now, doctor, inflammations of the vagina, and of the fallopian tubes, and of the uterus, and of the ovaries are sometimes gonorrheal, are they not? *A.*—Inflammation of those parts?

Q.—Yes? *A.*—Yes, sir.

Q.—Comes from gonorrhea, doesn't it? *A.*—Yes, sir.

Q.—Now, in your opinion, which you expressed this morning that this medicine, which Mr. Walker called your attention to specifically as Wine of Cardui—did you mean to be understood that in your opinion that sort of medicine would be good for a woman who was suffering from gonorrheal salpingitis? *A.*—No, I did not say so.

Q.—You did not mean that then? *A.*—No, sir.

Q.—Nor you did not mean, I suppose, that it would be good for gonorrheal inflammation of the womb, either? *A.*—No, sir.

Q.—Nor endometritis, or metritis, gonorrheal? *A.*—Oh, I don't know, I think perhaps it would be good for those.

Q.—You think that it may be good, do you? *A.*—Yes, sir.

Q.—For endometritis or metritis? *A.*—Yes.

A.—But not for salpingitis, or ovaritis or anything of that sort? *A.*—Not a gonorrheal salpingitis, no sir.

Q.—Now, doctor, vaginitis or gonorrheal vaginitis, would you think such a medicine as that would cure gonorrheal vaginitis? *A.*—I don't think any medicine cures it.

Q.—Now, doctor, taking up the question of viburnum prunifolium, you said something about that this morning. What are the potent qualities that viburnum prunifolium contains? *A.*—I cannot tell you.

Q.—You don't know what they are? *A.*—No.

Q.—What are the potent qualities found in cnicus benedictus that gives it its medicinal value, if it has any? *A.*—I cannot tell that. Both in viburnum and in carduus, I can tell one or two things that have been suggested as being—

Q.—I am not asking that. I am asking if you know. *A.*—No, I do not.

Q.—What the potent element is in either? *A.*—I do not.

Q.—In either of these herbs, if they contain potent elements? *A.*—Frankly, I don't know.

Q.—You never used any cnicus, did you? *A.*—No, sir.

Q.—In your life? *A.*—No, sir.

Q.—Now, doctor, in the hypothetical medicine described to you by Mr. Walker, which contained both viburnum prunifolium, and carduus benedictus, did you, in considering and in answering his question, consider both carduus benedictus and viburnum prunifolium as being of value in that medicine in the dosage mentioned? *A.*—Yes, sir.

Q.—Do you think now, that on account of the synergistic action of those two drugs, that this combination would have a greater effect than it would have if either of them were omitted? *A.*—Yes, I do.

Q.—Do you think that the solution, described by Mr. Walker and which he said was in a 20 per cent. alcoholic menstruum, or solution, would be just as valuable if the viburnum prunifolium was omitted? *A.*—No, I don't think it would.

Q.—Do you think that that solution would be just as valuable in the same percentage of alcohol if the carduus was omitted? *A.*—No, I don't think it would.

Q.—You do not then, if I understand you right, think that that medicine, if it was effective at all, would be as effective if the viburnum prunifolium was left out? *A.*—No, sir.

Q.—And you don't think that that medicine would be as effective, if effective at all, if the carduus benedictus was left out and the viburnum prunifolium was left in? *A.*—No, sir.

Q.—In your judgment, in order to be effective, if effective, it takes the combination of the two?

Mr. Hough:—We object to that. That is not what the witness says.

Mr. T. J. Scofield:—Is that right, Doctor?

THE COURT:—That is in the form of a question.

The Witness:—I can answer.

THE COURT:—He may answer.

To which ruling of the Court the plaintiff, etc., excepted.

The Witness:—No, I did not mean that at all, but I think that the two together are more effective than either would be by itself. I don't mean if they were separate then they would not be effective at all; but they would not be as effective if one was taken out and the other left, as they are both together.

Mr. T. J. Scofield: *Q.*—Now, you said that you had used the fluidextract of viburnum? *A.*—Yes, sir.

Q.—That is the form you use it in your practice— *A.*—Mostly, yes, sir.

Q.—Where you use it at all; is that right? *A.*—Yes, sir; that is right.

Q.—What is the official dose of that, Doctor? *A.*—I believe it is somewhere from 30 to 60 drops.

Q.—Yes. That represents practically the same number of grains; does it? *A.*—The extractives of those grains, yes.

Q.—Yes? *A.*—The medicinal effect of those grains, yes.

Q.—Yes. Well, now, Doctor, assume that it is a fact that many women had used this solution, Wine of Cardui, both before and after viburnum was added, and had reported the same effects; would this change your mind in any way on the subject of the omission of either of these herbs from that solution?

Mr. Walker:—Objected to.

THE COURT:—Have we had any evidence along those lines? don't recall.

Mr. T. J. Scofield:—Oh, yes.

Mr. Loesch:—Plenty of it.

Mr. Walker:—Where?

Mr. T. J. Scofield:—Running all through these depositions.

THE COURT:—Go ahead.

To which ruling of the Court the plaintiff, etc., excepted.

The Witness:—Will you read the question again, so I can get the use of it?

Mr. T. J. Scofield:—I say, assume it is a fact—well, let the reporter read it; let the reporter read it.

(Question read as follows: "*Q.*—Well, now, Doctor, assume that it is a fact that many women had used this solution, Wine of Cardui, both before and after viburnum was added, and had reported the same effects; would this change your mind in any way on the subject of the omission of either of these herbs from that solution?").

The Witness:—No, I don't think it would.

June 7, 1916, Morning

The Court met pursuant to adjournment. Attorneys for the plaintiff—The Chattanooga Medicine Co.—offered in evidence a letter sent by the secretaries of various state medical societies to their members, enclosing a copy of a letter from Dr. Heizer, and requesting information regarding the use of Wine of Cardui. There was next offered in evidence an advertisement which appeared in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION for Nov. 20, 1915, the advertisement being that of a medical firm which manufactures a preparation of carduus benedictus. The advertisement states at this firm will not "supply any but products of the highest standard and unquestioned therapeutic virtue."

There was then offered in evidence the deposition of Mrs. Lydia Powell, mentioned in the article published in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION for April 11. There was then offered in evidence a Query and Minor Note published in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, May 27, 1911, referring to the limitations of tablet makers to the effect that it is not sensible to put volatile substances in pills and tablets and expect the full amount to remain.

TESTIMONY OF DR. CHARLES E. CASPARI

Dr. Charles E. Caspary was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. HOUGH

Dr. Caspary testified that he is a chemist, residing in St. Louis. He received the degree of Bachelor of Arts in Johns Hopkins University, in 1896, and the degree of Doctor of Philosophy and Chemistry in 1900, at the same university. He taught in 1900 in the Columbia University one year. He then went to St. Louis as research chemist in organic chemistry for the Mallinckrodt Chemical Co. for two years. He then became professor of chemistry in the St. Louis College of Pharmacy, which position he has held ever since. For the past twelve years he has been chemist for the Marlborough Drug Co., St. Louis, and for the J. S. Merrill Drug Co., St. Louis, and has done considerable work in food and drug analysis.

Q.—Are you a member of any societies, chemical or medical? *A.*—Yes, I am a member of the American Chemical Society, one of the co-editors of one of the journals of the society, the *Journal of Engineering and Industrial Chemistry*. I am a member of the American Pharmaceutical Association. I am a Fellow of the American Association for the Advancement of Science. I am a member of the St. Louis Academy of Science; a member of the Revision Committee of the Pharmacopeia, and in that connection, I am a member of four subcommittees of the Revision Committee, namely, those on organic chemicals, inorganic chemicals, drug assays, and essential oils.

Q.—Of which Revision Committee? *A.*—The Revision Committee of the Pharmacopeia, which is at present pending, and which will appear in a few months.

Q.—How long has the work of that Revision Committee been going on? *A.*—It has been going on since May, 1910.

Q.—What Pharmacopeia is that? *A.*—That is the United States Pharmacopeia, the 9th revision.

Q.—What is a Pharmacopeia, doctor? *A.*—A Pharmacopeia is a collection—or consists of descriptions, of classes of drugs and chemicals and medicinal preparations, which are made from those, together with their properties, their physical and chemical properties, methods of determining their strength and methods for standardizing them.

Q.—What is the National Formulary? *A.*—The National Formulary is somewhat similar in its character to the Pharmacopeia. It is a book which is owned and published by the American Pharmaceutical Association, and also contains drugs and chemicals which are used perhaps not so extensively as those embraced in the pharmacopeia, but which are, nevertheless, in use and deserving of standardization.

Q.—What is a dispensatory, and what relation does it bear to the Pharmacopeia, and the National Formulary? *A.*—A dispensatory is a commentary on the Pharmacopeia in that it comments on all the drugs and chemicals that are official in the Pharmacopeia, and in the National Formulary as well, but it even goes further and includes a number of drugs and chemicals which are not contained in the Pharmacopeia, but which are nevertheless of sufficient value to be used. The dispensatory further indicates the therapeutic action and uses of drugs and chemicals which are not contained in the Pharmacopeia or National Formulary.

Q.—When you say "or sufficient value to be used," what do you mean? *A.*—I mean to be used by the medical profession in this country.

Q.—You mean of therapeutic value? *A.*—Of therapeutic value, of course.

Dr. Caspary stated that the doses in the Pharmacopeia are average doses. He defined fluidextracts and tinctures, stating that the solvent or menstruum is alcohol, in a greater or less dilution. He stated that the hypothetical medicine described by Mr. Scofield would correspond to a tincture. He stated that the chemist's report of Wine of Cardui published in THE JOURNAL for April 11, 1914, is not a chemical analysis because it is not sufficiently complete. He would call it, as it is properly called, a chemist's report. He stated there are other classes of active drug principles other than those stated in the report. He said that none of the chemist's reports given by the witness for the defendant gave the percentage of the ingredients to total 100. He also stated that chemistry does not indicate the therapeutic value of any drug.

The witness analyzed several samples of Wine of Cardui and found from three and three tenths to three and one half per cent. of extractive matter. He was asked two questions comparing the material contained in Wine of Cardui with other drugs in the Pharmacopeia. Objections to both questions were made and sustained.

Dr. Caspary stated that he found 19½ to 20 per cent. of alcohol by volume in Wine of Cardui. He analyzed ten different samples of carduus benedictus. The maximum alcohol was 44.2 per cent. by volume, and the minimum was 29.6 by volume. The maximum extractive was 24.06 per cent., and the minimum extractive was 7.43 per cent. He stated that had they been transferred into tinctures they would all contain more alcohol than Wine of Cardui. The extractive matter would be about the same or less than is contained in Wine of Cardui. The witness was asked if one of those samples was made by the aforementioned pharmaceutical firm. Objection was made and sustained against any answer.

The witness stated that it has been attempted to use glycerin as a preservative and as an extractive menstruum, but unsuccessfully.

Mr. Hough: *Q.*—What are the objections from a pharmaceutical point of view? *A.*—Glycerin extracts too much inert material together with the valuable material from the drug, inert material, such as starch and gums, and dextrin and upon standing these liquid preparations will gradually begin to deposit this inert material, and continue to deposit it for a long time, so that a very turbid and muggy looking extract results and while it is true that glycerin itself can be used for preservative purposes, it cannot successfully be used as

an extractive solvent. There are a few cases where glycerin, together with alcohol, is used as an extracting solvent.

THE COURT: Q.—Could you use—this may illustrate the ignorance of the Court—but could you extract the active principles by some other menstruum, and then preserve them after extracting them, in glycerin? A.—That has also been tried in the case of acetic acid, but has been found to be unsatisfactory.

Mr. Hough: Q.—Doctor, if you know, state what objections there would be to a preparation of the extractive matter in Wine of Cardui, in the form of pills and tablets? A.—There are several objections to the use of the extractive matter from Wine of Cardui for making pills and tablets.

In the first place, in order to obtain the extractive matter, it must be extracted from the drug with a liquid solvent and this solvent then has to be evaporated off in order to obtain the solid residue which is then incorporated into the pills or tablets.

Now, the evaporation of the solvent produces a serious change in the material extracted from the drug; whether that evaporation be carried on at a high temperature (such as the temperature of boiling water or whether it be carried on at lower temperature, the solid residue, standing, undergoes deterioration.

Furthermore, the solid material from the evaporation of Wine of Cardui is very hygroscopic, which means that it takes up moisture very rapidly from the air, absorbs it and remains soft and soggy and that militates against the use of these substances in the form of pills and tablets.

Mr. Hough:—(Addressing counsel for defendants.) Will you let me have your samples, please, that you introduced in evidence of pills and tablets?

Q.—May heat affect the substance contained in Wine of Cardui? A.—Heat positively does affect those substances, because Wine of Cardui ordinarily has a distinctive bitter taste, whereas if it is heated for any length of time at all, this bitter taste almost disappears entirely, showing that the heating has produced some change, some decomposition change in the substance, destroying that particular individual substance, which is responsible for the bitter taste.

Q.—Wine of Cardui, if evaporated to dryness, is the residue soluble in water? A.—The residue is not completely soluble in water, no.

Q.—Is everything that is in Wine of Cardui soluble in 20 per cent. alcohol? A.—It is.

The witness examined the exhibits introduced by the defendant, seven of which he stated illustrated the criticisms he made against the use of the solid material from Wine of Cardui in pill and tablet form. He was shown two samples containing glycerin. He stated that there was no odor to the samples and that none of them smelled like Wine of Cardui. It was impossible for him to tell whether they smelled like *carduus benedictus* or *viburnum prunifolium* because these drugs have no odor. The extractives have no odor because the volatile matter is evaporated off.

The witness has found sixty preparations in the U. S. Dispensatory and the National Formulary which contain more alcohol per dose than Wine of Cardui, based on the maximum dosage given in these books. He could not recall how frequently these doses were given.

Dr. Caspari stated that there are many vegetable compounds which cannot be analyzed to determine the preparations from which they are made. He stated that he could not ascertain the ingredients from which Wine of Cardui was made. The results of his analysis were practically the same as those obtained by all the chemists who have testified in the case. In his opinion no chemist could ascertain by chemical analysis what the ingredients of Wine of Cardui are.

Dr. Caspari testified that if a guinea-pig should get 45 drops or the equivalent of 45 drops of Wine of Cardui, the guinea-pig weighing 154 grams, the corresponding dose of Wine of Cardui for a woman weighing 150 pounds would be about two bottles.

An adjournment was taken until 2 o'clock the same day, Wednesday, June 7.

June 7, 1916, Afternoon.

TESTIMONY OF DR. CHARLES E. CASPARI (*continued*)

Court met pursuant to adjournment. Dr. Charles E. Caspari resumed the stand in behalf of the plaintiff.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that when a preparation is brought to him for analysis he first endeavors to get information as to what the preparation is used for and also as to the possible ingredients.

At this point Mr. Hough introduced a correction on the last question asked the witness on direct testimony—namely,

addition of the words "without alcohol" in each case as to dosage.

Dr. Caspari stated that any knowledge of the physical properties—the color, odor, and taste of any preparation submitted for examination would be of aid in making such examination. He stated in reference to Wine of Cardui that the word "wine" would suggest that there was alcohol present and the word "cardui" might suggest *carduus benedictus*. He bought five bottles of Wine of Cardui in the open market. He stated that most chemists are familiar, in a general way, with the therapeutic action of drugs.

The witness again stated his distinction between a chemical analysis and a chemist's report. He stated that there was no fault to find with the results of the chemist's reports published in THE JOURNAL because he found practically the same results himself.

Dr. Caspari stated that magnesium carbonate is added to pills or tablets to make them cohere better. He was asked concerning his criticism of pills offered as defendant exhibits to the effect that they were in a mass and whether or not they would have remained separate if they had been covered with gelatin or with tolu. He stated that the preparation which he examined was not so covered.

The witness stated that there are very few physicians prescribing extemporaneous pills nowadays. Pills prescribed are made by pharmaceutical houses and they are coated. The coating protects the condition of the pill. He stated that the odor of *viburnum prunifolium* was probably due to some substance in the nature of a glucosid. He stated that he did not know whether the addition of alcohol to the glycerin preparations would produce the odor of the glucosid. The difference in odor between the glycerin extracts and Wine of Cardui is a difference in kind, while the difference in odor between Wine of Cardui and the fluidextract of *viburnum prunifolium* is rather a difference in degree. He stated that if sufficient alcohol were added it might produce the volatile like odor of the glucosid. There are three or four tinctures and two or three fluidextracts in the Pharmacopeia which contain glycerin.

Dr. Caspari's experience has been that water alone will dissolve very little from *viburnum prunifolium*. Twenty per cent. alcohol will extract some of the material; 61 per cent. is probably used in the fluid extract to extract all of the material. He has not the faintest idea whether hot water takes out all of the virtues of *viburnum prunifolium*.

REDIRECT EXAMINATION BY MR. HOUGH

The witness testified that it was impossible for him to state whether the ingredients in the pills or capsules are the same as they were when they were made, or not. It would require a more careful examination than merely looking at them. He stated that the coating of pills would not primarily keep in the volatile matter, but it would depend largely on the character and nature of the volatile matter. He found volatile substances in Wine of Cardui.

The witness stated that glycerin is an alcohol. It is used in certain preparations because that particular combination of glycerin and alcohol has been found the best by experience to extract and preserve that particular drug.

A STATEMENT BY THE COURT

The Court then made the following statement without the presence of the jury:

THE COURT:—It has been represented to the Court that rumors have been spread, by whom it is at this time unimportant, to the effect that various doctors who have testified in this case volunteered in open court the names of their patients. Such rumors are false. All of the doctors, save one from Chicago, who had permission from his patient to disclose her name, requested the Court to allow them to withhold the names of their patients. This request was granted upon condition that the names be given to opposing counsel. As a result, none of the names were mentioned in open court or given to the public, but were given privately to opposing counsel for verification and investigation.

The foregoing statement may be made a part of the record in this case.

An adjournment was taken until Thursday, June 8, 1916, at 10:30 o'clock a. m.

(To be continued)

Correspondence

Federal Aid for Indigent Consumptives

To the Editor:—After twenty-five years of struggle against the menace of the migratory consumptive, California offers a solution in the Kent bill. It is a problem that calls imperatively for solution not only in California, and in the southern and southwestern states and in Colorado, but it constitutes from 5 to 15 per cent. of the tuberculosis situation in the middle states, and in New York and Massachusetts. Every eastern manufacturer suffers immense economic loss from the shifting character of labor, even where the shifting is among the inefficient, and the inefficiency is traced to tuberculosis more than to any other single cause. It is estimated that 10,000 consumptives wander into California every year, filtering through Colorado, Texas, New Mexico and Arizona. Thirty per cent. are indigent when they arrive; 20 per cent. more become so within a year; between 10 and 28 per cent. die within thirty days of arrival, and from 20 to 30 per cent. more within the year, while the percentage who recover or return home is negligible.

Unjust as this burden is, California alone would scarcely have had the temerity to ask for federal help if it had not first exhausted all available efforts at home and been forced to realize that the task was too big and too complicated for a state to handle unaided. The state embargo against the consumptive has been tried and found unworkable. When not unconstitutional, it is truly brutal. Placing the home responsibility on the home state and collecting costs from the home state is not feasible, as the constitution forbids agreements between states (see federal constitution, Article 1, Section 10 and Subdivision 10). Returning indigent patients who so desire is enormously expensive, and if they do not so desire there is no legal way of forcing them. Moreover, this is not necessarily a solution of the case so returned. Local agencies are frequently unable to meet the problem, and the "passing on" method has steadily grown in spite of the efforts of organized charity to prevent it. This has resulted in shifting the load to localities where they are trying to do their duty by their own tuberculosis sufferers. Los Angeles in six months (January 1 to June 30, 1915), had 668 consumptives in her hospital, of whom 145 had been in the county less than six months, while 290 more were adults who had been in the state less than five years.

From the injustice of this burden there is no relief save to bring proper influences to bear on the states and communities whence the patients come and on the transportation companies. To those who had studied the problem for years it seemed obvious that these influences could come only from the federal government. Hence the Kent bill, introduced into Congress by Hon. William Kent of California, and backed by Secretary McAdoo, Surgeon-General Blue and the Public Health Service.

The provisions of the Kent bill are that:

Any hospital caring for consumptives may apply for 75 cents a day subvention from the federal government for each nonresident consumptive cared for, provided:

- (a) That from some source, state, municipal or private, at least 75 cents a day is being spent on his care;
- (b) that the care so given satisfies requirements of the Public Health Service who are authorized to visit such hospitals periodically;
- (c) that the individual for whom the subvention is sought can show that he is legally a resident of some other state and did not migrate and was not assisted in migration to secure aid under this act.

2. A consumptive not legally resident in the state where he becomes dependent may, at his request, be returned to his home state by the Public Health Service at government expense, provided:

- (a) that he may be adequately cared for in his home state;
- (b) and finally, if returned he is not again entitled to any benefit under this act.

It should be noted that by the terms of the bill neither the state, municipality nor private institution need apply for the subsidy if it does not want to, thus obviating any criticism regarding federal interference with state rights. Furthermore, the form of cooperation suggested is a recognized method of dealing with tuberculosis in a considerable number of states. And there is the additional safeguard that the

money is administered only on recommendation of the Public Health Service after a hospital has asked for the subsidy and been found to be doing efficient work. Therefore, any criticism based on abuse of charity subsidies will encounter this essential difference in a health subsidy as contemplated by the Kent bill, namely, that *the source of the subsidy also determines* the conditions and standards according to which it may be granted.

The resulting standardization of tuberculosis hospitals seeking government aid is one of the big features of the bill. Better care of tuberculosis in each state will result from the Public Health Service's jacking up of sanatoriums and the encouraging of new buildings. Foci will be reduced and new cases prevented. "Cures" and "patent medicines" for the tuberculous can be regulated. And, eventually and inevitably, migration will be reduced, because it will put government authority on the fact that climate has never yet cured tuberculosis, and will give wide and effective advertising to this fact.

Furthermore, under the supervision of the Public Health Service, which has undertaken to carry out the provisions of the bill, we may expect the enforcement of the interstate quarantine regulations. The Public Health Service under the secretary of the treasury already has unlimited police power (U. S. quarantine act, 1893), but has never exercised it to the extent made possible by the law. To bring out this full authority requires some crisis such as the plagues in San Francisco and New Orleans or some intolerable burden necessitating federal aid.

This is an interstate problem, and the Public Health Service has the power to deal with tuberculosis as it has also the power to deal with any other quarantinable disease. The secretary of the treasury is authorized to make any regulations necessary to carry out such quarantine. His willingness to accept the responsibility placed on him by this bill is conclusive evidence of his determination to carry out such measures as are proposed by the Kent bill in every state that applies for help where the migratory consumptive has become a local menace. The Kent bill makes the migratory consumptive a national issue and has led the Public Health Service to make a detailed study of the United States interstate quarantine act with a view to more stringent regulations.

PHILIP KING BROWN, M.D., San Francisco.

Epinephrin in Infantile Paralysis

To the Editor:—In the symposium on infantile paralysis which appeared in THE JOURNAL, July 22, there is an error in the reproduction of my remarks (p. 314) which I wish to correct. It reads there: "No death (of infantile paralysis) is usually due to respiratory paralysis." It should read, of course, "Death is usually due to respiratory paralysis."

I shall avail myself of this opportunity to state that in the cases of infantile paralysis treated at the New York Throat, Nose and Lung Hospital, more than fifty babies received an intraspinal injection of 2 c.c. of a 1:1,000 epinephrin chlorid solution every six hours from the very beginning of the disease, that is, as soon as the patients were brought to the hospital. One result stands out clearly: that all these little patients stood *two cubic centimeters* of epinephrin solution administered intraspinally every six hours for many days without the slightest harm. As to the beneficial results, I prefer, for the present, to make no comment whatsoever.

S. J. MELTZER, M.D., New York.

Meeting of Cremation Society

To the Editor:—The fourth annual convention of the Cremation Association of America will be held in the auditorium of the Hotel Gibson, Cincinnati, Thursday and Friday, August 24 and 25. Physicians who are interested in cremation are invited to attend. They are also eligible to associate membership.

Some of the most eminent members of our profession have been connected with the sanitary reform known as the cremation movement. In Germany it was advocated by

Rudolph Virchow, in England by Sir Henry Thompson and Sir T. Spencer Wells, in France by Dr. Prosper Pietra-Santa, in Denmark by Dr. F. Levison, and in Italy by Drs. Gaetano Pini and M. de Cristoforis. In our own country, Dr. Francis Julius Le Moyné, a graduate of the medical department of the University of Pennsylvania, built the first crematorium in America at his own expense, and cremation was ardently promoted by Drs. Samuel D. Gross, Edward J. Birmingham and Felix Formento.

It will be news to many that the United States has forged ahead of Germany in the leadership of the cremation movement. There are fifty-three crematories here as compared to forty-eight in Germany, and two more are in contemplation, one at Salem, Mass., and another at Kansas City. We have also outdistanced Germany in the total number of incinerations, the figures being 86,006, up to the end of 1913, as compared to 76,350, up to the end of 1915. Statistics recently published in the *Sunnyside* show there was an increase of 906 per cent. in the number of cremations in America in fifteen years.

HUGO ERICHSEN, M.D., Detroit,
President, Cremation Association of America.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

POTASSIUM PERMANGANATE IN RATTLESNAKE BITES

To the Editor:—I was recently asked as to the value of potassium permanganate in rattlesnake bites. 1. What is your opinion? 2. What local measures would you suggest? 3. Are there any serums of value?

F. G. DEWEY, M.D., Coleridge, Neb.

ANSWER.—1. Potassium permanganate is a powerful oxidizing agent, and if applied directly to the open wound will destroy the rattlesnake venom with which it comes in direct contact, practically a very small amount. It is of no value, however, internally, as a sufficient dose to oxidize the venom would kill the individual. See Cushny's "Textbook of Pharmacology and Therapeutics," Lea and Febiger.

2. For rattlesnake, moccasin and copperhead poisoning, no successful antivenoms as yet have been produced. See Kolmer's "Infections, Immunity and Specific Therapy," W. B. Saunders Co., Philadelphia.

3. The most approved local measures in the treatment of snake bites are: free opening of the wound, immediate application of a tourniquet to the limb, and the local use of a saturated solution of potassium permanganate.

PRESCRIPTION CONTAINING TARTAR EMETIC AND SODIUM BICARBONATE

To the Editor:—The following prescription is published in a recent journal under the name of a "yaws mixture" and is recommended for kala-azar:

R Antimon. et. Pot. Tartr.	gr. 1
Sod. Salicyl.	gr. 5-10
Pot. Iodid.	dr. 1
Sod. Bicarb.	gr. 15
Aq.	oz. 5

The foregoing is one dose to be given three times a day for adults. Sometimes the potassium iodid has to be reduced to 15 grains.

The main object of the treatment is supposedly the administration of antimony, and I am wondering in what form the antimony occurs in this mixture, and if as a matter of fact it is soluble or, indeed, absorbable. The author states that the mixture is "inelegant owing to the bicarbonate of soda, but this decreases the emetic properties of the mixture." I find that a mixture of a 2 per cent. solution of tartar emetic with a 4 per cent. solution of sodium bicarbonate produces a white precipitate. Perhaps the reason the above-described mixture is not emetic is that the antimony is insoluble. I should be glad of any light that you can throw on the question.

SAMUEL COCHRAN, M.D., Hope Hospital, Hwaiyuan Anhwei, China.

ANSWER.—The foregoing letter was referred to our chemical laboratory, which reports: Tartar emetic and sodium bicarbonate mixed in aqueous solution in the proportions given in the prescription form no immediate precipitate; but on standing some time (for example, over night) a sediment

appears on the bottom of the flask. This deposit or precipitate, when filtered off, washed with water and dissolved in hydrochloric acid, gives with hydrogen sulphid the characteristic orange-colored precipitate of antimony sulphid.

In all probability, since there is no immediate precipitation, there is a slight loss of carbon dioxide and resultant increase in hydroxyl ion concentration, permitting hydrolysis of the complex tartrate ion and precipitation of antimony hydroxid.

It is quite likely that the relative insolubility of the antimony compound which is precipitated out by the alkali renders the absorption of antimony slower and in this way decreases its emetic properties.

FRAUDULENT CANVASSERS

To the Editor:—I am enclosing you exhibits which will probably be of interest to you, because they represent, I think, a fraud practiced on members of the medical profession. The gentleman who signed the receipt and took my money claimed to represent the Alumni Educational League, but my letter to the league, asking about the book, which I had paid for, is returned by the postal authorities as unclaimed, with the notation on the back of the envelope that the concern is not known at the address given.

I would appreciate it very much if you could, in any way, trace this concern out, and so would other members of the profession who doubtless gave orders and cash, as I did myself.

The young gentleman claimed to be helping himself to a college education in this way and seemed so familiar with the medical publications, as well as others, that the idea of fraud in connection with it never entered my head.

JAMES V. FREEMAN, M.D., Jacksonville, Fla.

ANSWER.—THE JOURNAL has repeatedly called attention to this scheme. See editorials, THE JOURNAL, April 10, 1915, p. 1247; May 29, 1915, p. 1855; July 31, 1915, p. 434, and

R T KNIGHT Pres.

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Nov. 20, 1915, p. 1825. News items have been published Sept. 4, 1915; Oct. 23, 1915, and an answer in the Queries and Minor Notes Department, Nov. 20, 1915, p. 1837.

ERLENMEYER'S BROMID MIXTURE

To the Editor:—In Current Medical Literature (THE JOURNAL, June 12, 1915, p. 2028), reference is made to the administration of bromid in Erlenmeyer's Mixture. Kindly explain what the mixture is.

H. J. TRESHLER, M.D., Midland, Pa.

ANSWER.—The original article to which our correspondent refers, which was abstracted in THE JOURNAL, is "The Opium-Bromid Treatment of Epilepsy According to Flechsig," by H. G. W. Kellner.

The formula for Erlenmeyer's bromid-water, or mixture, is:

Ammonium bromid	1	gm. or c.c.	gr. xv
Potassium bromid	2		
Sodium bromid	2		gr. xxx
Carbonic acid water (saturated).....	.600		3 xx

According to the original formula of Dr. Erlenmeyer, 1 drop of ammonia water is added to the foregoing formula.

NINE USEFUL DRUGS

Enough replies have been received to the Query on this subject, THE JOURNAL, July 22, 1916, page 309, to indicate that an analysis can be made. However, as a greater number will make such an analysis of interest and value, additional suggestions as to the nine useful drugs to be carried in a physician's handbag will be appreciated.

Medical Education and State Boards of Registration

New Requirements for Licensure in North Dakota

An official report states that at a meeting of the State Board of Medical Examiners of North Dakota held in July, regulations on four special matters were adopted, as follows:

1. The board voted to admit to practice in North Dakota, without further examination, any physician who presents a certificate from the National Board of Medical Examiners showing that he has successfully passed their examination.
2. It was voted that on and after July, 1918, every applicant for license, in addition to graduation from a recognized medical school, must present a certificate showing that he has served one year as an intern in an approved hospital. This applies, therefore, to all graduates of 1917 and hereafter.
3. Beginning January, 1917, every applicant for a license of reciprocity must present a diploma from a college rated Class A by the Council on Medical Education of the American Medical Association at the time such diploma was granted. The resolution states that this requirement will apply to graduates of 1912 and thereafter.
4. Hereafter no candidate who fails at two examinations will be allowed to write a third time unless he presents a certificate showing that he has spent an additional year either in graduate study or in an approved college or hospital. North Dakota is the second state to take definite action regarding certificates from the National Board of Medical Examiners, Maryland having done so by legislative enactment a few months ago.

Porto Rico April Report

Dr. M. Quevedo Baez, secretary of the Board of Medical Examiners of Porto Rico, reports the oral and written examination held at San Juan, April 4, 1916. The total number of subjects examined in was 9; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 6, of whom 3 passed and 3 failed. The following colleges were represented:

	PASSED	Year Grad.	Per Cent.
St. Louis Medical College.....	(1915)		79.5
Chicago College of Medicine and Surgery.....	(1915)		76.5
St. Louis Medical College.....	(1915)		76.5
FAILED			
St. Louis Medical College.....	(1915)		68.5
Chicago College of Medicine and Surgery.....	(1915)		56.5
St. Louis College Medical School.....	(1912)		70.3

The applicant was required to answer ten questions in each of the following subjects (questions in pathology are missing):

DIAGNOSIS

1. Differentiate between cerebrospinal meningitis and anterior poliomyelitis. 2. Describe the symptoms of brain tumor. 3. Give in detail advice to a young patient in the earliest stage of tuberculosis. 4. Give the causes and symptoms of hemothorax. 5. Mention the signs and symptoms of disease of the coronary arteries. 6. Differentiate between asthma and bronchial asthma. 7. Give etiology and symptoms of arteriosclerosis, and state what conditions of heart, brain and kidney are produced by it. 8. Describe the symptoms present in (a) carcinoma of the stomach; (b) gastric ulcer; (c) duodenal ulcer. 9. Give the probable cause and symptoms of calculus of pancreas. 10. What are the symptoms of acute Bright's disease? 11. Mention some complications which may follow typhoid fever. 12. Give the cause and symptoms of elephantiasis. 13. Describe the prodromal symptoms, giving duration of each, in (1) scarlet fever; (2) measles, and (3) smallpox. 14. Describe bubonic plague. 15. Give the symptoms and diagnosis of hookworm disease.

GENERAL ANATOMY

1. Give the origin, insertion and action of the rectus femoris. 2. Describe the collateral circulation after ligation of the common iliac artery. 3. Describe the deep palmar arch and give its formation. 4. Describe the knee joint. 5. Describe the arteria femorales as (a) origin, (b) course and (c) branches. 6. Describe the vena cava inferior. 7. Give the minute anatomy of the lobules of the liver. 8. Give the topographic anatomy of (a) the internal abdominal ring; (b) the external abdominal ring. 9. Name the ligaments of the hip joint. 10. Name the muscles that flex the thigh, also the leg. 11. What are the divisions of the trifacial nerve? Name the branches of the third division. 12. Describe the shoulder joint. 13. Describe

the prostate gland and give its relations. 14. Describe the anatomy involved in an operation for the radical cure of oblique inguinal hernia. 15. Describe the distribution of the peritoneum.

PATHOLOGIC ANATOMY

1. In the study of tumors or growths what macroscopic and microscopic characteristics would lead you to decide in favor of malignancy? 2. Classify tumors. 3. Describe pathologic appearance of acute parenchymatous nephritis. 4. Give the pathology of ophthalmia neonatorum. 5. Give the pathology of dysentery, catarrhal, ulcerative, diphtheritic. 6. What is a sarcomatous tumor? Give its pathology. 7. Mention at least four varieties of ulceration seen in the gastro-intestinal wall. Describe the gross appearance of an amebic ulcer. 8. Describe a tubercle. What is its origin and what tissues are most frequently invaded by it? 9. Give pathologic characteristics of medullary type of carcinoma of the breast. 10. Give gross pathology of endocarditis, and mention most frequent causes. 11. What is the pathologic condition found in chronic Bright's disease? 12. Define hypertrophy, atrophy; give varieties and causes. 13. Give differences between degeneration and necrosis. 14. What is the microscopic appearance of the affected tissues in acute hyperplastic splenitis? 15. How would you distinguish between fatty degeneration and fatty infiltration?

SURGERY

1. Define opsonins, antibodies, embolism, hypospadias and pyelonephrosis. 2. Diagnosis and treatment of posterior dislocation of the hip joint. 3. Treatment of uncomplicated fracture of upper third of the femur. 4. Diagnosis of Pott's disease. 5. Diagnosis of cancer of the female breast. 6. Differential diagnosis of cancer and ulcer of the stomach. 7. Diagnosis of intestinal obstruction. 8. Describe operation of suprapubic cystotomy. 9. Describe the Murphy-Fowler treatment of enterocolitis. 10. Describe operation for ligation of external carotid. 11. Prophylaxis and treatment of tetanus. 12. Cause, symptoms and treatment of acute noncalculous cholecystitis. 13. Diagnosis of fracture of the base of the skull. 14. Cause and treatment of decubital ulcers. 15. Describe one method of operation for the repair of harelip.

GYNECOLOGY AND OBSTETRICS

1. Define corpus luteum, abortion, menopause, version and placenta praevia. 2. Symptoms of retroversion of the uterus. 3. Diagnosis of extra-uterine pregnancy. 4. Cause and treatment of rupture of the uterus during labor. 5. Diagnosis of R. O. P. before labor. 6. Causes and treatment of retained placenta after full term delivery. 7. Treatment of acute salpingitis. 8. What are the difficulties for delivery in O. P. positions? 9. Name the sutures of the fetal head. 10. Uses of pituitary extract in obstetrics. 11. Give the causes and management of prolapsed cord. 12. Treatment of postpartum hemorrhage due to laceration of the cervix. 13. Describe operation for repair of complete laceration of perineum immediately after labor, stating what kind of suture material is used. Mention positive signs of pregnancy. 15. What is meant by curettage of the uterus, and when is it indicated?

THERAPEUTICS AND MATERIA MEDICA

1. Mention five drugs that are chemically incompatible with tannic acid. 2. Mention five saline purgatives and state the dosage of each. 3. What is the chemical antidote for arsenic? Give the dose of this antidote. 4. Creosote: properties, action and uses, dosage. 5. Glycerin: properties, action and uses, dosage. 6. Ichthyol: properties, action and uses, dosage. 7. Give the indications for three remedies useful in metrorrhagia. 8. What are secondary effects of alcohol on stomach, liver, vasomotor, system, nervous system? 9. What is the action and dose of apomorphin; of pilocarpin? 10. What is an alkaloid, a tincture, a fluidextract? 11. What is the strength of normal salt solution? Give indications for its use and mode of administration. 12. Give hypodermic dose of strychnin, sulphate of atropin, sulphate of morphin, apomorphin hydrochlorate, nitroglycerin and pilocarpin hydrochlorate. 13. Write a complete prescription for a diuretic containing no less than three ingredients. 14. Potassii chloras: properties, action and uses, dosage. 15. Pulvis effervescens compositus: dosage.

BACTERIOLOGY AND HISTOLOGY

1. Tell in detail: (1) How would you detect malarial organisms in blood; (2) How distinguish between the quartan and estivo-autumnal parasite? 2. Define: toxins, antitoxins, amboceptors, bacterioproducts, lysins. 3. Describe Widal's test for typhoid fever. What is its diagnostic value? 4. Describe fully the organism recognized as the cause of syphilis. 5. In a suspected case of pulmonary tuberculosis, what laboratory methods should be employed to establish the diagnosis? Give the methods in detail. 6. Describe in detail Gram's method of staining. Mention two species of micrococci that may be distinguished from each other by this method. 7. Describe striped and unstriped muscle, and name organs in which unstriped is found. 8. What is the relative difference between the sympathetic and cerebrospinal fevers? 9. Name the coats of the arteries and give structural difference. 10. Give composition of human blood. 11. Mention different leukocytes and derivation of names. 12. Give the normal histology of the skin. 13. Explain the difference between active and passive immunity. Illustrate by example how each may be acquired. 14. Give the structure of the mucous membrane of the stomach. 15. What structural differences are there between the malpighian corpuscles of the spleen and those of the kidneys? Make drawings.

PHYSIOLOGY AND HYGIENE

1. What are the manifestations of cell life metabolism? Explain significance and give classification. 2. Name end-products resulting from digestion of the three principal types of food, and explain how and by what channels they enter the circulation. 3. Name the varieties of blood that circulate through the liver. State the source and give the function of each. 4. What changes take place in the composition of blood as it passes through the kidneys? 5. Describe the sounds of the heart and give causes. 6. Discuss fully respiration. 7. State the number of white corpuscles in a cubic millimeter of blood. State the function of white corpuscles. 8. What diseases are specially liable to be conveyed by ingestion of milk? 9. Describe the portal circulation. 10. What are the uses of narcotics? Name the principal ones, giving the doses of each. 11. Suggest the prophylaxis of gastro-enteric toxemia of bottle-fed infants. 12. What is urea? What is the pathologic significance of urea in the urine? How estimated? 13. Discuss the influence of alcohol on the race. Is it food or poison? 14. Is sanatorium treatment of tuberculosis worth while? 15. How dangerous is impure air? How tested? And what would be index of impurity? What hygienic measures should be observed in public schools?

Book Notices

A TREATISE ON BLOOD PRESSURE IN OCULAR WORK. With Special Reference to Factors of Interest to Refractionists. By Eugene G. Wiseman. Cloth. Price, \$2.50. Pp. 267, with 19 illustrations. Rochester: John P. Smith Company, 1916.

According to the introduction, the purpose of this book is "to acquaint the optometric profession with a science (sphygmomanometry) hitherto uncmployed by it, but one which vitally concerns its future welfare." A careful reading of this book gives one the impression that the foregoing quotation is indeed true; it is hard to believe, however, that the "future welfare" of a certain manufacturer of sphygmomanometers is not also kept well in mind by the author. The volume is written by a nonmedical man, and reflects a lack of scientific knowledge in unfounded assertions and disjointed arguments. The book fills no want in the library of physicians, surgeons or oculists. It contains nothing original; and is simply a review of what has been said by others, with conclusions drawn by the author, attempting to show that all "optometrists," opticians, etc., should equip themselves with a sphygmomanometer (particularly one of a certain make), thereby greatly enhancing their chances for success. The placing of a highly scientific instrument, such as the sphygmomanometer, into the hands of an individual whose training has been only that found in the class referred to above could hardly result in any valuable benefit to the patient. Its most marked function, under these conditions, would probably be its spectacular and psychologic effect on the patient, tending to impress him with the attainments of the examiner.

INFANT MORTALITY: ITS RELATION TO INDUSTRIAL AND SOCIAL CONDITIONS. By Henry H. Hibbs, Jr. Paper. Pp. 127. New York: Department of Child-Helping, Russell Sage Foundation, 1916.

This book includes a series of papers representing an investigation of infant mortality conducted by the Boston School for Social Workers under a grant from the Russell Sage Foundation. Certain factors, such as the character of the milk supply, the influence of artificial feeding, and the form of medical attendance, which have received extended discussion elsewhere, are not included in this report, nor has any attempt been made to determine, except roughly, the relative influence of the various factors discussed. Chapters are devoted to the present position of infant mortality and its recent decline in the United States; the influence of prenatal conditions on infant mortality; infant mortality and the size of the family; the mother and infant mortality; and infant mortality, housing conditions, and influence of economic and industrial conditions. The author concludes that the fundamental causes of an excessive rate of infant mortality are poverty, inadequate economics, and low standards of living. The fundamental remedy is higher wages. Other remedies, such as legislation restricting or regulating the employment of mothers before and after confinement, day nurseries, the instruction of mothers and schoolgirls in domestic economy, etc., have their places, but the chief thing remains the provision of an adequate family income.

THE INVOLUNTARY NERVOUS SYSTEM. By Walter Holbrook Gaskell, M.A., M.D., F.R.S. Cloth. Price, \$1.80 net. Pp. 178, with illustrations. New York: Longmans, Green & Co., 1916.

The volume represents the results and conclusions of more than thirty years of research on the origin, structure and function of the involuntary nervous system on the part of the late Professor Gaskell. Our present day knowledge of the involuntary nervous system is largely due to the fundamental pioneer work of Gaskell and his pupil, Professor Langley. The problems related to this nervous system are here treated in their widest biologic relations. The book will be of interest to the medical man, despite the fact that it takes no account of the rôle of the involuntary nervous system in disease, such as vagotonia, pluriglandular affections, etc. A clear conception of the biologic relations and rôle of this system in health must ever be the starting point in working out the complex behavior of the system in morbid processes.

Medicolegal

Right of Claimant Against Employer to Sue for Malpractice

(*Pawlak vs. Hayes (Wis.)*, 156 N. W. R. 464)

The Supreme Court of Wisconsin reverses an order which sustained a demurrer to the complaint in this action for alleged malpractice because the plaintiff had made a claim against his employer under the workmen's compensation act. The court says that the plaintiff alleged that, while in the employ of a lumber company, he sustained a fracture of the leg, that he employed the defendant to treat him for the injury, and that by reason of the negligence and lack of skill of the defendant the leg was improperly set and treated, that at the time of the injury both the plaintiff and his employer were under the provisions of the workmen's compensation act, that the plaintiff made a claim against his employer under the act, and received compensation and part of his medical expenses from March 5, the date of the injury to about August 20, that as soon as he discovered the negligence of the defendant he refused to accept any more compensation from his employer, and offered to return the same or so much thereof as the court might adjudicate. The circuit court sustained the demurrer to the complaint on the ground that, when the plaintiff filed a claim against his employer, his cause of action for the injury received and the proximate results thereof were assigned to his employer by virtue of the provision of the compensation act that the making of a lawful claim against an employer for compensation for injury or death of his employee shall operate as an assignment of any cause of action in tort which the employee or his personal representative may have against any other party for such injury or death. But the supreme court says, it is quite evident from a reading of this provision that it contemplates the existence at the same time of two remedies either of which the employee may pursue, as the statutory remedy against his employer or the common law remedy against the third person who by his negligence caused or contributed to his injury, which was not the case here. No duty or opportunity to elect between such remedies could arise until the facts creating the liability of the third person came into existence. In this case they were not known to the plaintiff until about August 20, and there was nothing to show he was negligent in not sooner ascertaining them. As soon as they came to his notice he promptly elected to hold the third person whose alleged negligence aggravated his first injury, and thereby he waived further liability against his employer. It was competent for him to do so, or to hold his employer under the provisions of the compensation act. This act requires the employer to furnish a physician, and makes him liable for the value of the physician's services for not to exceed ninety days. This, the supreme court thinks, implies liability for any aggravation of the injury caused by the negligence of the physician treating the employee during such time. Whether the employer would be liable for malpractice after the expiration of ninety days is not decided. The negligent treatment here was alleged to have begun about two weeks after the accident.

Sunstroke with Reference to Accident Insurance

(*Bryant et al. vs. Continental Casualty Co. (Tex.)*, 182 S. W. R. 673)

The Supreme Court of Texas reverses a judgment rendered in favor of the defendant company, and directs that one be entered for the plaintiffs, on an accident insurance policy which provided that, if sunstroke, due to external, violent and accidental means, should result, independently of all other causes, in the death of the insured within ninety days, the company would pay the principal sum as indemnity for loss of life. The court says that the insured, while walking on the streets of Houston on an unusually warm afternoon in the month of August, in the ordinary course of his occupation as a collector of accounts, suffered a sunstroke from which he died on the following day. The defense of the company was that sunstroke is a disease, and therefore not

an accidental happening; that as a disease it was named as a risk of the policy, and that no indemnity was due for death resulting from it, under the policy, unless the preceding exposure was itself the consequence of an accident. The court regards the question presented as an important one, and has been deeply concerned in its correct decision. No decision of this question by a court of last resort in any jurisdiction was found. There have been certain decisions which announce that sunstroke is a disease. But whatever it may be, technically, it is not regarded as a disease in the popular mind. In the common understanding it is accounted a kind of violent personal injury, from the very idea of sudden and external force carried by the word. If classed by medical authorities as, technically, a disease—as to which it is not improbable that there is a conflict of expert view—to none but an expert medical mind would the provisions of this policy have carried the significance that it was insured against as a disease. To men in general, such as those with whom a company of this kind deals and to whom its policies are issued, whether educated or ignorant, the use of the term in any character of contract, and particularly, the court thinks, in an insurance contract, not generally insuring against death by disease, but against death from accidental injury, would have denoted merely what sunstroke is commonly understood to mean—heat prostration, frequently a casualty, a species of bodily injury, distinct in its kind and individual in its cause, and of known and not unusual occurrence. With the term having, as it does, this recognized popular meaning distinctly different from any technical significance it may possess, the proposition that the latter must prevail in the construction of the policy is not to be allowed.

Duty of the State to Restrain and Confine the Insane

(*Hammon vs. Hill* (U. S.), 228 Fed. R. 999)

The United States District Court, in Pennsylvania, in denying the petitioner a writ of habeas corpus against the superintendent of the Allegheny County Home and Hospital for the Insane, says that the petitioner based his right to discharge, notwithstanding his insanity, or presumptive insanity, on the unconstitutionality of the act under which he was committed, and that therefore he was restrained of his liberty without due process of law. It appeared that he was restrained and confined in the asylum under and in accordance with the provisions of an act of assembly of the state of Pennsylvania; that this act is one of a number of acts constituting a system adopted by the state for the care of her insane; that the act, or the act to which it is supplementary, has not been declared unconstitutional, or in any respect illegal, by the courts of Pennsylvania; that these acts provide a method by which the sanity of the relator can at any time be judicially determined on his application; that it was not even alleged that at the time of his commitment, or at the time thereof, that he was sane; and it further appearing that his sanity was adjudged by a court of competent jurisdiction on a hearing on a writ of habeas corpus sued out under the act of 1883, this court concludes that he was not restrained in violation of any right guaranteed to him under the Constitution of the United States. Nothing can be clearer than the duty of the state to restrain and confine the insane, not only for their own safety and protection, but also for the safety and protection of the public. The relation between the two is that of guardian and ward. The confinement in an asylum is not of the same character as imprisonment for the punishment of an offense. It is a necessity growing out of the inability of the mentally afflicted to care for themselves or prevent injury to others. The state not only restrains the lunatic for his own protection and the safety of the public, but its duty extends so far as to include every provision known to medical skill and science for the treatment of the diseased mind. Thus the work of the state in caring for the demented within her borders is at once protective in its character and highly humanitarian. A state would indeed be derelict of its duty if it failed to make adequate provision for the care and treatment of the insane. The state is the *parens patriae* (parent of the country) of the insane.

Society Proceedings

COMING MEETINGS

Colorado State Medical Society, Glenwood Springs, Sept. 5-7.
Michigan State Medical Society, Houghton, Aug. 15-17.
Oregon State Medical Association, Portland, Sept. 9-10.
Utah State Medical Association, Salt Lake City, Sept. 12-13.

AMERICAN ASSOCIATION OF ANESTHETISTS

Fourth Annual Meeting, held in Detroit, June 12, 1916

The President, DR. WILLIS D. GATCH, Indianapolis, in the chair.

Instruction of Medical Students and Hospital Interns in Anesthesia

DR. WILLIS D. GATCH, Indianapolis: Nothing can do more to improve the standing of anesthetists than to educate physicians generally in anesthesia, and the best place to begin is in the medical schools. There is practically no course of instruction on this subject in any of them at present, and state boards of examiners make no requirements in regard to it, with the possible exception of that of Pennsylvania. It may be objected that the curriculum is already overcrowded, but this could be avoided by a proper correlation of subjects. To the objection that not all students need this knowledge after graduation, it may be answered that all should know how to supervise the giving of anesthetics, even if they do not do the actual work. It is not always possible to learn what should be known concerning the various kinds of anesthesia and anesthetics during an internship in a hospital, for not all hospitals employ trained anesthetists.

Why Spinal Anesthesia Fails

DR. W. WAYNE BABCOCK, Philadelphia: Spinal anesthesia involves some technical difficulties. The difficulty in regard to making the puncture properly may now be eliminated as a likely source of trouble, since the performing of lumbar puncture has become so general. The second difficulty is in regard to the solution used. Sometimes the anesthetic is not brought into contact with the nerve roots in sufficient concentration to interrupt their conductivity. With different drugs, the percentage required varies. Another difficulty presented is to select the proper point of injection. The solution should be introduced practically opposite the nerve root that it is desired chiefly to affect. By using solutions varying in specific gravity from that of the cerebrospinal fluid and adopting particular postures with the patient, however, it is possible to cause the solution to gravitate in such a way as to affect nerve roots at a distance from the point of injection. If this is not taken into account, harmful results may be produced. The position of the patient, therefore, is of great importance. Patients who are very nervous are not good subjects for this method. In them, however, spinal anesthesia may be rendered more successful by pre-operative medication. Again, the operation sometimes fails because the type of operation is not suited to the method. Unless the time consumed in the operation is short, the patient may emerge from the effects of the drug before the operator has finished. Finally, this method is not adapted to the mental make-up of some surgeons. They must be able to adjust themselves to the peculiar conditions present, to make a success of it. Spinal anesthesia is not the method to be selected in apparently hopeless cases. It should not be employed where a local anesthetic could be used with as great advantage. In patients with great resistance, who can stand a lowered blood pressure, it is possible to secure the most widespread muscular relaxation with complete anesthesia and the least protoplasmic change that can be secured by any method of anesthesia.

DISCUSSION

DR. RAY A. RICE, Columbus, Ohio: We tried spinal anesthesia in the case of a tuberculous patient who was in rather bad shape for taking inhalation anesthetics, on whom we intended to do a leg amputation. Our pathologist prepared

the solution and gave the injection. He used cocain, about $1\frac{1}{2}$ grains to the ounce. The puncture was made successfully on the first attempt. The patient, however, lost none of the ability to feel pain, although we waited for fully fifteen minutes, making trial at intervals. The puncture was evidently made in the proper place, and the fluid came out nicely; but perhaps it did not come from the cord. We had to resort to ether in order to perform the operation.

DR. F. L. RICHARDSON, Boston: I have used tropacocain only, using the side method of injection. I have had only one failure in getting into the spinal canal. I have always made the injection in the lumbar region, depending on the amount of fluid I withdrew to mix with the drug, and the force with which I put it in, to get the height of the anesthesia. I should like to ask whether Dr. Babcock has difficulty in producing anesthesia in persons with a high spinal fluid tension. Of course, the blood pressure varies considerably with spinal anesthesia, and you can control this with gas oxygen.

DR. W. WAYNE BABCOCK, Philadelphia: Sometimes we cannot depend on the solution. In one instance that I know of, a surgeon used it twice in precisely the manner described in an article that I had written, yet in the first case there was no anesthesia produced, while in the second the patient died. I believe that the needle was properly introduced, but it may be that a proper mixture was not made. I have noticed a greater difficulty in the cases of persons with a high intradural tension when the fluid is drawn out with great force. I believe that it is because the solution is apt to leave as soon as the needle is withdrawn. We should take pains, before withdrawing the needle, to see that the solution is thoroughly mixed with the fluid. It is always possible to produce a sufficient degree of anesthesia, if you take this precaution, in from three to five minutes.

Experiments with Magnesium Sulphate

DR. S. J. MELTZER, New York: There have been many investigations on the effect of calcium, potassium and sodium, but not of magnesium, perhaps because the action of this drug is to inhibit, so that it was dismissed as something of no importance. Auer and I have published reports of a large series of experiments with magnesium sulphate, including subcutaneous injections. We found that it depresses the entire nervous system, and even produces anesthesia. Dr. Peck of the Roosevelt Hospital, New York, at my suggestion operated on three men under anesthesia produced by intravenous injections of magnesium sulphate, nothing else being used. They felt no pain, and one of them did not believe that the operation had been performed. That settled the question as to whether real anesthesia is produced by magnesium sulphate or whether it has merely a curare-like effect, which some felt that so long as only animals had been operated on under its influence could not be answered positively. I advise, however, that no one undertake to use this as an anesthetic until we are able to state definitely just how it should be handled. I hope that it will turn out to be an entirely practical method.

DISCUSSION

DR. WILLIS D. GATCH, Indianapolis: When I was an intern, a man was brought to the hospital in a state of coma, produced by his habit of taking 2 or 3 ounces of magnesium sulphate every day. He got over the attack. This was a case of complete magnesium sulphate anesthesia due to taking the drug by mouth, and I have often seen patients who I thought suffered from chronic magnesium sulphate poisoning from taking it in some form or other every day. The only case of severe tetanus that I ever saw saved was saved by intraspinal injections of magnesium sulphate; but I believe that this treatment is dangerous, and should be resorted to only in cases that would otherwise certainly prove fatal.

DR. JAMES T. GWATHMEY, New York: I should like to know the strength of the solution that Dr. Meltzer used for intravenous injection.

DR. S. J. MELTZER, New York: Magnesium sulphate is a very good remedy to apply to burns of the first and second degree. Some years ago, I had fifteen cases of erysipelas in which I used this remedy, and found that the patients were

all relieved of the inflammation. I used to think that taking magnesium sulphate by mouth could not produce anesthesia, but two years ago we found that we could kill any animal by injecting it directly into the intestinal canal. I think that in cases of jaundice with pain it might be practical to introduce it into the duodenum by means of the duodenal tube. The pain in these cases is due to colic, two antagonistic muscles contracting at the same time. The fibers of the gallbladder contract and try to force the bile out, while the sphincter of the common duct is also contracting and prevents its escape.

Essence of Orange-Ether Sequence by the Closed Method

DR. I. D. KRUSKAL, Brooklyn: This method overcomes the usual objections to a closed method. It has been used in 1,000 cases without a fatality of any kind. It furnishes a volume of air sufficient for respiration with an amount of anesthetic sufficient to produce anesthesia. Rebreathing of small quantities of carbon dioxide is a means of maintaining cardiac and respiratory function and preventing shock. The patient leaves the table in good condition, and recovery is shorter than by any other method of ether narcosis. There is an absence of prolonged nausea and vomiting. The vapor is constant in strength, moisture and warmth. Ether waste is eliminated. The average time required to get surgical anesthesia is six minutes. This method approaches the ideal more closely than other methods on account of the rapid, pleasant induction, devoid of excitement; the even maintenance, under perfect control, with perfect relaxation, the air supply, sufficient for oxygenation, with partial rebreathing, and the prompt and uneventful recovery.

DISCUSSION

DR. RAY A. RICE, Columbus, Ohio: In my opinion, the open method is very inferior. I now use a semiclosed inhaler drop method of my own to get my patients to sleep; but when they are well relaxed, I switch to an entirely closed method, which is different from Dr. Kruskal's in that I vaporize the ether by passing oxygen through it. It is entirely a rebreathing method. The patient gets no outside air at all, the nasal passages being stopped up. This gives the most perfect anesthesia that I have ever seen. The patient has to be relaxed entirely before the breathing tube is inserted. There is sometimes a coughing and strangling sensation, which the patient does not, of course, know about. I have used this method for a year or more with entire satisfaction. I think that the rebreathing method stimulates respiration and heart action, and prevents shock.

DR. ISABELLA C. HERB, Chicago: Dr. Kruskal gives the average length of induction as six minutes. I give seven minutes as mine. My patients never have coughing or strangling, because I give plenty of air in the beginning, which does not lengthen the time required for giving the anesthetic. If you employ vapor and concentrate it, the patient will hold his breath. You must give enough anesthetic to keep the patient asleep. The operation will regulate the amount needed for this. At certain stages of the procedure, the patient must be kept more soundly asleep than at others. Nausea and vomiting, we might say, are things of the past. We would not average more than 15 per cent. of cases of vomiting with the open method. I have never seen shock produced by an anesthetic. If the patients die, it is not from shock, really, but from paralysis. I have noticed, many times, the rapid breathing which accompanies the rebreathing method. You never see that in the open method of etherization. We do not have excitement, except in alcoholics; but that occurs, regardless of the method which is employed. Of course, Dr. Rice does not give his patients outside air, because it is the oxygen of the air which is required, and they are getting all of that which they require.

DR. CHARLES K. TETER, Cleveland: The success of the anesthesia depends more on the skill of the anesthetist than on the method he may use. Instead of using the nitrogen in the air, I use the oxygen with a small amount of nitrous oxide; and I find that I obtain better results than from just using the oxygen passed through ether. It prevents an overpercentage of carbon dioxide in the breathing mixture. The point of the whole thing is accuracy and constancy of dosage.

DR. L. S. HOLMER, London, Ont.: I should like to ask whether Dr. Kruskal uses preliminary medication, and what lung complications he has with his method in comparison with the open drop method.

DR. WALTER M. BOOTHBY, Boston: It is a mistake to let the teaching go out that ether will not produce lowering of the blood pressure. You can put the patient into a definite surgical shock by this means, if you push the anesthetic too far. The word "shock" has been used a great many times this morning, but I think that the word "collapse" would be better.

DR. JAMES T. GWATHMEY, New York: I do not think that any of us now know which is the better, the open or the closed method. I look on the gas-ether sequence and the drop method as two pioneer methods that should now be methods of the past. The drop method is inaccurate. I have never seen a patient struggle under this method. All my patients have preliminary medication. I think that $2\frac{1}{2}$ ounces of ether in an hour's administration, when absolute relaxation is obtained, cannot be approached by the drop method. I believe the success of Drs. Kruskal and Rice depends on getting the anesthetic well mixed before reaching the patient.

DR. WILLIS D. GATCH, Indianapolis: Do you use a positive intrapulmonary pressure?

DR. I. D. KRUSKAL, Brooklyn: The bag is two thirds distended, so there must be a positive pressure of 8 or 10 mm.

DR. E. J. MCKESSON, Toledo, Ohio: With the bag two thirds distended, the pressure will not run over 3 mm.

DR. M. P. DENTON, New York: I think that 5 mm. would be the proper amount.

DR. CHARLES K. TETER, Cleveland: I have found that with the bag a considerable distance from the patient and with a pressure of 5 mm. in the bag, there was a negative pressure during inhalation. I now take the bag up directly to the inhaler. With a large opening and with 4 mm. of pressure in the bag, the inhalation pressure is 2.5 mm.

DR. F. L. RICHARDSON, Boston: I think that the time is coming when we shall not stick to any one method, but shall select the method adapted to the particular case.

DR. I. D. KRUSKAL, Brooklyn: We can induce anesthesia with gas-oxygen, and then change to ether vapor. I do not see any particular advantage in using oxygen instead of air, except in grave surgical risks. In all cases, I give morphin and atropin, but never scopolamin. I would not go back to any method except a vapor method of ether administration. I think that there is a decided advantage in furnishing definite quantities of ether mixed with air directly to the patient. In regard to the question about pulmonary complications, these were difficult to follow in this series, because many cases were acute surgical conditions. Pulmonary infarcts and emboli occurred in these conditions, but I could not tell whether they were purely postoperative pneumonias or the result of the operation. I realize that open and semi-open ether can be given with satisfaction, and that most of us could, in a simple, ordinary, fifteen minutes' procedure, get as good results with them. I have limited the cases in this paper, however, to grave surgical conditions.

Anesthesia in Epileptics

DR. WALTER H. MYTINGER, Cincinnati: These cases are uniformly difficult to handle. A long preoperative treatment, preferably in an atmosphere conducive to mental rest and physical quiet, is desirable. A hypodermic injection of morphin with atropin has been used in adult cases as a routine procedure. The best results are obtained with this if given one hour and fifteen minutes before the operation. Nitrous oxide would seem to me to be the anesthetic of choice. It is difficult to obtain abdominal relaxation by gas-oxygen, even when nerve blocking is also employed. One must resort finally to the ether attachment; to use chloroform to the extent that might be required would be dangerous. The induction period is prolonged, and one must often wait for a convulsion to subside before taking the patient to the operating room. After administering anesthetics to a number of these patients, one gets the impression that one is giving a double anesthetization. Nearly always, the induction has to be performed twice.

DISCUSSION

DR. GEORGE W. CRILE, Cleveland: I should like to ask how often Dr. Mytinger found convulsions present in his cases before or after induction.

DR. MYTINGER, Cincinnati: It was almost the rule.

DR. F. H. McMECHAN, Cincinnati: It is interesting to consider whether, in the anesthesia of epileptics of some types, the proper local anesthetic would not solve the problem encountered in the onset of the epileptic seizure during general anesthesia. One of the physicians associated with the Hospital for Epileptics at Gallipolis, Ohio, said that it was the invariable rule that all the patients presented the symptoms of petit or grand mal during the induction stage of anesthesia. She also corroborated the statement that patients become practically anesthetized and ready for operation when the epileptic seizure takes place, and the anesthetic procedure has to be renewed.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Arizona Medical Journal, Phoenix

May, IV, No. 5, pp. 1-22

- 1 Typhus. C. C. Pierce.
- 2 Possibility of Preventing Laryngeal Phthisis. S. H. Watson, Tucson.
- 3 Sociologic Importance of Eyesight. D. F. Harbridge, Phoenix.

Arkansas Medical Society Journal, Little Rock

July, XIII, No. 2, pp. 27-43

- 4 Nervous Diseases Associated with Pelvic Disorders. G. H. Moody, San Antonio, Texas.
- 5 Dangers of Pathologic Conditions. R. L. Saxon, Little Rock.
- 6 Dislocation of Eleventh Dorsal Vertebra; Fracture of Spinous Process Tenth, Eleventh and Twelfth Dorsal Vertebra; Paralysis of Both Legs. J. M. Lemons, Pine Bluff.

Boston Medical and Surgical Journal

July 20, CLXXV, No. 3, pp. 71-112

- 7 Epidemic Poliomyelitis, Symptomatology and Diagnosis in Acute Stages. F. R. Fraser, New York.
- 8 Anatomic Form and Posture, Important Factors in Treatment of Pulmonary Tuberculosis. J. E. Goldthwait, Boston.
- 9 *Teaching of Therapeutics as Branch of Applied Physiology. F. H. McCrudden, Boston.
- 10 Exfoliative Dermatitis Following Neosalvarsan Injections. R. Bine, San Francisco.
- 11 Review of One Hundred and Twenty-Seven Clinical Cases of Ataxic Paraplegia. G. H. Bigelow, Boston.
9. Abstracted in THE JOURNAL, March 4, p. 767.

Bulletin of Medical and Chirurgical Faculty of Maryland, Baltimore

July, IX, No. 1, pp. 1-9

- 12 Artificial Production of Monstrosities. E. R. Stockard, Ithaca, N. Y.

Canadian Medical Association Journal, Toronto

July, VI, No. 7, pp. 577-672

- 13 *Drugs and Medicinal Agents Considered from Professional, Economic and National Standpoints. A. D. Blackader, Montreal.
- 14 Surgical Treatment of Gastric and Duodenal Ulcer. A. E. Garrow, Montreal.
- 15 Operative Treatment of Simple Fractures. E. R. Secord, Brantford.
- 16 Penetrating Gastric Ulcer with Specimen. E. M. von Eberts, Montreal.
- 17 Congenital Pyloric Stenosis. Living Case. E. M. von Eberts, Montreal.

13. Drugs and Medicinal Agents from Professional and National Standpoints.—The importance of drug therapy is emphasized by Blackader. He says that ailing patients demand some mitigation of their troubles and by means of official drugs, properly employed in proper doses, we are able to give all possible relief. He deprecates the long list of drugs in the Pharmacopeia. In his teaching work he yearly decreases the number of those taught to his students and emphasizes to them the greater importance of knowing a few drugs thoroughly, rather than of knowing many drugs

imperfectly. Large manufacturing houses of limited liability and immense capital, employing a skilled and highly educated staff, have been in many ways of much service to the profession and will be so long as the manufacturers are obliged to maintain a high standard of strength and purity. This, however, will require government supervision. Much caution must be exercised, and an absolute veto be placed on the use of proprietary combinations with patented names, or on any preparations of which the formula is hidden or obscure.

Many of these manufacturing houses and many pharmacists have gone much further than to offer official drugs put up in form convenient for administration, or blended in special formula of their own devising, stated to be suitable for all constitutions and conditions. Many of them now attempt to give advice to physicians as to the latest treatment of disease and foist prescriptions on them containing some so-called new chemical agent—otherwise a well-known drug under a new proprietary name. Still worse, in medical journals, which physicians are supposed to control, proprietary nostrums are ethically (!), so they state, offered only to the profession with highly exaggerated and totally unproved statements, claiming for their special combination all kinds of miraculous powers. Their agents flood us with their free samples and blotters emblazoned with the suggestive names of their special nostrums. Their literature is full of unwarranted statements loudly vaunting the virtues of their specifics; on every page flaunting ready made prescriptions for the physician to copy, in which a valuable official drug is shown in combination with their wonderful "elixir vitae," thus salving the conscience of the physician, while the nostrum manufacturer exacts his heavy toll in the price paid.

All this nostrum and proprietary business, Blockader says, depends on secrecy, on the zeal and assurance of the advertising proprietors, and on the gullibility of the purchaser. "Patent medicines," unless they contain some dope, are short lived. In Blockader's opinion it is reprehensible for the physician to countenance proprietary preparations of even official drugs. Another important fact which has to be recognized today is the number of new synthetic drugs which have been introduced to the profession by German manufacturing houses. A few of these have proved of very definite value, replacing many of our older drugs; the great majority of them, however, have proved failures. For the most part they are the by-products in the manufacture of other chemicals, especially of the anilin dye industry. Chemical industries of Germany have competed with one another for priority rights in flooding the markets of the world with new drugs of almost no value, but with a high sounding proprietary name indicative of their supposed action, to which was attached a scientific name to indicate profound chemical research. In writing prescriptions, Blockader says, avoid the use of all patented names and to use only the name given in the Pharmacopeia, or the chemical name. Much more objectionable even than the patented names of new synthetic drugs are the proprietary names representing the semisecret and patented preparations of many large manufacturing drug houses.

Colorado Medicine, Denver

July, XIII, No. 7, pp. 199-230

- 18 Diabetes Treated by Allen Starvation Method; Report of Seven Cases. T. R. Love, Denver.
- 19 Rocky Mountain Spotted or Tick Fever. A. J. Campbell, Denver.
- 20 Influence of Syphilis on Surgery. W. Senger, Pueblo.
- 21 Inguinal Hernia and Compensation Law. R. W. Corwin, Pueblo.
- 22 Appendicitis in Children as Still Occasionally Treated. E. Hadley, Telluride.
- 23 Infections of Hand and Arm. B. B. Blotz, Rocky Ford.

Iowa State Medical Society Journal, Des Moines

July, VI, No. 7, pp. 281-336

- 24 Arthroplasty from Clinical and Experimental Standpoint. A. Steindler, Iowa City.
- 25 Pulse Pressure as Measure of Circulatory Efficiency. W. L. Bierring, Des Moines.
- 26 Abdominal Trauma. O. J. Fay, Des Moines.
- 27 Vaccine Therapy. G. McConnell, Waterloo.
- 28 Peroral Endoscopy. F. Roost, Sioux City.

Journal of Abnormal Psychology, Boston

June-July, XI, No. 2, pp. 73-142

- 29 Doris Case of Quintuple Personality. W. F. Prince.
- 30 Abnormal Mental States in Children During Convalescence from Acute Illness; Report of Case. J. G. Wilson.

Journal of Biological Chemistry, Baltimore

July, XXV, No. 3, pp. 351-715

- 31 Influence of Alkali and Alkaline Earth Salts on Rate of Solution of Casein by Sodium Hydroxid. T. B. Robertson and K. Miyake, Berkeley, Calif.
- 32 *Studies of Autolysis. Latent Period in Autolysis. H. C. Bradley and J. Taylor, Madison, Wis.
- 33 *Chemical Stimulation of Nerves. J. Loeb and W. F. Ewald, New York.
- 34 Utilization of Inosite in Dog. R. J. Anderson, New York.
- 35 *Utilization of Inosite in Animal Organism. Effect of Inosite on Metabolism of Man. R. J. Anderson and A. W. Bosworth, Geneva, N. Y.
- 36 Nature of Disease Due to Exclusive Diet of Oats in Guinea-Pigs and Rabbits. C. Funk, New York.
- 37 *Composition and Physiologic Activity of Pituitary Body. II. F. Fenger, Chicago.
- 38 Role of Psychic and Sensory Stimuli in Hyperglycemia Produced by Lowering Environmental Temperature of Dogs. B. Kramer and H. W. Coffin, Iowa City, Iowa.
- 39 *Nature of Acid Soluble Phosphorus of Serum. I. Greenwald, New York.
- 40 Chemical Nature of Vitamines. Antineuritic Properties of Hydroxypyridines. R. R. Williams, Washington, D. C.
- 41 *Studies in Carbohydrate Metabolism. Role of Calcium in Regulation of Blood Sugar Content. F. P. Underhill, New Haven, Conn.
- 42 *Id. Influence of Sodium Carbonate on Blood Sugar Content and on Epinephrin Hyperglycemia and Glycosuria. F. P. Underhill, New Haven, Conn.
- 43 *Id. Influence of Magnesium Salts on Blood Sugar Content and on Epinephrin Hyperglycemia and Glycosuria. F. P. Underhill, New Haven, Conn.
- 44 Hydrogen Electrode Potentials of Phthalate, Phosphate and Borate Buffer Mixtures. W. M. Clark and H. A. Lubs, Washington, D. C.
- 45 Conjugated Sulfuric Acid of Mucin of Pig's Stomach (Mucoitin Sulfuric Acid). P. A. Levene and J. López-Suárez, New York.
- 46 Cephalin. Phenylureidocephalin and Naphthylureidocephalin. P. A. Levene and C. J. West, New York.
- 47 Utilization of Sucrose and Inverting Power of Blood Serum After Parenteral Administration of Sucrose. S. Kuriyama, New Haven, Conn.
- 48 Comparison of Results Obtained by Colorimetric and Gravimetric Determinations of Cholesterol. J. H. Mueller, New York.
- 49 *Studies on Blood Serum. Determination of Noncolloidal Nitrogen. W. H. Welker and F. H. Falls, Chicago.
- 50 Mechanism of Sparing Action of Carbohydrates on Protein Metabolism. R. A. Kocher, San Francisco.
- 51 Distribution of Lipoids ("Fat") in Human Blood. W. R. Bloor, Boston.
- 52 Effect on Nitrogen Partition of Substituting Alcohol for Sucrose in Otherwise Fixed Diet. F. S. Hammett, Los Angeles.
- 53 Vicine and Divicine. P. A. Levene and J. K. Senior, New York.
- 54 Preparation of Guanidine Sulfate. P. A. Levene and J. K. Senior, New York.
- 55 Pituitary Gland, Its Effect on Growth and Fission of Planarian Worms. R. Wulzen, Berkeley, Calif.
- 56 Experimental Studies on Growth. Influence of Cholesterol on Growth of White Mouse. T. S. Robertson, Berkeley, Calif.
- 57 Id. Influence of Lecithin on Growth of White Mouse. T. B. Robertson, Berkeley, Calif.
- 58 Id. Influence of Administration of Egg Lecithin and of Cholesterol to Mother, on Growth of Suckling Mice. T. B. Robertson and E. Cutler, Berkeley, Calif.
- 59 Improved Hasselbalch Hydrogen Electrode and Combined Tonometer and Hydrogen Electrode, Together with Rapid Methods of Determining Buffer Value of Blood. J. F. McClendon and C. A. Magoon, Minneapolis.

32. Studies of Autolysis.—There is nothing in the data presented by Bradley and Taylor which suggests the activation of an enzyme as an important determinative step in autolysis. If the enzyme is activated it takes place at a H plus level such as is found in the living tissue. Furthermore, none of the curves show any indication of an autocatalytic phase in the early stages of the reaction, such as Morse assumed, due to activation of the enzyme by developing acidity. Length of the latent period, rate of proteolysis as measured by concentration of products, and final equilibrium of the digestion all appear to depend on the mass of substratum available for hydrolysis by the proteases present normally in the liver cell.

33. Chemical Stimulation of Nerves.—It is shown by Loeb and Ewald that a nonstimulating salt like NH_4Cl can be made a powerful nerve stimulant if for the four hydrogen atoms ethyl groups are substituted. $\text{N}(\text{C}_2\text{H}_5)_4\text{Cl}$ is a more powerful stimulant for the nerve than sodium citrate. There is little difference between the stimulating power of the chlorid, hydroxid and citrate of $\text{N}(\text{C}_2\text{H}_5)_4$, showing that in this case the cation and not the anion determines the high stimulating power. This conclusion is supported by the fact that in order to inhibit the stimulating action of the cation $\text{N}(\text{C}_2\text{H}_5)_4$ through the addition of CaCl_2 the same high concentration of this latter salt is required as for the inhibition of the stimulating action of sodium citrate. Both $\text{N}(\text{C}_2\text{H}_5)_4\text{Cl}$ and Na_3 citrate can only stimulate the nerve when the electric irritability of the latter is at its normal height. If this irritability is only moderately diminished (by putting the nerve for two hours into an isotonic sugar solution), neither sodium citrate nor oxalate nor $\text{N}(\text{C}_2\text{H}_5)_4\text{Cl}$ will stimulate the nerve. If, however, the original irritability of the nerve is restored, by bathing the latter in NaCl , sodium citrate as well as $\text{N}(\text{C}_2\text{H}_5)_4\text{Cl}$ will stimulate the nerve again.

It can be shown that when enough Ca is added to a solution of $\text{N}(\text{C}_2\text{H}_5)_4\text{Cl}$ or Na_3 citrate to inhibit the stimulation, the irritability of the nerve is not lowered. It can be shown that by adding a quantity of Ca not quite high enough to inhibit entirely the effect of the stimulating salts the latent period of stimulation is considerably increased, a fact which harmonizes with the assumption that the inhibiting effect of Ca is due to a prevention or retardation of the diffusion of the stimulating salt into the nerve. All these facts contradict the theory of Mathews that only the anions have a stimulating effect and that Ca (and all the cations), have a depressing effect. Possible explanations of the connection of diffusibility and stimulating action of salts are discussed.

35. Effect of Inosite on Metabolism of Man.—When inosite is taken by Anderson and Bosworth at the rate of about 0.5 gm. per kg. of body weight per day it produces some diarrhea at first or frequent soft stools. After a few days the stools, although more frequent than usual, are nearly of normal consistency. Except for the increased excretion of creatinin in the after period, for which Anderson and Bosworth offer no explanation, they find that the ingestion of inosite has no marked or appreciable effect on the general metabolism of man. About 9 per cent. of the inosite taken per os is eliminated unchanged in the urine, but none in the feces. In what manner the balance, or about 91 per cent., of the inosite is utilized the authors have not been able to determine.

37. Composition of Pituitary Body.—According to Fenger the physiologic activity of the posterior lobe of the pituitary body is somewhat higher during the growth period than after maturity. This is analogous to the conditions existing in the thyroid, the thymus and the suprarenals. The infant gland contains more phosphates both in the anterior and posterior lobes than glands from fully mature animals. The uterine contracting active principle of the posterior lobe of the pituitary body is readily extracted from the fresh glands by water and also by neutral and acidulated methyl or ethyl alcohol. The acidulated methyl alcohol extract is more than twice as strong as the water extract and somewhat stronger than pure crystalline beta-imidazoleethylamin hydrochlorid.

39. Acid Soluble Phosphorus of Serum.—The phosphorus compounds of serum, Greenwald says, consist almost exclusively of phospholipins and inorganic phosphate. There is some indication of the presence of a form which is soluble in dilute acids but is not precipitated by magnesia mixture or by molybdate solution, and which does not dialyze readily from serum.

41. Calcium in Regulation of Blood Sugar Content.—Calcium salts, Underhill claims, play a noteworthy rôle in the regulation of blood sugar content, for (1) although an increase of calcium is without marked effect in normal animals such an augmentation in rabbits with a disturbed carbohydrate metabolism, in epinephrin hyperglycemia, may result in a distinct change in the character of the curve of epinephrin hyperglycemia and may also cause a noticeably

increased elimination of sugar in the urine; (2) withdrawal of calcium by introduction of sodium phosphate, for example, will produce in normal rabbits, although not invariably, a condition of hypoglycemia; and (3) the injection of epinephrin at an optimum period after sodium phosphate introduction produces a briefer period of hyperglycemia with a lower sugar level than that yielded by epinephrin alone. The sugar elimination by the kidney may also be less than the average output under epinephrin only.

42. Influence of Sodium Carbonate on Blood Sugar Content.—Underhill found that the intravenous injections of sodium carbonate into rabbits may induce a marked though transient fall in blood sugar content. It is suggested that the acid base equilibrium is a factor in blood sugar regulation. The significance of this view in its relation to carbohydrate metabolism after thyreoparathyroidectomy is indicated. The hyperglycemia and glycosuria provoked by epinephrin are both significantly decreased if sodium carbonate is administered at suitable periods of time previous to epinephrin introduction.

43. Influence of Magnesium Salts on Blood Sugar Content.—Small doses of magnesium lactate introduced subcutaneously, Underhill says, fail to produce significant changes in the blood sugar content of the rabbit. The same dosage of magnesium lactate injected in like manner intensifies the effect of epinephrin on blood sugar content and glycosuria. The maximum influence is seen when the magnesium salt is given two hours previous to epinephrin treatment. A significant hyperglycemia is produced by subcutaneous administration of magnesium sulphate if general anesthesia develops. Glycosuria is always slight. If anesthesia fails to develop, hyperglycemia is not pronounced, and is of short duration. Under these conditions sugar fails to appear in the urine. Injection of calcium during the height of magnesium anesthesia quickly abolishes this state, as demonstrated by Meltzer and Auer, and in correspondence with this antagonism there is a rapid return of blood sugar content to the normal level. Glycosuria is either absent or is present to a small degree only. Administration of hydrochloric acid or sodium carbonate is without significant influence on magnesium anesthesia.

49. Determination of Noncolloidal Nitrogen.—The results obtained by Welker and Falls show that the nitrogen of urea, glycoll and leucin can be recovered to a very large extent, and that creatin nitrogen can be recovered only in part by this method. In the experiments on the solution of the noncolloidal products of the tryptic digestion of the serum proteins there is also a failure to recover all the added nitrogen. The results obtained by the use of this method show that not all the noncolloidal nitrogen is determined. They follow closely, however, those obtained by the use of the Folin and Denis method. Aluminium cream is a satisfactory reagent for the removal of the colloidal nitrogen from blood serum. Its use simplifies the determination of the noncolloidal nitrogen of the serum. The liability to experimental error is less than in the method proposed by Folin and Denis.

Journal of Cutaneous Diseases, Boston

July, XXXIV, No. 7, pp. 489-582

- 60 Peculiar Form of Porokeratosis. S.-I. Matsumoto, Kyoto.
- 61 Poisoning by Crude Coal Tar. C. J. White, Boston.
- 62 Diffuse Pigmentation of Serotum in Lichen Planus. D. W. Montgomery, San Francisco.
- 63 Verrucae Planae Juveniles Complicated with Lichen Planus. G. D. Culver, San Francisco.
- 64 Monilethrix; Report of Six Cases. G. M. MacKee and I. Rosen, New York.
- 65 Histopathology. W. J. Heimann, New York.
- 66 Preparation of Skin Tissue for Microscopic Study. N. Freeman, New York.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

July, VIII, No. 7, pp. 339-415

- 67 *Increase of "Tone" Associated with Action of Strophanthus on Heart. J. Tait and H. Pringle, Edinburgh.
- 68 *Pharmacologic and Chemical Studies on "Senso," the Dried Venom of Chinese Toad. S. Shimizu, Tokyo.

69 *Pharmacology of Novocain. R. A. Hatcher and C. Eggleston, New York.

70 *Influence of Atropin and Pilocarpin on Glycogenic Function. H. McGuigan, Chicago.

67. **Action of Strophanthus on Heart.**—The peculiar slow contraction, sometimes vaguely referred to as "heightened tone," which in the deeply strophanthinized heart precedes the apparent active contractions, being unassociated with any refractory state, according to Tait and Pringle does not involve physiologic activity in the muscle. They agree with Schmiedeberg that the heightened tone is really an increase of elasticity. Roy, dealing specially with the question of elasticity of the heart, could not identify the change produced by digitalis with an increase of elasticity. With Roy's view the authors do agree. They claim that certain peculiarities in the record of a perfused strophanthus-ventricle find their only explanation in the increase of elasticity produced by the drug.

68. **Studies on Senso.**—From "senso," a Chinese drug derived from toad skins, the author has isolated four principles, named preliminarily substances A, B, C and D, only two of which, A and B, have been obtained in a state of chemical purity. Substance A.—At first a crystalline substance was easily obtained, which appeared to be similar to Faust's bufonin and showed a digitalis like action. But the product, after repeated purification, proved itself to be cholesterin, as its melting point and the results of combustion analyses correspond well with those required for cholesterin. Substance B.—This substance occurs in microscopic crystals when obtained from a solution of chloroform and petroleum ether, and appears to be identical (or isomeric) with the bufagin of Abel and Macht as is proved by its physical properties and color reactions and by the results of the elementary analyses. The substance has a marked effect on the heart, causes a rise of the blood pressure and an increased flow of urine, and resembles in its action, on the whole, the digitalis glucosides. However, it produces in almost all cases a distinct "peristalsis" of the frog's heart, and in the warm blooded animals the so-called therapeutic stage is of short duration; even with small doses, a toxic stage may easily occur. Therefore, this substance is of toxicologic interest only, and is quite useless as a therapeutic agent.

Substance C.—This substance, named bufotoxine, possesses a local anesthetic action, and after absorption its action is that of a medullary convulsant poison. It may be classed with the most efficient members of the picrotoxine group. Substance D.—The aqueous solution of "senso" contains epinephrin or an epinephrin like substance, which shows several typical color reactions and, biologically, a strong sympathomimetic action. Owing to lack of material the author is at present unable to isolate this substance in a chemically pure state and to proceed further with an investigation of its various properties.

69. **Pharmacology of Novocain.**—According to Hatcher and Eggleston the toxicity of novocain is greatest when a concentrated solution is injected rapidly into the vein, in which case a dose of 40 mgm. per kilo is fatal to the cat and rabbit, and probably to other animals, though much smaller doses cause severe, and even threatening, symptoms. Very much larger doses may be injected slowly into the vein or subcutaneously without causing more than temporary disturbances. The subcutaneous injection of a mixture of novocain and epinephrin results in greatly delayed absorption and consequently diminished toxicity of the novocain for the cat. When such a mixture is injected intravenously there is a synergistic constrictor action on the vessels, with an antagonistic effect on toxicity probably due to the action of epinephrin on the heart. The toxicity of novocain is increased, but in a variable degree, by the previous administration of hydrated chloral which depresses the respiratory center. The extremes of toxicity of novocain shown when it is injected rapidly into the vein of a chloralized cat (10 mgm. per kilogram, fatal) and when administered slowly to a normal cat (408 mgm. per kilogram with only temporary

disturbance), suggest a possible explanation of the accidents occasionally seen when small doses of novocain are used clinically. Novocain leaves the blood stream rapidly, being fixed or destroyed in the liver, the weight of evidence pointing to its destruction in that organ. Less than 3 per cent. (if any) of a large intravenous dose is excreted unchanged in the urine of a cat within a period of two to three hours.

70. **Influence of Atropin and Pilocarpin.**—Large doses of atropin, McGuigan says, usually cause an increase of the blood sugar, probably due to excitement. Pilocarpin in large doses never causes a significant increase of the blood sugar, and often causes a reduction after some hours. The reduction is apparently due to depression and fatigue. The increase in the blood sugar due to ether anesthesia is not modified by atropin or pilocarpin. Atropin in massive doses does not lessen the hyperglycemia due to stimulation of the celiac plexus. The influence of pilocarpin and atropin on the blood sugar furnishes no evidence of the presence of glycosecretory nerves.

Journal-Lancet, Minneapolis

July 15, XXXVI, No. 14, pp. 403-434

- 71 Semeiotic Significance of Pathologic Findings in Adult Feces. (To be continued.) C. P. Robbins, Winona.

Medical Record, New York

July 15, XC, No. 3, pp. 89-134

- 72 Recent Progress in Operative Treatment of Empyema of Thorax. H. Lilienthal and M. W. Ware, New York.
73 Cause, Treatment and Prevention of Hay-Fever. W. Scheppegeggell, New Orleans.
74 Hair Matrix Carcinoma. F. Warner, Columbus.
75 Action of Gamma Rays of Radium on Deep-Seated Inoperable Cancers of Pelvis. H. Schmitz, Chicago.
76 *Treatment of Paralysis Agitans with Parathyroid Gland. W. N. Berkeley, New York.
77 Wassermann Reaction. B. Lemchen, Dunning, Ill.

July 22, No. 4, pp. 135-176

- 78 Animal Experiments on Acquirement of Active Immunity by Treatment with von Ruck's Vaccine Against Tuberculosis. F. J. Clemenger, Asheville, N. C., and F. C. Martley, London.
79 Diagnosis and Treatment of Poliomyelitis. W. L. Barber, Waterbury, Conn.
80 Treatment of Unstable Semilunar Cartilages of Knee Joint; Report of Case. R. Whitman, New York.
81 Nature of Leukemias; Pathogenesis of Acute Lymphatic Leukemia. R. Stein, New York.
82 Study of Normal Bacterial Flora of Postage Stamps. R. A. Keilty and P. D. McMaster, Philadelphia.
83 *Value of Scarlet Red in Treatment of Gastric and Duodenal Ulcer. J. Friedenwald and T. F. Leitz, Baltimore.

76. **Treatment of Paralysis Agitans with Parathyroid Gland.**—The preparation used by Berkeley is an acetic extract of the fresh bullock's glands, made by treating the ground or triturated glands with cold distilled water, filtering, and then precipitating with a very minute amount of acetic acid. It is absolutely without local effects of a disagreeable nature. The hypodermic solution, in doses of 15 minims, does not even redden the skin, if it be injected with reasonable care. That parathyroid gland is not a "cure" for paralysis agitans, but 60 to 70 per cent. of the sufferers from this disease who have given the remedy a fair trial for from three to six months have been greatly benefited, and in such patients the progress of the disease has been arrested, or very materially retarded. Berkeley is of the opinion that paralysis agitans is caused by a deficiency of the parathyroid glands, and that further and more diligent study of the complicated chemical processes involved will make it ultimately possible to cure paralysis agitans with parathyroid in just the same way in which cretinism is cured with thyroid.

83. **Scarlet Red in Treatment of Gastric and Duodenal Ulcer.**—From their experience with this remedy in the treatment of cases of peptic ulcer, together with the results in the thirty-seven cases already reported, Friedenwald and Leitz believe they are justified in drawing the following conclusions: 1. Scarlet red still remains a useful adjuvant in the treatment of peptic ulcer and while it cannot by any means replace the usual forms of treatment, when administered in conjunction with them, it adds materially to the

effectiveness of the cure. 2. It is of great help when administered in the ambulatory cases, the effect being even more favorable than the usual remedies, such as bismuth. 3. Inasmuch as scarlet red in no way interferes with the administration of other remedies, such as the alkalies or atropin, these may be administered when indicated at the same time and, in fact, the effect of the combination is at times most beneficial.

Military Surgeon, Washington, D. C.

July, XXXIX, No. 1, pp. 1-110

- 84 Duties of Medical Supply Officers and Their Methods. H. I. Raymond and E. P. Wolfe, U. S. Army.
- 85 Operations for Craniocerebral Wounds of Modern Warfare. H. Cushing, Boston.
- 86 Training of Navy Hospital Corps Man. F. E. McCullough, U. S. Navy.
- 87 Relapsing Fever. F. Hagler, St. Louis.
- 88 Messing and Hygiene of National Guard Regiment on Railroad Trip of Six Thousand Miles. C. B. Walls, Ill. N. G.
- 89 Venereal Diseases in European Armies. E. K. Tullidge, Philadelphia.
- 90 Trailer Ambulance. H. H. Johnson, U. S. Army.
- 91 Advisory Committee of Civilian Physicians and Surgeons on Medical Preparedness. F. F. Simpson, Pittsburgh.

New Orleans Medical and Surgical Journal

July, LXIX, No. 1, pp. 1-80

- 92 Etiology and Pathology of Blood Dyscrasias Associated with Splenomegaly. J. A. Lanford, New Orleans.
- 93 Blood Dyscrasias Associated with Splenomegaly. J. D. Weis, New Orleans.
- 94 Blood Dyscrasias Associated with Enlarged Spleen. F. W. Parham, New Orleans.
- 95 Aids to Suprapubic Prostatectomy. J. Hume and S. Logan, New Orleans.
- 96 Mucous Colitis and Its Treatment. S. K. Simon, New Orleans.

New York Medical Journal

July 15, CIV, No. 3, pp. 97-144

- 97 Syphilis of Nervous System. E. D. Bondurant, Mobile, Ala.
- 98 Vertigo and Seasickness. L. Fisher and I. H. Jones, Philadelphia.
- 99 Bone Setting and Its Modern Revival. N. D. Mattison, New York.
- 100 Tubal Sterilization. A. Heineberg, Philadelphia.
- 101 Military Preparedness and Surgeon. G. N. Kreider, Springfield, Ill.
- 102 Rubella or German Measles. E. Gray, Berkeley, Calif.
- 103 Microscope in Dermatology. O. L. Levin, New York.
- 104 Connellan-King Diplococcus Infection of Tonsil. J. J. King, New York.
- 105 Mayer's Solution. D. H. Stewart, New York.
- July 22, No. 4, pp. 145-192
- 106 Diagnosis and Treatment of Acute Anterior Poliomyelitis in Pre-paralytic and Postparalytic Stages. M. N. Neustaedter, New York.
- 107 Diagnosis and Treatment. A. H. Wright, Toronto, Canada.
- 108 Analysis of Certain Neurotic Symptoms. C. P. Oberndorf, New York.
- 109 Percussion in Early Tuberculosis. J. Schneyer, Philadelphia.
- 110 Salivary Superstitions. H. D. King, New Orleans.
- 111 Syphilis of Larynx. J. Weinstein, New York.
- 112 Interperitoneal Adhesions. R. J. Behan and W. A. Nealon, Pittsburgh.
- 113 Laboratory Aids in Diagnosis of Poliomyelitis. J. B. Neal, New York.

Tennessee State Medical Association Journal, Nashville

July, IX, No. 3, pp. 111-150

- 114 Principles of Treatment in Nephritis. M. H. Fischer, Cincinnati.
- 115 One Hundred Cases of Sacral Anesthesia. D. R. Pickens, Nashville.
- 116 Prevention of Blindness in Tennessee. R. Fagin, Memphis.
- 117 Subperiosteal Abscess of Antrum of Highmore; Report of Case. A. B. Dancy, Jackson.
- 118 Professional Ethics. C. E. Reeves, Gainesboro.
- 119 Immobilization in Treatment of Injuries to Fingers and Toes. J. W. Handly, Nashville.
- 120 Constipation. B. F. Fyke, Springfield.
- 121 Suicide. J. W. Stevens, Nashville.

Texas State Journal of Medicine, Fort Worth

July, XII, No. 3, pp. 121-164

- 122 Report of Committee on Study of Cancer. W. L. Brown, El Paso.
- 123 Cancer of Cervix Uteri, with Especial Reference to Combination Method of Treatment. S. M. D. Clark, New Orleans.
- 124 Some Gynecologic Percentages as Applied to Cancer Problem. F. L. Barnes, Houston.
- 125 Cancer of Uterus; Its Surgical Treatment. D. C. Balfour, Rochester, Minn.

- 126 Feeding Problem in Infancy. F. P. Gengenbach, Denver.
- 127 Does Sphenoidal Sinus Occasionally Pulsate? H. B. Decherd, Dallas.

Wisconsin Medical Journal, Milwaukee

July, XV, No. 2, pp. 33-68

- 128 Harrison Law and Its Relation to Drug Habitués. A. Sherman, Winnebago.
- 129 Harrison Narcotic Law. W. N. Wells, Madison.
- 130 Clinical Studies in Diabetes. H. P. Greckley, Waukesha.
- 131 Rupture of Aortic Aneurysm into Right Pleural Cavity with Death Two Weeks Later. F. H. Munkwitz and L. Jermain, Milwaukee.
- 132 Case of Pericarditis with Effusion. D. F. Hudek, Milwaukee.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

July 1, II, No. 2896, pp. 1-32

- 1 *Transplantation of Bone, and Some Uses of Bone Graft. R. Jones.
- 2 Life History of *Ascaris Lumbricoides*. F. H. Stewart.
- 3 Disinfection of Nasopharynx of Meningococcus Carriers by Means of Air Saturated with Chloramine. M. H. Gordon.
- 4 *Paralysis of Intestine After Resection for Gunshot Injuries. O. Richards and J. Fraser.
- 5 Postoperative Paralytic Ileus; Report of Case. H. T. Hicks.
- 6 Treatment of Backward Displacements of Uterus. F. J. McCann.

1. **Transplantation of Bone; Uses of Bone Graft.**—Whatever particular theory of osteogenesis may be the true one, Jones points out that the following points have proved valuable in practice: The area of the graft must be kept scrupulously aseptic, and free from unnecessary blood clot. Adequate blood supply is necessary to the growth of the graft. The graft must be placed in close apposition to raw surfaces of the bone with which it is to unite. The whole region must be kept fixed for a long period for undisturbed organization to take place. The bone graft should be autogenous, and it is better that it should include both periosteum and medulla wherever this is possible, for both these aspects of the bone afford facilities for the growth of new blood vessels. Surgeons should have patience, for union is often delayed, and hasty conclusions that union is not going to take place, and consequent relaxation of strict fixation of the part, may convert a case of delayed union into one of nonunion. After any of these procedures it is essential to fix the limb absolutely to let new vessels grow undisturbed by chance movements, for the idea of the operation is that all the transplanted bits of bone shall become vascularized. As a general rule, the limb should be kept fixed and undisturbed for at least twice the time necessary for union of the same bone in an ordinary simple fracture.

4. **Paralysis of Intestine After Resection.**—Resection of a wounded coil of small intestine, Richards and Fraser say, is sometimes followed by obstruction, the segments of intestine above the union becoming distended, while the segment below remains contracted. In cases operated on within a short time of the receipt of the injury this is probably mainly due to some interference with the nervous mechanism, caused by the injury itself and the resultant shock, and increased by other causes, for example, local peritonitis. In cases operated on after a considerable interval a further cause is that continued obstruction, and consequent septic absorption, render the bowel above incapable of rapid recovery. A case in which this complication has occurred may possibly be saved by a subsequent short circuiting of the affected coil.

Indian Journal of Medical Research, Calcutta

April, III, No. 4, pp. 565-789

- 7 Dose of Alum for Clarification of Water by Precipitation. J. Morison.
- 8 Apparatus for Purification of Water for Troops. R. S. C. Brown.
- 9 Flies and Their Relation to Epidemic Diarrhea and Dysentery in Poona. J. Morison and W. D. Keyworth.
- 10 Serologic Investigation and Classification of Cholera-Like Vibrios Isolated From Water in Calcutta. E. D. W. Greig.
- 11 Tree Hole Breeding Anopheles From Southern India: A. (Culiseta) Culiciformis, Cogill. S. R. Christophers and K. Chand.
- 12 Measurement of Degree of Agglutination. W. F. Harvey.
- 13 Vaccination. W. F. Harvey.
- 14 Applications of Kinetic Theory of Gases to Vital Phenomena. A. G. McKendrick.

- 15 Investigation of Epidemic. W. F. Harvey.
- 16 Contribution to Study of Kala-Azar. J. W. Cornwall and H. M. LaFrenais.
- 17 Nosema (Nosema Pulicis N. S.) Parasitic in Dog Flea (Ctenocephalus Felis). V. T. Korke.
- 18 Study of Hemoprotozoa in Portuguese India. F. De Mello and L. J. Braz De Sa.
- 19 Arnett's Index in Laboratory Rabies. J. W. Cornwall and S. R. Aiyar.
- 20 Differentiation of Dysentery Bacilli by Their Agglutination Reactions. M. K. Pai and S. R. Krishnan.

Lancet, London*July 1, II, No. 4844, pp. 1-44*

- 21 *Fate of Patients Who Have Had Stones Removed From Kidney. J. Bland-Sutton.
- 22 Prevention and Treatment of Cholera. S. M. Cox.
- 23 *Cause and Nature of Changes Which Occur in Muscle After Nerve Section. J. N. Langley.
- 24 Diagnosis of Cancer of Stomach. J. A. Lindsay.
- 25 *Substitute for Peptone and Standard Nutrient Medium for Bacteriologic Purposes. S. W. Cole and H. Onslow.
- 26 Shockless Operation. P. Lockhart-Mummery.
- 27 Intestinal Toxins and Circulation. D. T. Barry.
- 28 Kala-Azar in Soldiers Returning From Malta. G. R. Ward.
- 29 Abdominoperineal Resection of Rectum by Coffey's Modification of Two Stage Operation. L. C. Panting.
- 30 Asphyxia From Defective Shipboard Ventilation. G. E. Brooke.
- 31 Case of Advanced Intra-Abdominal Pregnancy. B. R. Vickers.
- 32 Annual Report for 1914 of Registrar-General. J. F. W. Tatham.
- 33 Portable Fracture Box. J. D. Buxton.

21. **Prognosis of Stone in Kidney.**—The conservation of a disorganized and septic kidney, Bland-Sutton says, exposes patients to the risk of future suffering from recurrent calculi. This entails repeated operations and, finally, removal of the kidney under adverse conditions. Endeavors to save such damaged kidneys are not examples of cautious surgery, but rather glaring instances of surgical timidity. Many patients suffer much discomfort, even misery, from a timid nephrotomy when their best interests demand bold removal of the disorganized kidney. When a kidney is septic, calculous and disorganized, if its companion is normal the diseased kidney should be removed.

23. **Muscle Changes After Nerve Section.**—The degree to which electric stimulation prevents wasting of the muscles, Langley says, cannot be determined with any accuracy. Experiments on this point were recently made on rabbits by Kato and Langley. The tibial or peroneal nerves were cut on both sides and the paralyzed muscles stimulated on one side with condenser currents. These experiments, while suggesting that contraction delayed the wasting of the muscle, were not definitely in favor of the theory of "disuse atrophy," for in each experiment great wasting of the muscles occurred and the sluggish response to electric stimulation characteristic of denervated muscle was not prevented. Langley concludes that the changes which take place in muscles after nerve sections are not due to absence of contraction, and that the term "disuse atrophy" is a misnomer. It was noticed by Kato and Langley that muscles from about the fourth day after section of their nerves are in a state of continuous fibrillation, namely, the separate muscle fibers contract rhythmically, but with different rhythms; the muscles present a shimmering appearance when viewed by light reflected from their surface. The contractions cause no movements of the muscle as a whole, and are easily overlooked. As each fiber contracts many times the total expenditure of energy in the day must be considerable. Langley believes that it is reasonable to suppose that this continued activity of the muscle fibers must cause fatigue, and that the atrophy of muscle is due to too great rather than to too little functional activity. The changes in reaction which occur in denervated muscle are, in fact, like those caused by fatigue.

25. **Substitute for Peptone.**—Experiments were made by Cole and Onslow with various mediums containing an abundant supply of amino-acids. The growth on such mediums of a large number of pathogenic organisms is rapid compared with their growth on the recognized standard mediums. The supply of free amino-acids is best obtained by the tryptic digestion of casein, and to procure uniform results a pancreatic extract is used, prepared by a special method described fully in the paper.

Medical Journal of Australia, Sydney*June 3, I, No. 23, pp. 447-462*

- 34 Cystic Ovaries. W. Ritchie.
- 35 Case of Coal Gas Poisoning. E. L. Crowther.
- 36 Right Laryngohemiplegia Following Goiter Operation. Right Abductor Paresis From Pressure of Enlarged Cervical Glands. L. G. Davidson.

June 10, No. 24, pp. 463-478

- 37 Eighty Cases of Wounds of Head Seen in Base Hospital in France. J. F. Fairley.

June 17, No. 25, pp. 479-496

- 38 Australian Voluntary Hospital in France. G. Horne.
- 39 Some Functions of Thyroid Gland and Their Relationship to Goiter. S. Pern.
- 40 Successful Case of Esophagotomy for Removal of Plate of False Teeth. H. Bullock.
- 41 History of Small Urinary Calculus. J. B. Nash.

Sei-I-Kwai Medical Journal, Tokyo*June, XXXV, No. 6, pp. 29-34*

- 42 *Investigation of Diabetes Mellitus Among Japanese. S. Iwai.

42. **Diabetes Mellitus Among Japanese.**—The tolerance of the Japanese for sugar seems stronger than that of the Europeans. The fact that there are more mild forms of diabetes and less severe cases of it among the Japanese, Iwai suggests, may be due to this difference in the tolerance for sugar. Among the Japanese, women seem to have stronger tolerance than men. The fact that there is less diabetes among women than among men may also be due to this stronger tolerance of women, but there is more room for further study in this regard. The excess of starchy food alone cannot make glycosuria in healthy people; this fact may shed light on the fact that there are few diabetics among the Japanese whose chief food is of a starchy nature.

Bulletin de l'Académie de Médecine, Paris*June 20, LXXV, No. 25, pp. 729-758*

- 43 Fatal Tetanus Ascribed to Catgut Used at a Herniotomy. C. Nicolle and H. Bouquet.
- 44 Necessity for Use of Standardized Vaccine. (Ce que doit être le vaccin animal utilisé pour les vaccinations publiques.) L. Camus.
- 45 Fresh Milk Favorable Culture Medium for Typhoid Bacilli; Souring Destroys Them. (Nouvelles observations sur le mécanisme de la propagation de la fièvre typhoïde par le lait.) A. Trillat.
- 46 Superposed Typhoid and Paratyphoid. (Les fièvres typhoïdes intriquées.) A. Chantemesse and A. Grimberg.

Lyon Médical*June, CXXV, No. 6, pp. 177-244*

- 47 *Deficiency Disturbances in Infants. (La carence alimentaire chez l'enfant.) E. Weill and G. Mouriquand.

47. **Deficiency Disturbances in Infants.**—Weill and Mouriquand remark that quite frequently the dietetic deficiency responsible for the disturbances is the direct result of the physician's advice. The sterilization of milk is carried too far, or the starches are in too fine a form, too thoroughly bolted, and used too exclusively. Deficiency disturbances may develop on breast milk, a fact that has only recently been emphasized. Certain infants do not thrive on certain breast milks even when the milk is seemingly good and abundant. The child may present anemia and fail to develop properly. The manifestations from "deficiency" milk, in the course of breast feeding, are most characteristic in the regions where beriberi prevails. The nursing woman with beriberi may transmit it in a grave form to her nursling. It survives only if a change is made in time to milk that is not of this deficiency type. Even if the nursing woman is still healthy, a too exclusive diet of polished rice may modify her milk in such a way that the nursling feels the deficiency effect and malnutrition results. Neither infection nor intoxication explain such facts. Outside of beriberi regions such extreme types are not known, but they show that the diet of nursing women should not be too exclusive in any line and should include fresh vegetables and fruit, etc.

In regard to artificial food, Weill and Mouriquand state that they have never encountered a case of scorbutus among infants fed on freshly sterilized milk. Even on the commercially sterilized milks and artificial foods it takes months for the child to develop actual scorbutus. It seems as if

it must bring into the world with it a supply of the necessary ferments which it takes long to use up, and a little orange juice, raw meat, etc., rapidly restores the supply. Deficiency disturbances are liable to develop on any cereal hulled too completely, as well as with pod vegetables hulled and sterilized too thoroughly. By adding overbolted starches to the oversterilized milk, the onset of the disturbances is hastened and they are rendered more severe. Weill and Mouriquand have been making a study of deficiency diets since the war began, with a view to warding off all disturbances of the kind from the troops. A long list of their communications presented at meetings of the Société de Biologie in the last two years is appended. The latest ones were entitled "Research on Cats Fed Exclusively on Meat Raw, Frozen, Salted, Boiled or Otherwise Sterilized" and "*Graines de céréales décortiquées hypercarenceées par la stérilisation.*"

Paris Médical

June 24, VI, No. 26, pp. 581-596

- 48 War Wounds of the Skull and Their Treatment. (Lésions du crâne par projectiles de guerre.) H. Hartmann.
- 49 *Importance of Examination and Treatment of Rhinopharynx in Epidemic Meningitis. (Cytodiagnostic de l'adénoidite postérieure à méningocoque; son rôle dans le diagnostic et le traitement de la méningite cérébro-spinale épidémique.) G. Rosenthal and J. Cheville.
- 50 Atrophy of Muscles and Deep Hyperesthesia as Signs of Chronic Apical Lesion Below. R. M. Beauchant.
- 51 The Preceding Condition in Estimating Amount of Pension for the Incapacitated. (De l'état antérieur dans l'appréciation de l'invalidité des militaires.) Granjux.
- 52 *The Metal Helmet. (L'efficacité de protection du casque d'infanterie.) P. Sollier.
- 53 *Petrolatum in Treatment of Constipation. (Notes pratiques sur l'emploi de l'huile de vaseline ou de paraffine dans la constipation.) Le Tanneur.

49. **Diagnosis and Treatment of Meningitis by Way of the Rhinopharynx.**—Rosenthal and Cheville reiterate that epidemic meningitis starts in adenoids—Luschka's tonsil—and hence it can be detected and possibly aborted by examination and treatment of this region. With this specific inflammation, this third tonsil is abnormally hard, and smears show diplococci and associated bacteria with the characteristic debris of blood corpuscles, the polynuclears predominating and very much altered, gram-negative diplococci within and outside of the cells, with scanty epithelial cells. By means of this cytodiagnosis the disease can be detected in its incipency and traced into convalescence. If the smear shows numerous epithelial cells and diplococci taking the Gram stain, the probability of epidemic meningitis is slight. As long as the findings are of this characteristic type, there can be no question of convalescence even although the symptoms may have subsided. The pseudoconvalescent is still a menace to himself and the community. The rhinopharynx should be treated with the specific antiserum as well as the meninges. For this they inject daily through the nostrils a medicated oil mixed with equal parts of antimeningococcus serum. The meningococcus adenoiditis, they reiterate, is the primordial and primitive lesion, the fundamental, initial and terminal, substratum of infection with the meningococcus. As long as it persists the patient is infected, not a mere carrier, and specific treatment of the rhinopharynx is indispensable.

52. **The Metal Helmet.**—Sollier calls attention to the fact that the helmet is a much better protection when it is set loosely and is not fastened on. When struck by a fragment of shell it yields and is pushed off the head, thus saving the skull much better than when it is held tight by a chin band and is unable to yield at the impact. He also suggests that there should be a space left between the leather inner lining and the metal. This would prevent injury from the sharp edges turned in by the flying shell.

53. **Liquid Petrolatum in Constipation.**—Le Tanneur points out that a vegetable oil is unable to serve as a lubricant for the feces until the amount ingested surpasses the dose normally absorbed by the liver and pancreas. Hence to take olive oil for the purpose, as some recommend, imposes a useless burden on these two organs. Liquid petrolatum, on the other hand, seems to traverse the alimentary canal without exciting

any reflex action in the liver. Three years of experience with refined liquid petrolatum have confirmed its valuable lubricating action and its healing influence on the minute excoriations from abnormally hard feces. At necropsy of persons who have been systematically taking liquid petrolatum he has found the appendix literally stuffed with it, and adds that its presence in this way guarantees sterility from the microbial point of view. He orders one or two tablespoonfuls a day, after dinner at night or before breakfast, keeping it up for two or three weeks, repeating the course as needed. The physician must realize, he declares, that in this he has an absolutely marvelous means at his disposal for keeping constipation under control without drastic measures. But he must impress on the patient that it is a course of treatment, aiming at a durable cure in time.

Presse Médicale, Paris

June 22, XXIV, No. 35, pp. 273-280

- 54 Bacteriologic and Serologic Diagnosis of Associated Typhoid and Paratyphoid. (Les fièvres typhoïdes intriquées. Technique.) A. Chantemesse and A. Grimberg.
- 55 Indications for Removal of Projectiles in the Lungs. (Les indications de l'extraction des projectiles intra-pulmonaires.) Piéry.
- 56 Quantitative Evaluation of the Globulins in the Cerebrospinal Fluid. (De la recherche des globulines dans le liquide céphalo-rachidien par les procédés de Nonne-Apelt et de Noguchi-Moore.) V. Demole.

June 29, No. 36, pp. 281-288

- 57 Epidemic Bacillary Dysentery at Morocco, 1915. G. Boudet.
- 58 *Tropical Dysentery Found Endemic in Spain. (Les premiers cas de dysenterie tropicale en Espagne.) F. F. Martinez.

58. **Tropical Dysentery in Spain.**—Martinez has discovered that what is known as tropical dysentery is at home in southern Spain. He has found the histolytic endameba in the stools of persons who had never been out of Spain. Emetin proved as successful in curing such patients as in its record elsewhere. His previous recent research has likewise confirmed the identity of certain affections endemic in southern Spain with leishmaniasis, both kala-azar in children and oriental sore. These supposedly tropical and exotic affections he has thus revealed are endemic in his country.

Correspondenz-Blatt für Schweizer Aerzte, Basel

June 24, XLVI, No. 26, pp. 801-832

- 59 *Technic for Measuring the Blood Pressure and Testing the Functional Capacity of the Heart, and Interpretation of the Findings. (Ueber Messung des Arteriendruckes und Prüfung der Herzfunktion.) H. Schulthess.
- 60 Arrhythmia. H. Ryser. Continued.

59. **Testing the Heart and the Blood Pressure.**—Schulthess discusses what we can expect to learn from the blood pressure and heart functioning, and extols the improved technic he has worked out for the purpose. He emphasizes that the blood pressure in an artery is the result of cooperation of a large number of factors, representing different conditions and processes in the circulatory apparatus. The more exactly we can measure the minimal and the maximal pressure and the pulse curve as a whole, the better insight we get into these separate factors. In a series of tests, when he applied the pneumatic cuff to the arm, the pressure at which the peripheral pulse was shut off was about 125 mm. mercury in 107 young men and twenty young women, all healthy, and seated. The pressure was found equally high on an average in his patients with heart disease, but very frequently either higher or lower. It is thus impossible, he declares, to set any figure as the normal standard for the pressure or pulse rate. We can speak only of a "normal range," and a single examination is never decisive. He states that with his modification of O. Frank's mirror sphygmograph, it is possible to determine the minimal pressure with precision. In 200 patients he found it averaged 100 mm. mercury. The normal range of about 80 rose to 100 with valvular defects; to 130 with arteriosclerosis, and to 150 with nephritis. Schulthess has also devised a model of the circulation which pumps with a pulse approximating the human pulse, and, as the various factors are under control separately, it helps to explain the human pulse.

He tests the heart action and pulse before and again after the patient has gone quietly up and down one flight of

stairs. Healthy persons show a slightly accelerated heart beat after going up the stairs six times, but the pulse is not affected. When the heart is insufficient, the pulse becomes smaller as the systole is less complete and the amount of blood expelled is less. The heart is mainly responsible for the changes after exercise, and he records the pulse rate and the blood pressure—what he calls the pulse-shutting-off pressure (*Pulsspcrrdruck*) before the exercise, and each minute afterward for five minutes. When both, starting with normal figures, run up high together, this speaks for nervous overexcitability of an organically sound cardiovascular apparatus. When the pulse rate runs up high while the arterial pressure falls, there is some organic defect, mitral insufficiency or stenosis, possibly otherwise latent.

He warns against letting patients know the figure of their blood pressure. Those with arteriosclerosis are the ones most interested, and they go from one doctor to another and as the various instruments do not always give concordant findings, the patients come to mistrust the physician's statements, and here again, he says, "we physicians have cut into our own flesh." The lower blood pressure from time to time with the same instrument may be from treatment, abuse of iodids with weakening of the heart's energy, or other factor which simulates a deceptive improvement. Schulthess tells his patient merely, "Your blood pressure corresponds to your age, your constitution," or "is high, and we must seek for the reasons of this high pressure and combat them as called for." The arterial pressure is a guide, but not for the patient, only for the physician. In conclusion he emphasizes that the findings by this method of functional tests may reveal the purely functional nature of disturbances and thus be of more practical importance than the discovery of a valvular defect.

Gazzetta degli Ospedali e delle Cliniche, Milan

June 22, XXXVII, No. 50, pp. 785-800

- 61 Projectile Loose in Pleural Cavity. (Corpi stranieri vaganti nella pleura.) S. Gangi; (Proiettile libero nella cavità pleurica diagnosticato radiologicamente.) G. Ceresole.

Policlinico, Rome

June 25, XXIII, No. 26, pp. 805-836

- 62 Present Status of Military Surgery. (Note sintetiche di chirurgia di guerra.) G. Mafera.
63 Intravenous Serotherapy of Meningococcus Septicemia; Two Cases; Recovery. T. Dal Canton.

Riforma Medica, Naples

XXXII, No. 16, pp. 421-448

- 64 Technic and Results of Multiple Vaccine. (Sul valore immunizzante del tetravaccino Castellani: tifo + paratifo A + paratifo B + colera.) F. P. Titone.
65 Traumatic Paralysis of Reflex Origin. P. Boveri.

No. 17, pp. 449-472

- 66 *Tumors Below the Thalamus in the Midbrain. (Sui tumori della regione ipotalamica del cervello intermedio.) S. Livicrato and G. F. Cosmettatos.

No. 18, pp. 473-500

- 67 Heart Neuroses and the War. (Le nevrose di cuore e la guerra.) A. Ceconi.
68 Acute Delirium. (Considerazioni sul delirio acuto.) A. Salerni.

66. **Tumors in Chiasm Region.**—A case with necropsy findings demonstrates anew that the loss of the sense of smell may be a comparatively early symptom of a tumor below the thalamus in the midbrain. The anosmia may aid in locating the tumor. The case reported shows further that the anterior portion of the optic thalamus does not seem to have any definite physiologic significance. Also that a tumor may develop in this region and grow to a large size without injuring the hypophysis, apparently, in any way either anatomically or functionally.

Brazil-Medico, Rio de Janeiro

June 10, XXX, No. 24, pp. 185-192

- 69 The Reasoning of the Insane. (Raciocínio nos alienados.) H. Roxo. Commenced in No. 23.

June 17, No. 25, pp. 193-200

- 70 *The Blood in Yellow Fever. (Contribuição ao estudo da hematologia da febre amarela.) E. P. M. Bittencourt.

70. **The Blood in Yellow Fever.**—Merely the conclusions are given here of Bittencourt's thesis. They are based on study of twenty cases. He found the changes noted constant in all the cases, whatever the type of the case. There was always hypoglobulia and the number of whites was much below normal all the time, while the hemoglobin percentage was not much changed or even a little above normal. The blood coagulates unusually fast, and the serum is of a yellow or orange tint. The greater the displacement toward the left of the Arneth blood picture, the more unfavorable the prognosis. The blood reaction bears a certain resemblance to that of typhoid fever.

Grèce Médicale, Athens

February 1 and 15, XVIII, No. 3-4, pp. 5-8

- 71 *Partial Collapse of Lung Induced by Paraffin. (Traitement chirurgical de la tuberculose pulmonaire par décollement de la plèvre pariétale, et affaissement partiel du poumon, tamponné par la paraffine.) G. Dré Kolias. Commenced in No. 1.
72 *Amebic Dysentery in Greece. (Sur quelques traits de la dysenterie amibienne en Grèce.) I. Cecikas.

71. **Partial Collapse of Lung Induced by Paraffin.**—The first part of Dré Kolias' article was listed in these columns May 13, 1916, p. 1590. He here records the later findings in the case reported, all testifying to the beneficial action of the operation, permitting the lung to collapse, after releasing it from the parietal pleura. The lung was then immobilized to a certain extent by injecting paraffin. He says that Tuffier's operation of decortication of the lung has been done in only twenty cases to date, but the results have been very favorable, while the technic is simple and easy, as Dré Kolias has amply confirmed on the cadaver. The lung can be compressed and immobilized with paraffin when conditions forbid artificial pneumothorax.

72. **Amebic Dysentery in Greece.**—Cecikas relates that in a recent series of amebic dysentery cases, the correct diagnosis was made in only 19 per cent. at first, all the others presenting various other affections, enterocolitis, malaria, a polyp or fistula in the rectum or hemorrhoidal catarrhal trouble. Three of the patients were children, and all were at some summer resort at the time. In all, the reds were far below par, the indican output was increased, and all complained of a vague pain in the abdomen, increasing at defecation, the stools growing more and more numerous, at intervals, the last stool in a series containing blood and pus with more or less mucus. The abdomen showed little change, offering no resistance to ordinary palpation but stiffening, and sharp pain being felt, especially behind the pubis, on the left side, when the hand was worked in deep. Digestion was not much impaired and proctoscopy usually was useful only in that it excluded other affections. In some cases, however, a typical abscess was disclosed. The clinical picture of the amebic dysentery was much milder than is the rule in tropical countries. Persons from the tropics had been stopping at the various hotels where the contagion occurred. The drinking water and the cultivation of vegetables were above suspicion at the places involved. Contagion probably occurred by the water, vegetables or fruits becoming contaminated just before serving—none of those infected had slept in the room with any suspects. The Brazilian ipecac treatment was applied in three cases; the course had to be repeated in one, and a relapse followed a month later. One patient was given the ipecac by the drip technic, but vertigo and vomiting followed with visual disturbances and symptoms of gastro-enteritis. The others were treated with emetin and castor oil with invariably good results.

Acta Scholae Medicinalis Univ. Imp. in Kioto

I, No. 1, pp. 1-133. German Edition

- 73 *Clinical and Experimental Study of Intracutaneous Resorption. (Die intrakutane Resorption.) M. Kasahara.
74 Biochemical Transformation by Bacteria of the Primary Disintegration Products of Albumin. II. (Ein optisch differenter Abbau des l-Tyrosins durch Proteus bzw. Subtilis.) T. Sasaki.
75 *Experimental Study of Formation of Urine Indican. I-II. (Zur Frage über die Bildung des Harnindikans. I. Fütterungsversuch mit einer grossen Menge Tryptophan; II. Ueber das Verhalten der Phenylglycin-o-carbonsäure im Tierkörper.) C. Asayama.

73. Absorption of Fluids Injected Into the Skin.—The hundred pages of Kasahara's report of his experimental work and clinical experiences contain seventy tabulations of details. The data all confirm the slower absorption from within the skin, as the absorbing power is less than just below the skin. But he found that the superficial lymphatics of the corium take up corpuscular elements and bacteria so that intracutaneous injection of bacteria is followed by the signs of positive vaccination earlier and more distinctly than is the case with subcutaneous inoculation, while the local process can be traced and the findings more easily studied. Intracutaneous inoculation is the best method, he states, for enhancing the virulence and testing the toxicity of bacteria, and for differentiating certain strains. When tubercle bacilli are injected into the skin of the guinea-pig a red papule develops which opens spontaneously and becomes transformed into an ulcer which never displays any tendency to heal. The regional lymph glands swell at the same time. These changes occur earlier and in a more pronounced form with intracutaneous than with subcutaneous inoculation. Intracutaneous reinfection of an already tuberculous guinea-pig induces an accelerated reaction at the point of the injection. Normal cerebrospinal fluid induces no reaction when injected into the skin, and thus serves in differentiation of meningitis.

75. Formation of Urine Indican.—Asayama fed rabbits with an extract of soy beans and then introduced 1 gm. cryptophan into the stomach through a tube. The urine afterward gave a most striking and pronounced reaction for indican, when before there had been none or merely traces. His tables give the details of these experiments which, he says, have for the first time actually demonstrated the production of urine indican by physiologic means from cryptophan, one of the building-stones of albumin.

Russkiy Vrach, Petrograd

XV, No. 19, pp. 433-456

- 76 Cardboard Splints for the Shoulder. R. R. Faltin.
77 Improved Pedal Control of Flow of Saline, etc. (Automaticheskiy zashim v operatsionnoi.) L. I. Omorokoff.
78 Extension Treatment of War Fractures of Femur. M. P. Lavrova.
79 Acute Intestinal Diseases in Soldiers. (K voprosu ob ostrikh zabolievaniakh kishechnago trakta u nizhnikh chinov.) A. V. Lavrinovitch.
80 Influence of Acceleration of Cardiac Contraction on Duration of Period of Impulse Conduction and Systole. (O vlianii uskoreniya serdechnikh sokrashtsheniy na prodolzhitel'nost perioda provedeniya razdrasheniya i perioda systoli.) N. I. Leporsky.
81 *Electrocardiographic Diagnosis of Nodal Rhythm. A. A. Tardzhimaniants. Commenced in No. 17.

No. 20, pp. 457-480

- 82 *Vagotony and Sympathotony in Scarlet Fever in Children. V. I. Molchanoff and D. D. Lebedeff.
83 *Poisoning with Asphyxiating Gases. D. I. Vostroff; (Id.) M. D. Toushinsky.
84 Campaign Against Typhus and Recurrent Fever. (O borbe s sipnim i vozvratnim typhami.) V. A. Brink.
85 *Treatment of War Wounds of Rectum. (K liecheniu ognestriel'nykh ranenii priamoi kishki.) N. N. Prokhoroff.
86 Intravenous Injections of Iodin Combinations. D. K. Averbukh.

81. Electrocardiographic Diagnosis of Nodal Rhythm.—Tardzhimaniants found in a case of myocarditis that digitalis produced nodal rhythm, but atropin stopped it. Adonis vernalis caused nodal rhythm but only transiently. The action of adonis vernalis and digitalis in producing nodal rhythm is thus identical. He declares that the electrocardiographic method of examination is the only one with which exact diagnosis of this type of rhythm is possible.

82. Vagotony and Sympathotony in Scarlet Fever in Children.—Molchanoff and Lebedeff studied the condition of the so-called vegetative nervous system in ten children with scarlet fever, during the period of recovery, the second and third week. The children were from 6 to 12 years old. They injected in turn epinephrin, pilocarpin and atropin, with an interval of from one to three days between them. Before each experiment the blood pressure and pulse were taken, and after the injections both the blood pressure and pulse were determined every fifteen minutes for two or three hours. Epinephrin caused in every patient a rise of blood

pressure and acceleration of the pulse, but there was no glycosuria, except quite slight in one patient. Pilocarpin produced a more pronounced reaction, with salivation and sweating, and in three out of ten patients the pulse became accelerated and the blood pressure rose. The atropin effect was less marked, merely dryness of the mouth, dilatation of pupils, and erythema; one patient gave no reaction whatever. The conclusion arrived at is that among the ten little patients eight must be classed as vagotonics; one showed a certain even balance between the vagus and sympathetic systems, and in one case no conclusion could be drawn, as only pilocarpin was tested. The majority of the scarlet fever patients showed in the period of recovery distinct vagotony. They consider the cardiac changes during the period of recovery from scarlet fever (retardation of pulse, arrhythmia, dilatation of heart), and the blood changes (eosinophilia), as manifestations of vagotony, while the so-called white or negative dermographism, which was found in all the ten patients, they consider as a sign of increased tonus of the sympathetic nervous system.

83. Poisoning with Asphyxiating Gases.—Vostroff treated 100 soldiers poisoned with asphyxiating gases. The lungs were usually found in a normal condition; emphysema was present in eighteen cases, marked anemia in eight, icterus in one, and dilatation of the heart to the left in two. The blood pressure was usually below normal; with slight lymphocytosis. In addition there was a depressed state of the nervous system, with hypochondria. All recovered with rest and fresh air treatment.

Toushinsky reports a case of gastric ulcer caused by asphyxiating gases three and a half months after the poisoning. The patient had been repeatedly vomiting blood, had blood in the stools, pain after meals, etc. Before the accident there had been no gastric trouble. It is undoubtedly to be ascribed to the action of the poisonous gases.

85. Treatment of War Wounds of Rectum.—Prokhoroff obtained excellent results in the treatment of gunshot wounds of the rectum by making an artificial anus. An incision 2 or 3 inches long is made in the left iliac region, parallel to Poupart's ligament, between the umbilicus and the anterior superior iliac spine; the peritoneum is opened, the sigmoid flexure drawn out *ad maximum*, and in its omentum an opening is made with a blunt instrument and a rubber drain tube is introduced. A dressing is then applied without any preliminary sutures on the peritoneum or rectum. The wounds are widely dissected and loosely tamponed. Twenty-four hours later a longitudinal opening of the extracted gut is made for a distance of about 1½ inches. Two days after the operation a large enema of normal salt solution is given through the peripheral end. Two weeks after the operation the patients could be sent to the base hospitals in an excellent condition.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

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- 87 *Operative Treatment of Trigeminal Neuralgia. (Trigeminus-neuralgie en de behandeling der hardnekkige gevallen.) L. J. J. Muskens. To be continued.
88 *Heart Disturbances Following Physical Fatigue. (Optreden van hartstoornissen na lichamelijke vermoeienissen.) P. H. Kramer.
89 *School Myopia; Its Origin, Importance and Treatment. (Over de schoolbijziendheid.) W. Koster.
90 Gangrenous Frontal Sinusitis. (Een geval van gangraeneuse ontsteking van den voorhoofdschouzen en etterige ontsteking van de zeeftbeencellen met doorbraak naar de oogkuil.) I. C. Henkes.

87. Operative Treatment of Trigeminal Neuralgia.—Muskens is privat-docent of neurology at Amsterdam, and he here presents evidence in favor of a method of treating inveterate trigeminal neuralgia as he has accumulated experience with it in the last five years. The first steps of the operation are the same as for gasserectomy, but instead of resecting the gasserian ganglion he crushes with clamps the second and third branches as they leave the ganglion. He says that this causes the cells in the ganglion to atrophy and wither beyond repair, while the operation itself is comparatively harmless. The conditions permit the clamp to be applied at two or three points on the second branch, but

only once on the third. He crushes the axis cylinder as thin as paper, and recuperation and regeneration thereafter seem out of the question. The success was prompt, complete and permanent in three of his five cases with an interval since of four or five years. He gives no case histories in this instalment of his article.

88. Soldier's Heart.—Kramer compares the numerous recent publications on heart disturbances in soldiers under the stress of active service with his own experience in Holland with similar disturbances in men after excessive physical exertion. In one of his cases a man of 25 after a long march presented signs and symptoms of mitral regurgitation, accompanied by a feeling of oppression when fatigued. The systolic murmur at the apex and the oppression subsided after a few days of rest, but returned again after fatigue. The left ventricle was found dilated at the time of the murmur but the heart muscle itself seems to be normal in every respect. He explains the disturbance as the result of lack of reserve power. Only the stress of mobilization of the troops revealed this lack of reserve force. Toxic disturbances of the heart action were usually caused by excessive use of tobacco. All complaints of palpitations, irregular pulse, etc., stopped when tobacco was shut off. Cola tablets—taken sometimes by the soldiers as a remedy for sleeplessness—are liable to bring on similar disturbances. The emotions of the campaign, frequent drinking of coffee and tea, abuse of tobacco and concentrated foods whip up thyroid functioning so that many belligerent soldiers are said to suffer from actual hyperthyroidism, an incomplete form of exophthalmic goiter, without exophthalmos or perceptible goiter. This was reported at first as comparatively frequent among the German troops, but Kramer has not encountered among the Dutch troops any cases suggesting this hyperthyroidism. On the other hand, he has seen a number of cases of heart disturbances developing under the strain of the mobilization in young men with a history of comparatively recent typhoid. The postinfectious trouble did not become manifest under the conditions of ordinary life. Under bed rest the murmurs and other symptoms subsided; there was nothing to suggest endocarditis. The murmur at the apex grew louder during inspiration in one of these cases. Grober remarked last year that the soldiers now fighting in the war are liable to develop arteriosclerosis to an unusual extent as one of the pathologic consequences of the war. In conclusion Kramer cites the saying, "The physical heart is doubled by an emotional heart," and declares that the manifold emotions of the war may act directly on the heart. He mentions that Fried reported recently finding the heart much dilated in men who had been fighting in the trenches for some time, without a chance for physical overexertion. He ascribed it to nervous influences alone. Schlesinger has also encountered cases of dilatation of the heart under psychic influences. Half of his 171 "heart cases" were of this type. The number and variety of cardiac neuroses is unprecedentedly large in the present war; most cases of the kind are encountered in the hospitals nearest the firing line. These patients soon improve and in a short time are ready for service again.

89. School Myopia.—Koster emphasizes that there are two forms of myopia in children, that which begins when close study is required, about the age of 12 and does not go above 5 D., not increasing any after 16 or 18, and the visual acuity is scarcely reduced. The progressive form begins as early as the fifth year, the visual acuity is reduced and the choroid, ciliary body or iris show manifest signs of something wrong. Between these extreme types there are many transitional cases. Prolonged use of the eyes with the book held too close to the eyes is one factor in school myopia, but hereditary influences he thinks are mainly responsible, an inherited tendency to mild chorioretinitis. The candidates for myopia, even as small children, have comparatively large eyes and somewhat thinner, bluer sclera and deeper anterior chamber. If such children do not happen to do much close work with their eyes, they may escape myopia in school but may develop it later if their trade or business, sewing, watch-making, etc., makes much demand on the eyes. The cause

of myopia he contends is some pathologic condition. With school myopia it is an extremely mild, generally inherited chorioretinitis. The tension with extreme accommodation tends to elongate the axis of the eyeball, which entails the myopia. The latter is merely secondary, and it is a blunder to draw conclusions as to treatment from the standpoint of the laws of optics. The underlying pathologic condition requires treatment and any attempts to improve the myopia must guard against measures liable to conflict with the cure of the primary trouble. His conclusions harmonize, he says, with the views of Donders and van Snellen.

Koster emphasizes further that with school myopia the tendency now is to mistake the effect for the cause and fit glasses to correct the myopia completely, while it is important to avoid excessive accommodation. The glasses should correct the myopia enough for the child to see the blackboard. This will enable him to do all his school work at a distance of $\frac{1}{3}$ meter. For close work he takes off the glasses. On the street and doing housework he can wear the glasses or not, as he chooses. Children with beginning school myopia, who cannot be kept from holding the book closer to the eyes, should be given positive glasses of 1 or 2 D. and be warned not to "lie down on their work." The parents must be taught how the child should use the glasses. By this means all demands on the eyes can be met. If the myopia reaches 4 D., then weaker work-glasses can be given, 2 D.; the aim is to prevent excessive accommodation. With myopia gravis, even distance glasses may do harm. Those who insist on glasses to correct completely the defect in refraction, to be worn all day, should stop and realize how much harm they are doing. Treatment should aim to cure the benign chronic chorioretinitis which is the basis of the whole trouble. For this he uses salicylates, mercury or iodids as required, all in minute doses but long kept up, with occasional intermissions. Everything tending to drive the blood into the head should be avoided, no violent gymnastics or exercising with the head bent over, nothing tight around the neck. The child should not be allowed to sit in school with wet or cold feet, and constipation should be combated. No fine handwork of any kind should be allowed, no drawing, and the child should hold himself erect at work and play. By these means the myopia can be kept down within a low range. When it does not surpass 3 D., it is not much of a handicap. It is important to seek out the candidates for myopia and impress on the parents to begin with their younger children to ward off myopia by the above general measures.

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June 14, LIX, No. 24, pp. 569-592

- 91 *Tuberculous Exanthem Developing Under Radiotherapy of Tuberculous Glands. (Tuberkuløst Exanthen, optrædende som en Dermatitis photoelectrica.) P. Haslund. Concluded in No. 25.

June 28, No. 26, pp. 621-648

- 92 Recovery Under Salvarsan From Chronic Malaria Refractory to Quinin. (Et Tilfælde af chronisk Malaria behandlet med Salvarsan.) V. Friis-Møller.
93 Hemorrhagic Inherited Syphilis in Two Newly Born Infants. B. Pontoppidan.

91. Tuberculous Exanthem Developing Under Roentgen Exposures.—Haslund's patient was a woman of 29 who was being treated at the Finsen Institute for tuberculous glands in the neck. They had gradually enlarged in the course of five years, but without suppuration or perforation, until the circumference of her neck was 37 cm. and the swelling extended on both sides nearly from the ear to the clavicle. Scarcely any local benefit from the Finsen treatment was apparent after six months of exposures but the general health was improved and the patient's acne had entirely subsided. Operative measures were then applied. At the fifth month of the Finsen treatment an eruption developed on the exposed regions and vicinity, new efflorescences constantly developing as long as the exposures were continued, but not afterward. Haslund presents arguments to sustain the assumption that at some time during the treatment tubercle bacilli had found their way from the deep focus to the skin and sensitized it to the chemical rays. The result was what might be called a tuberculous photo-electric dermatitis.

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THE NERVOUS SYSTEM AS INFLUENCED BY HIGH ALTITUDES*

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The frequency with which individuals exhibit nervous symptoms, or complain of "nervousness" while living at increased elevations is responsible for the popular or common belief that one may expect to become "nervous" because one lives at the higher altitudes. This view has obtained so long that it is expressed with as little consideration as its value, empirically, really merits; but in the belief that a general *a priori* review of the underlying factors involved might be advantageously brought to the attention of the section, it was chosen as being of sufficient interest to form a part of the annual communication of the chairman and at the same time relieve it of an aspect of formality or conventionalism.

Some one has commented on the humor of the tendency in Colorado to charge to the altitude all of the evil or disagreeable changes experienced, while the climate is invariably credited with the benefits derived. Such expressions as "high altitudes are too hard on the nervous system" and "one cannot live any length of time at such an elevation without a nervous breakdown," and again, "women cannot live in Leadville (10,200 feet) because their nervous system does not seem to stand the altitude—they become nervous wrecks" are merely the result of experiences and accepted by the public, and in no little part by the profession, without inquiry as to the reason for the manifestations commonly grouped under the term "nervousness" being brought about.

The first clue to a most important factor in determining these manifestations is to be found in the improvement frequently observed as a result of a more or less prolonged stay at a lower elevation or at the sea level—indeed, so often is this the case that the advice has become a routine. It would appear to be likewise significant that the plethoric type of individual rarely finds it necessary to leave the higher altitudes, while it is most often those evidencing a type of relative or absolute anemia who seem invariably to find relief at the lower elevations. A sufficient number of cases have been observed in which environmental influences could be eliminated as playing a negligible rôle.

It is not a definite syndrome with which we have to deal, but rather a state or condition of the nervous

system probably best characterized as an irritability or hyperexcitability which may manifest itself in the motor, sensory or psychic spheres, or a combination of them, in an otherwise normal individual. Associated with this increased excitability is an increased rapidity of fatigue which finds expression in muscular weakness and diminished physical endurance, as well as failure in adaptability and power of concentration mentally. They complain of a mental unrest approaching anxiety, and find difficulty in carrying on the usual mental requirements of their occupations, owing to the failure to concentrate or sustain the attention. It is quite indicative when an individual experiences his best functional ability on awakening in the morning, which rapidly gives way to an unusual degree of fatigue, increasing as the day progresses. This condition may be the forerunner of a simple neurasthenia, or in the presence of a congenital predisposition the development of the more profound neuroses is facilitated. The psychic determinants of neurotic states find such a nervous system an easier prey to their influence.

If we turn our attention now to the purely physical facts in relation to altitude we find there is a progressive diminution in atmospheric pressure in accordance with the elevation. For example, at the sea level the barometer will register in the neighborhood of 760 mm. (30 inches) with a temperature of 50 degrees; at Denver (5,280 feet) under like conditions 630 mm. (24.74 inches) and at the summit of Pike's Peak (14,109 feet) from 452 to 462 mm. (17.8 to 18.2 inches). With the diminution of pressure, the atmospheric expansion is inversely proportionate and consequently the weight of oxygen in a given volume of air is correspondingly diminished.

Applying these facts physiologically, it is apparent that in order that a requisite amount of oxygen be transported, an increase in the volume of air inspired must take place; an increase in the lung area utilized; a greater number of corpuscles be exposed to aeration, and an increase in the amount of hemoglobin. The latter would seem to be required in even greater amount since, as Barcroft¹ has shown, the saturation power of hemoglobin varies with the oxygen pressure.

In 1911, the Anglo-American Pike's Peak Expedition, undertaken by members of Oxford and Yale universities, made extensive physiologic observations,² when it was found that "the percentage of hemoglobin in the blood increased for several weeks on the summit of Pike's Peak, and varied in various *acclimatized* persons from 115 to 154 per cent. on the scale of the Gowers-Haldane hemoglobinometer, corresponding to a percentage of oxygen capacity of from 21 to 28.5

* Chairman's address, read before the Section on Nervous and Mental Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Barcroft: Respiratory Function of the Blood, 1914, p. 15.
2. Phil. Tr. Roy. Soc. London, Series B, ccciii, 185.

c.c. of oxygen per 100 c.c. of blood. The number of red corpuscles increased parallel with the hemoglobin and there was no change in relation between the coloring power and oxygen capacity of the hemoglobin or in the dissociation curve of hemoglobin in the arterial blood. The increase in hemoglobin was apparently due to "concentration of the blood" "for the first few days," but "afterwards entirely to a large increase in the total amount of hemoglobin." Barcroft,³ in commenting on his own observations and those just mentioned, concludes that "in each case there was a gradual rise in the total oxygen capacity, which reached its maximal value only after some time, about three weeks after the ascent. This perhaps is the essential point, for it proves quite clearly that the body reacts to the altitude either by producing increased quantities of hemoglobin or by retaining what would otherwise be broken." In this regard, however, the observations of Bürker⁴ differ somewhat in that the individual variations were found to be greater. He found that smaller and lighter individuals reacted most strongly and more promptly; hemoglobin and erythrocyte count increased uniformly, so that the average hemoglobin content of the corpuscle underwent no essential change. In the larger and heavier individuals the hemoglobin content increased more than the numerical count so that the corpuscles were richer in hemoglobin in the higher elevations. The same author states that "The blood reaction as influenced by high altitudes is to be construed as an adaptation of the oxygen-carrying surface of the blood to the altered external conditions of the lower elevations, especially to the want of oxygen through the diminished atmospheric pressure."

The symptoms observed on ascending Pike's Peak, such as blueness of the lips and face, loss of appetite, nausea and vomiting, intestinal disturbances, headache, fainting in some persons, periodic breathing and great hyperpnea on exertion, are transitory manifestations and persist two or three days, when distinct signs of acclimatization become apparent. In this process of acclimatization, three factors became evident: (a) increased secretory activity of the lining cells of the lung alveoli; (b) lowering (in consequence of the diminished alkalinity of the blood) of the threshold of alveolar carbon dioxide pressure, and (c) increased percentage of hemoglobin in the blood. The stimulus to these compensatory changes is deficient aeration of the blood passing through the lungs; and the compensation attained is, though very considerable, not complete.

Acclimatization in the normal individual presupposes, therefore, the ability to supply especially the required increase in the red blood cells and in the amount of hemoglobin. The degree of this ability then determines the completeness of acclimatization, and the oxygen want must obviously be in proportion to deficiency in the power of adaptability.

With this brief reference to the experimental work of Zuntz, Bürker, Barcroft, Haldane, Douglas, Henderson, Schneider and others, it is obvious that an increased activity of the blood-forming organs is the normal process of adaptation stimulated through oxygen want in the higher altitudes. Moreover, it becomes apparent that the clinical standard of corpuscular and hemoglobin determinations which might

be regarded as within the normal at the sea level, when obtained at an elevation of 5,000 feet or more, may be regarded as a relative anemia which deserves consideration as a possible foundation for pathologic symptoms.

Now, as is well stated by Sewall⁵:

The very essence of constitutional disease is the failure of physiological response on the part of living tissues to the external stimuli which are their normal excitants. Far from being strange, it is to be expected that in a certain proportion—a large proportion—of people the physiological response of the blood-forming tissues to the stimulus of altitude should be slow or imperfect. The clinical result is relative anemia.

Assuming, then, that anemia results fundamentally in the limiting of oxygen supply to the tissues, it seems proper to direct attention to the nervous tissue metabolism under like circumstances. The necessity for oxygen, and the fact that it is used up during the action of the brain,⁶ can be very strikingly demonstrated by the experiment of Hill with methylene blue, and it can also be shown that this use is confined to the period of activity.

Thurnberg⁷ showed that the consumption of oxygen and production of carbonic acid in nerve cells can be demonstrated directly by chemical analysis.

That individual ganglion cells present different resistances to anemia has been further confirmed by Landergren's⁸ work on the phenomena of acute asphyxia; especially noteworthy is the finding of a brief rise of activity in the vasobulbar center.

Verworn's⁹ work on the metabolism of nerve cells by means of strychninized frogs demonstrated that when the excitability was lost, the constituent in the blood responsible for restoration was not organic nutritive materials, but solely due to the oxygen. From his result he distinguishes two fundamentally different factors in the paralysis of the centers, namely, the fatigue due to the accumulation of the toxic products of metabolism and exhaustion due to the consumption of the supply of oxygen.

It can be proved in many ways that the passage of a nerve impulse through the nerve centers requires the expenditure of energy by these centers. It is significant that in all nervous systems, especially in the higher animals, that arrangements are made for their free supply of oxygen.¹⁰ Very short deprivation of oxygen causes a complete block throughout the system, in many cases preceded by a short period of increased excitability or ease of transmission.

As early as 1879 Schmoulewitsch,¹¹ actuated by the experiment of Stevson, dating from the seventeenth century, found that deprivation of blood did not, as was previously observed, cause an immediate loss of irritability. On the contrary, this is for a while even increased and commences to disappear only after a certain degree of augmentation. The same phenomenon was observed after section of a nerve. The irritability of the corresponding muscle is increased for the first few moments. In his opinion, given at that time, this was to be attributed also to anemia, as the immediate result of nerve section. In this regard his conclusions are interesting:

5. Sewall: *Colorado Med.*, 1915, xii, 41.

6. Halliburton: *Biochemistry of Muscle and Nerve*, 1904, p. 79.

7. Thurnberg, quoted by Luciani: *Human Physiology*, 1915, iii, 231.

8. Landergren, referred to by Luciani: *Human Physiology*, 1915, iii, 267.

9. Verworn, referred to by Luciani: *Human Physiology*, 1915, iii, 271.

10. Starling: *Human Physiology*, 1915, p. 314.

11. Schmoulewitsch: *Bull. gén. d. therap.; abstr., Periscope, Jour. Nerv. and Ment. Dis.*, 1879, vi, 154.

3. Barcroft: *Respiratory Function of the Blood*, Barcroft, 1914, p. 130.

4. Bürker: *Ztschr. f. Biol.*, 1913, lxi, 379.

That the anemia is the cause of increased irritability of the muscles, I have proven by the following experiments:

1. After compression of the aorta or ligating the artery of a muscle, we cannot produce any augmentation of the irritability after section of a nerve. This demonstrates that this augmentation depends exclusively upon the circulation, for, as I say, the circulation once interrupted, the section of the nerve is without effect.

2. In curarizing an animal to the stage of complete paralysis, we always find an increase of muscular irritability following the section of the nerve. Here, evidently, only the vasomotor nerves can act, since, as has been demonstrated, they are not easily paralyzed by curare.

Anemia, therefore, like certain affections of the nervous system that disorder the functions of the vasomotors, should increase the muscular irritability, a fact observed clinically, but not as yet sufficiently demonstrated theoretically.

It seems evident, therefore, that in the absence of oxygen supply the excitability of the protoplasm of nerve and other cells is lost—a fact which at first sight appears to be in conflict with clinical experience. It must be kept in mind, however, that we are concerned with a lessened oxygen supply, rather than with a complete withdrawal.

Is the increased irritability and consequent fatigue to be attributed to the insufficient oxygen supply primarily, or to the influence of the products of metabolism which have not been sufficiently oxidized to secure their elimination?

In order that expressions from more competent and authoritative sources might be presented, personal communications with the foremost physiologists were solicited and in general reveal an inclination to the former view, namely, that the irritability is to be charged to the diminution of oxygen supply through failure to effect the ordinary compensation. Professor Henderson considers that a "moderate deprivation of oxygen may readily cause an increase in irritability and a greater readiness to fatigue, while an extreme deprivation reduces irritability." He also calls attention to the fact that in the term "irritability" it is not an increase of functional power that is implied, but rather the reverse—an ease of excitability or irritability in what might be considered the popular rather than the scientific sense.

Dr. Haldane expresses himself as in accord with the writer, in that the hyperexcitability is to be attributed to oxygen want, and does not accept the view that oxygen want is sedative; and to emphasize his view, points out "that the effect of cutting off a man's vitals is not sedative—anyhow in the early stages." He further summarizes his views as: "1. Want of oxygen, within limits, is or may be excitant and not sedative. 2. The amount of oxygen in the blood is not an index of sufficiency at low pressures."

The unoxidized toxic or intermediary products of metabolism are preferably to be regarded as depressants, according to Dr. Howell, and in accordance with their concentration; although he cites the observation of Lee, that the first effect of the fatigue products of muscular contraction is an increase of irritability followed by depression when the concentration is presumed to have increased.

Without entering further into details with reference to the mechanism of the finer adjustments of the body to the oxygen supply, such as the carbonic acid or rather the hydrogen-ionic influence on the respiratory center, the relation of muscular exertion to its production, mode of formation, relations of alveolar and blood content and influences modifying these rela-

tions, etc., it seems established, that there is an irritability of the nervous system to be attributed to diminished oxygen supply by reason of the failure on the part of certain individuals to bring about an adaptation to the conditions incident to the diminished atmospheric pressure.

It must be admitted that there is good reason to suspect the possibility of some remote pathologic process as a fundamental factor inhibiting the power of adaptability in certain persons.

The estimation of hemoglobin by means of most of the ordinary methods in use depends on individual judgment of shades of color, and variations are often quite considerable. There is a strong tendency to read the percentage too high, especially when the examination is made in a subdued light. This was found to be particularly true when daylight was the source of illumination. In eighty-nine comparative observations made with day, and artificially lighted instruments, taking the judgments of three individuals, the estimations were invariably higher by the latter method, and varied from 6 to 15 per cent.

The corpuscular count was found to correspond so uniformly to the hemoglobin percentage that in the majority of cases it might be omitted.

As a result of several years' careful observations at an altitude of about 5,000 feet, it seems evident that the threshold of nervous stability varied between 82 and 88 per cent., corresponding to a corpuscular enumeration of from 4,100,000 to 4,400,000, and influenced in individual cases by demands made on the nervous structures as determining causes.

It was recognized quite early that the clinical ineffectiveness of the ordinary chalybeate therapeutic measures was not to be regarded as negating the lowered blood values as a cause of the nervous irritability, since not infrequently subsequent estimations made in the absence of clinical improvement were found to show but little increase and were in some instances even lowered. It was necessary to change the form of iron administration, especially in the stationary cases, until one was found to be effective in elevating the hemoglobin content. With this elevation the clinical improvement was uniformly constant, regardless of the means of accomplishment. In a few instances the removal to a lower altitude with the continuation of the iron administration proved effective when no impression was observed while at the higher elevation.

A marked increase in the elimination of the phosphates noted in a majority of the cases suggested the administration of the alkaline and earthy normal phosphates, and in some of the stationary cases seemed to augment the iron assimilation.

The question "Do so-called neurasthenic cases or those of 'nervousness' occur more frequently at high altitudes?" must be answered in the negative, but for several reasons. First, the general standard of living is better than in the more congested centers of population; second, the confined artificially lighted indoor workers are less common; third, there is a greater average of bright, cloudless days; lastly, the greater intensity or actinism of the light.

Finally, it is the class of patients who are able to live with more comfort at the lower altitudes and who manifest irritable neurotic disorders repeatedly on going to the higher elevations that prompted this investigation and as a result of which it may be concluded that:

1. The demand for oxygen-carrying elements of the blood increases directly with the altitude.

2. In normal individuals this requirement is met through an increase in the red blood corpuscles and hemoglobin in from three to five weeks—the normal acclimatization.

3. This power of adaptation is diminished or wanting in certain individuals.

4. Deficient acclimatization results in oxygen want or relative anemia.

5. As a result of diminished or limited oxygen supply, the increased excitability or irritability of the nerve structures may be explained.

6. If by therapeutic or other means, the blood forming mechanism can be stimulated into activity, individuals should find no more difficulty in living tranquil lives in the high altitudes than at the sea levels.

325 Mack Building.

COMPLICATIONS AND SEQUELAE OF THE OPERATION FOR IN- GUINAL HERNIA

AN ANALYSIS OF ONE THOUSAND AND FIVE HUNDRED
CASES AT THE MASSACHUSETTS GENERAL HOSPITAL*

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The operation for the repair of inguinal hernia is rightly regarded as one of the most satisfactory and simple of surgical procedures. The operative technic has become practically standardized for the routine case, the general principles of closure of the canal being accepted with difference of opinion only as to the merits of transplantation, or nontransplantation, of the spermatic cord. Special and unusual cases, particularly large, direct hernias, may require special measures, such as transplantation of the rectus muscle, or sheath, or implantation of fascia lata.

Large series of cases have been reported by individual operators of great experience, showing a very high percentage of cures and a practically negligible death rate. Coley¹ reports 3,100 cases of inguinal hernia in which operation was performed at the Hospital for Ruptured and Crippled from 1891 to 1912, with twenty-eight recurrences, less than 1 per cent. of the total number. Out of 3,383 cases of hernia of all kinds in which operation was performed there were six deaths, a mortality of 0.17 per cent.

The statistics of Wölfler's clinic at Prague comprise 1,460 nonincarcerated inguinal hernias in which operation was performed between 1895 and 1910, with eight deaths, a mortality of 0.63 per cent. Relapses after operation were estimated at from 5 to 8 per cent.

The dissemination of such favorable modern statistics as these, together with improvements in general anesthesia, the introduction of spinal anesthesia, and wide adoption of local anesthesia have greatly extended the field of this operation. An increasing number of the ruptured are insistently demanding surgical relief from the uncertainties and annoyances of truss treatment.

Patients who a few years ago would have been rejected as unfit surgical risks on account of age,

infirmity or intercurrent disease are now readily accepted for this operation, until it is beginning to be a question if the pendulum is not already swinging too far. At any rate, it seems an opportune time to check up results, to audit, as Codman would express it, our hernia accounts.

The 1,500 cases which form the basis of this report were consecutive cases of inguinal hernia in which operation was performed at the Massachusetts General Hospital from October, 1908, to December, 1914. Definitely strangulated hernias are not included, but cases of incarceration without acute symptoms are counted.

In considering these statistics, it must be borne in mind that the operations were performed by a large number of surgeons of varying degrees of experience, no less than seventy-five individual operators. There were 1,093 operations done by members of the visiting staff, the largest number to the credit of any one operator being 117, and the smallest, 1; 663 operations were done by fifty-three different members of the junior house staff.

The patients also showed extreme variation as to age, physical condition and social condition, as would be expected in a large general metropolitan hospital. Comparison of such statistics with those of single operators dealing with somewhat selected material cannot but be disadvantageous.

The youngest patient was 10 months of age, the oldest 77 years. There were ninety patients between 1 and 10 years of age. Eight patients were over 70. The largest number of cases fell in the decade between 20 and 30, namely, 397.

There were 1,388 males and 112 females. In 1,244 cases the hernia affected one side only; in 256 it was double. In eighty-eight cases the hernia was direct, in the others indirect. No cases of strangulated hernia were included. In ten cases the hernia was of enormous size. In sixty-nine cases the hernia was complicated by undescended testicle. There were nine cases in which the bladder was contained in the sac. In one of these cases there was a large stone in the bladder contained in the hernial sac. The appendix was found in the sac eight times, and removed in the course of the operations forty-six times. There were seven cases of sliding hernia. There was hydrocele present in forty cases, marked varicocele in twenty-six cases. In fifty cases there had been a previous operation for hernia, with recurrence.

In the 1,500 cases there was a total of 1,756 operations, counting double hernia as two operations. In the male cases the Bassini technic was employed 834 times, Ferguson 764, and Halstead fifteen, with twenty-four cases of varying and miscellaneous technic.

In sixteen cases in which the hernia was complicated by ectopic testicle, orchidectomy was performed. In fifty cases the undescended testicle was brought down into the scrotum; in one case it was dropped back into the peritoneal cavity. In nine cases orchidectomy was done in the course of the operation on account of tuberculosis, gumma or other lesion of the testicle.

In many cases operations for other conditions, such as gallstones, ventral hernia, stricture of urethra, etc., were done at the same sitting.

The anesthesia was general in 1,319 cases. Spinal anesthesia was used in eighty-nine cases. Spinal anesthesia was supplemented by general in nine cases, and local in six cases. Local anesthesia was used alone in seventy-five cases. There was one case of rectal anes-

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Coley: Keen's Surgery, vi.

thetia, and one case in which the anesthetic was not stated.

Accidents of operation were reported as follows: Injury to the bladder in two cases, with immediate suture, without ill effect. The vas deferens was reported cut seven times; in one case end-to-end suture was attempted. In two cases a small nick was made in the bowel and immediately sutured without bad result. There were no cases of injury to the iliac vein.

There were eight deaths in this series, a mortality of 0.53 per cent. In two of these fatal cases there were complicating conditions present which were largely responsible for the result. One case was that of a man of 63 with diabetes mellitus, having a scrotal hernia and symptoms of severe cystitis. Under spinal anesthesia a suprapubic cystotomy was done; it was then found that there was a hernia of the bladder through the inguinal canal. As the bladder could not be withdrawn through the hernial opening, the inguinal canal was opened and a stone was found in the portion of the bladder lying in the hernial sac. The stone was removed, the inguinal canal repaired and bladder closed about a suprapubic drain. The patient died of sepsis. This unusual case might, I think, fairly be left out of hernia statistics.

In the other complicated case a ventral hernia was repaired at the same sitting; general peritonitis developed, with fatal result. Necropsy showed that the peritonitis developed from sepsis in the ventral hernia wound. In this case it is manifestly unfair to burden the inguinal hernia operation with the fatal result. This leaves six cases of straight hernia with fatal issue. In three cases death occurred suddenly, and unexpectedly, on the fifth, thirteenth and fourteenth days, respectively, and was ascribed clinically to pulmonary embolism. There were no necropsies.

In one case the patient, a feeble man of 69, with double hernia, gradually petered out and died comatose on the tenth day.

In another case of double hernia a large hematoma developed which was subsequently drained. A secondary operation was performed on the eighth day on account of abdominal pain, distention and vomiting, with high temperature. Perforated ulcers of the colon were found, with general peritonitis. Necropsy showed no direct connection between the hernia operation and the peritonitis, which was evidently the result of perforation of ulcers of the colon.

In the last case death resulted on the eighth day, with symptoms of vomiting, distention and jaundice. Necropsy showed focal pneumonia, and extensive hemorrhage into the mesentery and retroperitoneal tissues.

Nonfatal postoperative complications of more or less severity developed in 438 cases, or 28 per cent.; some of these were trivial. In many cases the complications were multiple.

COMPLICATIONS

Sepsis.—In 158 cases the wounds failed to heal by first intention. In ninety-three cases the sepsis was trivial, consisting either of a stitch abscess, or more often a collection of serum which required draining. In many of the latter cases probably no infection was present; cultures were not made. In sixty-five cases there was frank pus in the wound, under 4 per cent. of the total number of wounds.

Of the seventy-five cases in which operation was performed with local anesthesia, sepsis developed in the wounds in thirteen cases, or 17 per cent.

Of the eighty-nine cases in which operation was performed with spinal anesthesia, there were nine septic wounds, or 10 per cent.

Hematoma.—In 112 cases the development of a hematoma was mentioned in the record; in twenty-seven of these cases it was stated to be slight. Marked and extensive ecchymosis was noted in two cases; in one of these it extended to the chest wall. In both cases it subsided spontaneously.

Subsequent orchidectomy became necessary in five cases, once on account of tuberculosis, and once on account of sloughing of a transplanted undescended testicle.

Complications in the Respiratory Tract.—These were of common occurrence, namely, 138 cases (9.2 per cent.) distributed as follows: Frank pneumonia was reported in seven cases, questionable pneumonia in one. Bronchitis was recorded in forty-eight cases; postoperative cough, with slight temperature, in forty-three; pulmonary infarct, two; pleurisy, one; colds, six, and tonsillitis, thirty.

Respiratory complications were by no means abolished by the use of spinal or local anesthesia; this probably was partly due to the fact that these forms of anesthesia were selected on account of chronic bronchitis or cough on the part of the patient. At any rate, respiratory complications occurred in twenty-five of the 170 in which spinal or local, or a combination of the two were used, nearly 15 per cent. Of these, one case of pneumonia and one fatal case of pulmonary embolism followed spinal, and one nonfatal pulmonary infarct local, anesthesia.

Miscellaneous.—There were many miscellaneous complications distributed as follows: otitis media, two; measles, one; cholangitis, one; persistent hiccup, three; phlebitis, three; acidosis, two; pyelitis, one; ataxic paraplegia, one (this was not a case of spinal anesthesia). There were three cases with marked postoperative mental symptoms; one with delirium, and two with hallucinations and attempted suicide. The latter were both cases of spinal anesthesia.

END-RESULTS AND RECURRENCE

End-results were obtained through the routine follow up system of the hospital, no special effort being made to trace cases for this report. The hospital system consists of sending a letter to each patient, one year from date of discharge, requesting return to the hospital for examination; if this is impossible, report of condition by letter is requested.

As already stated, eight patients died in the hospital after operation. Data subsequent to discharge were obtained in 754 cases, just over 50 per cent., in which 140 patients reported by letter and 614 reported in person for physical examination. Eleven patients died of intercurrent disease during the year; 577 were reported unequivocally well, or cured, 38 per cent. of the total number operated on, and 76 per cent. of those whose subsequent histories are known. Ninety-nine patients are classed as relieved; fifty of these were cured of the hernia but complained of subjective symptoms more or less closely associated with the wound. The commonest complaint was of pain in the wound, especially when working or lifting. Two complained of persistent numbness in the inguinal region. Of the others in the relieved class, seventeen patients had no actual recurrence of hernia but a bulge in the region of the scar; eight had marked varicocele; five were cured of the hernia for which they were operated on,

but subsequently developed hernia elsewhere; three had atrophy of the testicle; two had keloid in scar; one had a persistent sinus; one developed adenocarcinoma of the sigmoid, and one was cured of hernia but had incontinence of urine. There were six cases of miscellaneous and unclassifiable complaints.

Fifty-nine patients had definite recurrence within the year; five of these had double recurrences; two are known to have recurred after the lapse of a year, making a total of sixty-six recurrences, or 3.7 per cent. of the total number of operations performed, and 8 + per cent. of the number of cases traced. There were six cases in which there was questionable recurrence. In two of these, relapse was claimed by the patient but could not be found by the examiner. If these six cases are counted as recurrences, the percentage is raised to 9 per cent. of the cases traced.

Of these recurrences, twenty-six, or 3.1 per cent., followed the Bassini operation, and thirty-four, or 4.4 per cent., the Ferguson.

In the sixty-seven cases of recurrence or questionable recurrence, postoperative sequelae were distributed as follows: cough, eleven cases; hematoma, nine, and sepsis, four.

In the 112 female cases there were only two recurrences.

Of the eighty-eight direct hernias there were recurrences noted in seven, or 7.9 per cent., or 15 per cent. of the direct hernia cases traced.

There were only two relapses out of seventy-five cases in which operation was performed with local anesthesia, 2.5 per cent. of recurrences; but it must be borne in mind that these were for the most part the less severe types of cases.

Simmons found in his study of hernia that recurrence practically always takes place within six months after operation. This is undoubtedly true for the great majority of cases, but like all generalizations is subject to exceptions. In two of our cases counted among the recurrences, the patients were reported well at the end of the first year. Others which we do not know about may also have relapsed since the expiration of the year.

SUMMARY AND CONCLUSIONS

In summing up this statistical study of inguinal hernia, I desire to emphasize the following points:

The results of operation are on the whole good, better than might be expected under the conditions. The operation, however, has a definite, though low, mortality rate, and should not be undertaken in the old and the infirm without good reason.

Postoperative cough, hematoma and sepsis are important factors in the incidence of recurrence, but the latter complication seems to play a lesser rôle than is generally assigned to it.

A strikingly large number of patients anatomically cured complain of pain, probably due to nerve traumatism.

General anesthesia is still best in the routine case. Local anesthesia is very satisfactory, and has a wide application in cases in which inhalation anesthesia is contraindicated, but carries a slightly greater risk of sepsis, and hence probably of recurrence too, although the latter conclusion is not borne out by our figures. Spinal anesthesia, on account of its greater danger and serious sequelae, should have little place in this operation.

Careful study of the results in this series of cases reaffirms the importance of the well recognized surgical principles of clean anatomic dissection, conservation of nerve supply, high closure of sac, securely accurate coaptation of tissues without constriction, and complete hemostasis, in the attainment of success in the operation for inguinal hernia.

ABSTRACT OF DISCUSSION

DR. HENRY O. MARCY, Boston: Tracing the development of the male during the late fetal period we note the extrusion of the testicle from the abdomen and the carrying with it of the peritoneal covering investing the vessels and vas deferens, making up the spermatic cord. Normally, the peritoneum is so closed in about the structures at the exit from the abdomen that only by pulling on the cord do we note the slight depression on the peritoneal surface, which lines the abdomen at this point. When the opening through the abdominal wall is imperfectly closed there results a more or less marked depression of the peritoneum described by Cloquet as normal anatomy and called by him the "infundibular process of the peritoneum." This defective closure of the internal ring is the usual cause of indirect hernia, although it may not occur until an advanced age. When normally developed the intra-abdominal pressure is at right angles to the canal and firmly closes it. The reconstruction of the canal to its normal size and obliquity is the sine qua non in the cure of hernia. In 1870 I operated on a large strangulated hernia and closed the wound with buried catgut sutures. The cure remained permanent. My first publication for the cure of hernia was in November, 1870. I instituted a long series of studies on animals to determine the rôle of buried animal sutures and published many articles on their advantages. I early emphasized the reconstruction of the inguinal canal, to its normal size and obliquely as safe, easy and permanent. The cure of hernia was established on a firm basis. In 1882 I first obtained tendons from the tail of the kangaroo and introduced their use as a suture material in every way superior to catgut. Corroboration of the principles and practice which I have so long advocated is now ample. All aseptic wounds closed with buried aseptic tendon sutures will remain aseptic and in well vitalized structures will be followed by primary union. The aseptic absorbable animal suture, preferably tendon, I consider my best contribution to surgery and the cure of hernia is dependent on their wise use. For a long period it has been a far too common custom to accredit to European writers much that belongs to our profession. To Bassini, honor is due for his excellent work, but in method, experience and publication he is antedated by a number of American surgeons. At last the cure of hernia should be called the "American method." With all the emphasis of an earnest conviction, I commend to every aseptic surgeon familiarization with the methods of wound closure by means of buried absorbable sutures, and not alone predict their early general adoption but that, in importance, they have the first place in the technic of modern aseptic wound treatment.

DR. DANIEL NATHAN EISENDRATH, Chicago: Hernias in hospitals are generally operated on by the house men and careful supervision is not given to a series of operations by one operator. I was very much struck with one point made: that was the frequency of sepsis in cases with local anesthesia. I have had that experience in my early cases, but since I have diluted the epinephrin I have not had experiences of that kind. I think we use epinephrin as a local anesthesia too strong and we have a reduction in the vitality of the tissues which favors intervention. Instead of using 4 or 5 drops of a 1:1,000 solution to the ounce I seldom use more than 1 drop. A second point to which I wish to call attention is some of the causes of recurrences. I think we are very apt to forget that there are in a large number of hernias a series of diverticular sacs. I mean the sacs which come out from the internal ring and form a double sac, i. e., a short trouser leg and a long trouser leg. Many of us were formerly satisfied with dissecting up and ligating the neck of the sac. We think we are ligating high up. When-

ever I find one having on the outer aspect a great deal of fat I put my finger in and see if there is a diverticulum, i. e., a pantaloon sac. Another cause is the comparative frequency of the concomitant occurrence of the direct and indirect hernia on the same side, parallel with each other and we are apt to overlook either the direct and the indirect. The next point is one Dr. Davis calls attention to, viz., the frequency of pain following hernia operations, and I have learned to be careful not to include any nerve fibers in my sutures. At the Michael Reese Hospital in Chicago, we uniformly do the Andrews operation of imbrication. It is the ideal operation in the type of cases of which we see so many, those with the very weak conjoined tendons. Our best result is in transplanting the cord invariably. I have not made an exception except in cases of undescended testes. The reason why this Andrews operation with the transplant of the cord is the ideal operation is that if you do not transplant the cord you have at the lower end a space that represents the pubic bone. You must make allowance for hard bony material with suture material. If you do transplant the cord you can work the many muscle tissues. I think that is the reason why a great many of these cases have recurrences, for the 34 per cent. of the total number of recurrences following the Ferguson operation.

DR. EDWARD W. LEE, New York: To what extent, if any, does Dr. Davis consider that traumatic hernias exist? Is there such a thing as traumatic hernia? Is there not a condition that predisposes to hernia that would let hernia be produced? I ask this question because in connection with a former paper the workman's compensation law and medico-legal cases this question is becoming one that somebody has got to decide very definitely to determine whether we actually have what may be called traumatic hernia.

DR. LINCOLN DAVIS, Boston: In regard to the question just asked: I do not know. I have no data on traumatic hernia. It is my belief that there is a predisposing factor present in all these cases, probably a pouch in the peritoneum which enables the bowel to come through suddenly, but I really have not gone into that question. I agree entirely with what Dr. Eisendrath said in regard to the double sac. I think that is a very important matter, and I have frequently found a direct hernia accompanying indirect and I think it is the direct hernia which is the problem to cure. Particularly in those direct hernias, I think Dr. Andrews' operation of imbrication and overlapping the layers is of great value. As to sepsis in local anesthesia, I think our figures are altogether too high and we have perhaps been a little slow in taking up local anesthesia. I think we are going to use it more and more. I am a little bit in doubt myself as to whether you can do quite as secure a closure under local as under general anesthesia. I think the infiltration of the tissues around the neck of the sac interferes with the most accurate and firm closure of the sac. We have not followed enough cases that have been done under local anesthesia to be convinced on that point. Dr. Marcy showed how the obliquity of the canal is one factor in preventing hernia and that is the condition that you wish to restore and it is for that reason that the direct hernia is so much more of a problem than the indirect. I found in these statistics which I have given you, that there was very little difference in the percentage of recurrence between the so-called Bassini and Ferguson operations. It was a little less than 1 per cent., I believe.

Loss of Weight of Musk.—Most of us remember that in our high school days the odor of musk furnished an illustration of matter in a finely divided molecular condition. We were taught that musk may give off odor indefinitely, meanwhile retaining its fragrance and weight unimpaired, or, at least, that any hypothetical loss of weight due to the subtraction of odoriferous particles was not susceptible of demonstration by the most delicate scales. According to the *Journal of the Franklin Institute*, however, this has been experimentally disproved. It is stated that musk, exposed for about seven months to a current of dry air, loses weight. When the loss of weight has ended, the musk is odorless, and its fragrance cannot be restored by exposure to damp air.

THE PREVENTION OF OBSTRUCTION OF THE PASSAGE OF GAS

FOLLOWING OPERATIONS ON THE COLON*

A. J. OCHSNER, M.D.

CHICAGO

A review of our work in surgical operations on the colon, as well as a review of the literature on this subject, impresses one most forcibly with the fact that, barring sepsis, which is now almost never encountered, and necrosis due to interference with the blood vessels or tension, both of which conditions can readily be avoided, the greatest danger to the patient comes from tension caused by obstruction to the passage of gas following colon operations. It seems, consequently, wise in performing any operation on the colon to plan the operation in such a manner as to make it impossible for a sufficient amount of gas to accumulate above the seat of the operation to endanger the success of the operation. If the surgeon has this fact definitely in view, it is usually not difficult to plan some provision which will be effective in preventing this source of danger. Several of these provisions have been fully described by a number of surgeons, but so far as I have been able to determine, the subject as applied to the entire colon has not received a due amount of consideration in surgical literature, and it

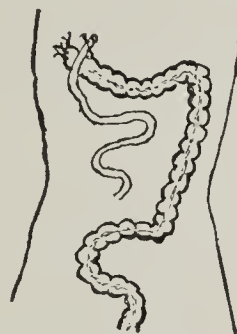


Fig. 1.—Francis Reder operation: anastomosis between ileum and colon.

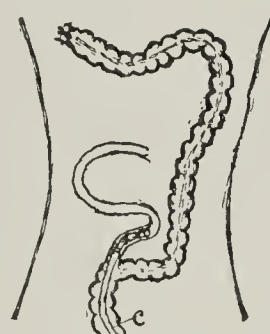


Fig. 2.—Excision of cecum: anastomosis between ileum and sigmoid flexure; C, drain extending into ileum.

seems worth while to undertake the task of presenting this subject at the present time together with diagrammatic drawings of the actual steps which we have employed in our clinic for this purpose.

Francis Reder has described an ingenious method for preventing pressure from gas in cases in which the cecum has been removed and in which the ileum is implanted into the transverse colon, as shown in Figure 1. The end of the ileum is passed out through a buttonhole in the abdominal wall about 10 cm. beyond the point at which the anastomosis between the closed end of the transverse colon and the end of the ileum is made. A tube is inserted into the free end of the ileum which will permit the gas to escape which may accumulate in the ileum, until perfect healing has taken place between the ileum and the transverse colon, and until the enterostomy opening functionates perfectly. When the drainage tube is removed, the remaining wound will heal spontaneously. If there is any difficulty about the healing of this wound, this can be stimulated by touching the lumen of the projecting intestine with the actual cautery.

In case the distance between the free ends of the ileum and the transverse colon is so great that an anastomosis cannot be accomplished without the use of a degree of tension which might endanger the vitality of the intestine, the same operation may be performed with equal safety by closing the free end

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

of the transverse colon, as indicated in Figure 2, and making an anastomosis between the ileum and the lower portion of the sigmoid flexure and carrying a rubber drainage tube, 1.5 cm. in diameter, up through the rectum and through the enterostomy opening into the ileum and fastening it in position by means of a few fine silk sutures at the point of anastomosis, a method which was introduced by Sir Arbuthnot Lane in connection with his operation of short-circuiting for the relief of intestinal stasis.

In performing this operation for intestinal stasis, an additional step in the same direction, represented

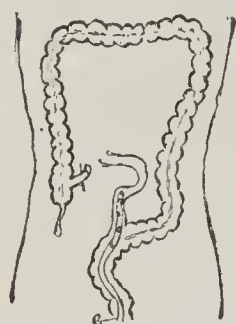


Fig. 3.—Anastomosis between ileum and sigmoid: stump of ileum placed through buttonhole in abdominal wall, with drainage tube extending through anastomosis opening.

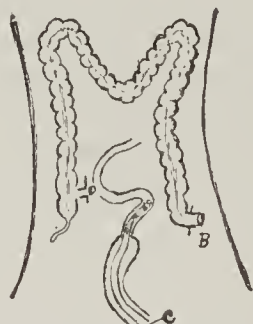


Fig. 4.—Exclusion of colon: stump of ileum and sigmoid passed through stab wound in abdominal wall; anastomosis between ileum and sigmoid.

irrigate the cecum freely in case there should later be backing up of fecal material into its lumen. This irrigation may be preceded by the injection through the artificial opening of glycerin and oil in order to soften the accumulation contained in the colon.

To the last step of this operation may be added an operation which was introduced by Dr. William J. Gillet of Toledo, Ohio, which is illustrated in Figure 4. The sigmoid flexure of the colon is severed near its lower end, and the proximal segment is passed through a buttonhole in the abdominal wall at a point marked *B* in Figure 4. The ileum is drained by means of a tube after the method described in connection with Figure 3. The tube is shown in position also in Figure 4. This operation makes it possible to leave in place the entire colon together with the omentum. The amount of drainage from the artificial opening connected with the colon is so slight that it does not materially inconvenience the patient, and still it affords the patient absolute protection against the accumulation of fecal material within the lumen of the excluded colon. This step reduces the danger of the exclusion of the colon enormously and increases the comfort of the patient very greatly, because the presence of the omentum will protect the small intestine against adhesions to the abdominal wall and against discomfort from changes of temperature.

In operations for intestinal stasis, this operation is very much simpler and safer than the operation which contemplates the removal of the entire colon, and it is in every way equally effective. It is not absolutely necessary to bring out the ileum through a buttonhole as shown in Figure 4, because, if there is an accumulation in the excluded colon, this can be removed by giving an enema through the opening *B*. In very stubborn cases of intestinal stasis, however, it seems that it is preferable to have both openings, so that thorough irrigation can be made use of.

In case a tumor or diverticulitis of the sigmoid has to be removed, leaving sufficient intestine to make it possible to reunite the severed ends, it is possible by

in Figure 3, may be added by leaving the cut end of the ileum which remains attached to the cecum open and passing this out through a buttonhole in the abdominal wall at a point opposite McBurney's point. This will enable the patient to

following this method to establish entirely satisfactory conditions. The colostomy, *B*, Figure 4, can then be placed in front of the distal end of the remaining colon. In case the tumor or diverticulitis is located in the descending colon, the excluded colon may be drained through an opening as indicated at *B* (Fig. 5), or at any other point immediately in front of the free end of the remaining colon. In this case also the remaining portion of the sigmoid and rectum and the lower end of the ileum are drained by means of a rubber drainage tube 1.5 cm. in diameter, sutured in place as indicated by the dotted lines *C* in Figure 5. Here again the stump of the ileum, which remains attached to the cecum (Fig. 6 *A*), may be closed with sutures, leaving the lumen of the remaining portion of the colon open at the point *B* (Fig. 6).

In cases in which the tumor or diverticulitis is located in the sigmoid flexure, in which the size of the tumor and its location make it possible to remove the entire growth and still preserve a sufficient amount of the intestine to anastomose the upper and lower ends directly, the method which has been described by Gibson, and illustrated in Figure 7, furnishes perfect conditions. The operation consists in fastening a rubber drainage tube of proper size into the upper segment of the colon by means of sutures, as shown at *A*, in Figure 7, and then invaginating the upper segment *A* into the lower segment *B*, as indicated at *D*, in Figure 7, and then uniting the two ends by means of two rows of carefully applied sutures. The drainage tube *C* carries away all the secretions that come from segment *B* of the colon, and by nourishing the patient entirely for a week or ten days by means of proctoclysis through the tube *C*, making use of some predigested food, it is possible to prevent accumulation completely in the remaining portion of the colon.

The same principle works out with equal satisfaction if a tumor has to be removed from the ascending or transverse colon in cases in which the amount of intestine to be removed is not sufficient to make union between the upper and lower segments possible by

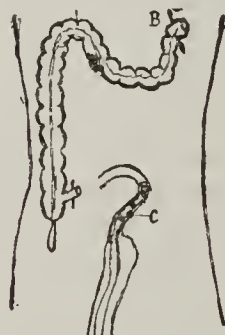


Fig. 5.—Anastomosis between ileum and sigmoid: stump of ileum passed through stab wound in abdominal wall; stump of transverse colon passed through stab wound in abdominal wall at *B*; excision of descending colon.

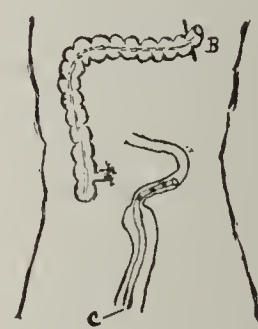


Fig. 6.—Same as Fig. 5 with stump of ileum sutured.

means of direct anastomosis. In all of these cases, however, the upper segment of the colon has usually been overdistended because of the presence of the obstruction of the tumor or di-

verticulitis, and it is consequently sometimes difficult to invaginate the upper into the lower segment, unless the drainage tube which has been chosen, as shown in Figure

7 *C*, is sufficiently small to prevent overfilling the lumen of the lower segment. In all of these cases, the use of proctoclysis with normal salt solution, to which some concentrated, predigested food has been added, will greatly facilitate the keeping of the colon free from gas.

In any operation on the colon in which the surgeon is not absolutely certain that he can obtain free passage of gas past the seat of operation by employing one of the various methods that have just been

described, or some other equally efficient method, it is always wise to place a rubber drainage tube into the lumen of the cecum or ascending colon, as shown in Figure 8, and to pass this out through a stab wound in the abdominal wall directly in front of the point at which the intestine has been perforated for drainage. It is well to use for this purpose a drainage tube 1 cm. in diameter over which a second drainage tube has been pulled which is just large enough to grasp the inner drainage tube when this has been pulled inside of the lumen of the other tube by attaching a cord to the inner tube and threading this through the outer tube, and then, by putting the inner tube on a stretch, the outer tube can be drawn on this readily; and as soon as the inner tube is relaxed it will fit tightly within the grasp of the outer tube as shown in Figure 8 A. It is then possible to suture the outer tube to the colon at the point at which it has been perforated so as to prevent leakage, the sutures passing only through the outer tube and leaving the inner tube entirely free for drainage. The colon is then pulled up tightly against the peritoneum opposite the stab wound, through which the drainage tube is carried out, and a few fine sutures unite the colon to the peritoneum and the transversalis fascia, thus making leakage impossible. This tube may be utilized for making proctoclysis or introducing liquid food or oil into the colon.

This method is also most useful as a preliminary operation in cases in which there is an obstruction in the colon in a patient whose condition does not warrant an immediate operation. The patient can in the meantime be tided over the critical period and operated on when the bad effects of the acute obstruction have subsided. This operation is so especially useful in cases of complete obstruction of the colon in very old patients, such as have been described very fully by Schumacher, in which no mechanical obstruction can be demonstrated, but who nevertheless are suffering from a complete obstruction. It is also useful in cases of cancer of the rectum in which one desires to make an excision of the tumor and bring down the sigmoid into the wound in the peritoneum at the time of the final operation, although in these cases an inguinal colostomy will more completely divert the contents of the colon, leaving the portion to be operated on entirely free from fecal material. There can be no doubt that drainage is absolutely indicated in these cases, and that the methods which have been illustrated above are simple and efficient, I am convinced by having employed them in a very large number of cases, which the lack of space prevents me from reporting at this time.

ABSTRACT OF DISCUSSION

DR. W. D. HAGGARD, Nashville, Tenn.: Every surgeon knows the difficulties we had originally with the operations of the colon when we found that the Murphy button, until

then our greatest dependence, was liable to be blown out by gas pressure. The Mickulicz operation has been so satisfactory because we could arrange for the immediate escape of gas if necessary. If gas does not pass over the extraventrated segment it is a simple matter to make a colostomy with a rubber catheter to allow gas to escape. The objection to the first operation diagrammed here is the possibility of fistula from the small intestine. To avoid this in an enterocolostomy it is advisable to leave the wound partly open down to the fascia and pack with gauze. The anastomosed area can be sutured gently to the abdominal wall. In a day or two, if the gas does not pass out, one can easily spread open a portion of the anastomosis with blunt scissors. The great majority of cases will not need this, but when it is needed it can be employed easily and simply. If no vent for gas is found necessary, there is no fistula left to deal with later. The utilization of the stomach, as illustrated in the drawing, passing through the rectum and through the opening into the small intestine is a real life saving procedure. The same can be said of the ultimate effect of the anastomosis of the small intestine into the sigmoid for real disease, but not for stasis because we do not know exactly what the trouble is, and neither do the intestines. Another useful procedure is the utilization of the appendix, as described by Mayo, of bringing it out on the surface and cutting it off flush with the skin and inserting a catheter for the escape of gas.

DR. CHARLES A. L. REED, Cincinnati: The operation described in Figure 1 is very interesting. I have accomplished the same purpose by making an end to side anastomosis and folding the end of the ileum into the side of the stump of the colon, then fixing the open end of the colon in the wound. In Figure 2 the only objection to leaving the upper end of the colon open is the occurrence of retroperistalsis with discharge of more than gas. After a while, however, it can be closed, and in the majority of instances, it will close itself. The ileocecostomy, as indicated by Dr. Ochsner, is an operation which I have practically abandoned because the reflux into the colon defeats the purpose of the operation. I cannot agree with Dr. Haggard that the presence of a stomach tube through the rectum and cecum into the small intestine is a life saving procedure which should be a source of comfort to the surgeon. I have found that the procedure sometimes causes angulation of the small intestine, sinks in like a lead pencil and the ileum angulates over it in a dangerous way. If any tube be inserted it should not be stiff, but a very soft flexible or rubber tube. These various other expedients, as they have been presented, simply show that in dealing with the intestinal problem, you have a large range of liberty, a large number of resources, and, given the mastery of the principles of intestinal surgery, the details will be determined by the case in hand at the moment of operation. The real surgeon never does any particular operation; he operates.

DR. A. J. OCHSNER, Chicago: The suggestions that have been made are very good. I have found no difficulty from leaving the ileum open, because the piece of ileum has been of sufficient length to close immediately on pulling out the drainage tube, which is not shown as being present in the drawing because I feared it might obscure the idea of placing the ileum in the particular position shown. I have used the Murphy button many times in making the anastomosis between the ileum and the colon, but I have had bad luck in two cases which I would not have had if the colon had been left open, which, of course, provides safety against the accumulation of gas and at the same time enables one to remove the button if it makes trouble.

Research.—The university is the natural home for research. The development of research institutes, except of those that have been built up around a great genius, and during the period of the active life of such a man, is apt, in the long run, to be more of a menace than help to the work of investigation. In a way the establishment of these institutes is a measure of university inefficiency. They mean that the universities have failed to rise to their full possibilities as centers of mental activity.—R. L. Wilbur.

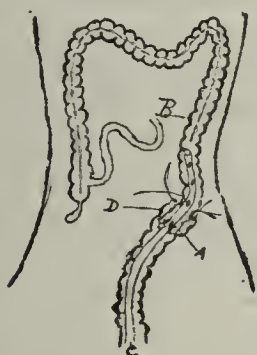


Fig. 7.—Reuniting of colon after excision of tumor: A, attachment of colon to drainage tube; B, descending colon; D, telescoping of upper into lower segment.

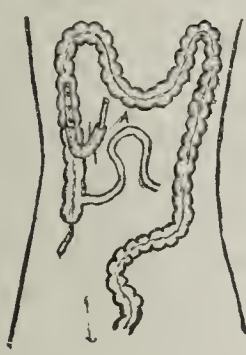


Fig. 8.—Double drainage tube, A, applied to colon proximally to obstruction to prevent accumulation of gas.

THE SUPERIORITY OF THE RIGHT SIDE ANUS

IN THE HANDLING OF PARTIAL AND COMPLETE
OBSTRUCTION OF THE LOWER COLON AND
SIGMOID IN CASES UNSUITED FOR
RADICAL OPERATION *

JOHN YOUNG BROWN, M.D.

Fellow of the American College of Surgeons

ST. LOUIS

Partial and complete obstructions are frequently encountered resulting from neoplasms, both malignant and benign, of the lower colon and rectum. The diagnosis of obstructions of this type can readily be made, the majority of them giving a history of chronic constipation with recurrent attacks of partial obstruction. The malignant types almost invariably present a history of bleeding and sloughing prior to complete obstruction.

When a patient is admitted to a hospital giving a history of acute obstruction of probably two or three days' duration, with stercoraceous vomiting and profound toxemia, it is not possible, nor is it necessary, to make a refined diagnosis of the exact character of lesion in the rectum or colon which is responsible for the obstruction, or whether it is due to intra-intestinal or extra-intestinal pathology.

The question that confronts the surgeon is how he can quickly and safely relieve the patient of the immediate cause of his illness, and in doing this, take fully into consideration the possibility of subsequent radical work. In a large majority of such cases it will be found after the acute condition has been relieved that they are inoperable from a radical standpoint. However, in a certain number of cases, it will be found that when the patient reacts from the acute condition, radical work can be done. In a series of six cases of acute obstruction of this type the writer has been able, by means of an ileal anus on the right side and exclusion of the large bowel, to relieve without mortality, these six acutely obstructed patients.

The right side anus has been chosen by the writer for the following reasons:

1. It can be rapidly made.
2. It admits of immediate and proper drainage of the distended bowel above the obstruction.
3. It excludes completely the large bowel, and we have found that as soon as the fecal current is turned from the large bowel, partial relief of the obstruction in the excluded bowel follows in a very short time; irrigations through the tube passed through the ileocecal valve and the use of the rectal tube will result in complete evacuation of the contents of the large bowel.
4. Should it become necessary to reestablish the continuity of the bowel, this can be done with the greatest possible ease. Whereas, if a left side colostomy had been done the colostomy would have relieved the acute condition, but in the event that subsequent work became necessary, the difficulties of restoring bowel continuity would stand out in marked contrast to the ease with which this can be accomplished when the anus is on the right side.

In one of the writer's cases the obstruction was due to an old pelvic inflammation in which the sigmoid and rectum participated. In this case a radical operation

was subsequently performed and the patient is now in excellent health.

The possessor of an artificial anus is not to be envied. It is, however, astonishing how little discomfort results from the anus on the right side. There is comparatively no odor to the discharge, and with a properly adjusted receptacle the patient can live in comparative comfort. While the anus on the left side can be more readily controlled, the odor from an anus of this type is most objectionable.

The technic of the operation is as follows: Prior to giving the anesthetic, the stomach is washed until the water comes back clear. Under ether or gas, incision is made through the outer border of the right rectus muscle. The cecum is located and the small bowel is pulled up, clamped and cut across two or three inches above the ileocecal valve. One half of a Murphy button is fitted in a good-sized rubber tube. This is inserted and purse-stringed in the proximal intestine. A tube of the same size is next inserted into the distal ileum and through the ileocecal valve. This is held in position by a purse-string. Both the proximal and distal ends of the intestine are brought out and fixed at the lower angle of the incision. The wound is closed in the usual manner. The protruding bowel and tubes are carefully surrounded by gauze, and the stomach is again washed out before the patient leaves the table. The tube through the ileocecal valve gives exit to the gas contained in the large bowel, whereas the tube in the proximal ileum drains the small bowel.

In the event that subsequent radical work becomes necessary, this can be done in a manner to meet conditions. If the original obstruction was due to extra-intestinal pathology, this pathology can be removed and the restoration of bowel continuity can be made by doing a lateral anastomosis or an end to side anastomosis of ileum to cecum. If resection of the colon becomes necessary, the fact that the large bowel has been excluded enables the operator to work on the left side under ideal conditions.

ABSTRACT OF DISCUSSION

DR. JEROME MORLEY LYNCH, New York: I am very glad to know that the profession is beginning to recognize the value of ileostomy in surgery. This operation is comparatively old. It was first performed twenty years ago by an Italian. Reference to it is scattered through the literature. At the time I first performed this operation, for a definite purpose, nearly four years ago, it was on one of my associates, Dr. Treby Lyon, who had a very severe infection of the bowel which quite incapacitated him. The results of our investigations in that case were published. We were fortunate in having a physician to experiment on as he became very much interested in the work. The contents of the ileum were examined at the Yale laboratories. The patient was taken to Wood's Hole and there Dr. Bradley investigated the enzymes from the lower ileum. Other experiments and observations were made, all of which are on record. The most important lesson from this case was that the patient with an ileostomy is just as comfortable, if not more so, as a patient with a colostomy. The patient has gained 40 pounds, is back in practice, and his condition does not interfere with his duties. He refuses the risk of having the ileostomy closed because of polyposis. I operated on the wife of a New York physician under novocain. This woman, who had been bedridden for a year, was able to take up her household duties within a short time after the ileostomy was performed, but most remarkable of all was the sudden and complete restoration of her mental faculties, which had been deranged for a year. Indeed, she had not known her family for more than three months prior to opera-

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

tion. She was mentally clear in thirty-six hours. Dr. Draper and I have thought this sudden change suggested strongly a relationship of this toxemia to the nonbacterial form shown by us to occur after duodenal obstruction.

DR. J. SHELTON HORSLEY, Richmond, Va.: I recently had a case in which I believe the operation of Dr. Brown saved the patient's life and naturally I feel kindly toward it. The patient had multiple papillomas of the colon which had become ulcerated and were discharging blood and mucus. Under the Brown operation he picked up wonderfully, though he is not yet well. Dr. Brown says he uses the lower stump of the ileum, but the abstract of his paper in the program refers to the cecum as the point at which he inserts the tube for irrigation of the colon. I think the ileum has many advantages: First, the ileocecal valve prevents the back flow from the cecum. Second, if later the fecal current is to be reestablished through the colon it can be done through the distal stump of the ileum if 6 or 8 inches of it are left, and so the beneficial effect of the ileocecal valve in preventing the flora of the large bowel from having free access to the ileum will be maintained. If the ileum is cut across close to the cecum and the cecum opened it would be necessary in reestablishing the fecal current to anastomose the ileum directly to the cecum or colon.

DR. JOHN YOUNG BROWN, St. Louis: We insert the tube in the distal gut and through the ileocecal valve. It is retained by a purse-string. In the proximal bowel, half of a Murphy button is fastened into the rubber tube. This is inserted after the bowel has been drained. The button is simply used to retain the tube in the proximal gut. One of the most astonishing things following this simple operation is the rapidity with which the excluded large bowel tears up. By the use of the rectal tube and irrigations through the distal tube, the excluded bowel can be cleansed thoroughly in a very short while. In regard to accurate diagnosis in obstructive lesions of the sigmoid, colon and rectum, this is made with great difficulty. The same conditions present themselves in this locality that are found in the upper abdominal tract. Yesterday Dr. Crile reported three or four cases of pyloric obstruction in which, at the time of operation, with the pathology in his hand, a diagnosis of malignancy was made. Following gastro-enterostomy these cases cleared up, proving conclusively that there existed no malignancy. The same thing we find in the lower colon. The high mortality in intestinal obstruction is due to three causes: First, late operations; second, too much surgery, and third, improper treatment prior to operation and the bad handling of these cases after operation.

LIPECTOMY AND UMBILICAL HERNIA *

WALTER LATHROP, M.D.

HAZLETON, PA.

The fact that umbilical hernia is a dangerous abdominal condition, if allowed to exist without an attempt at relief, is sufficient reason for calling attention to this defect of anatomy. The radical treatment by the overlapping, or Mayo method, is so well known that it seems almost superfluous to mention it, but it is valuable enough to stand repetition.

After birth there are several changes that take place in the closing of the umbilicus. Bickham says:

1. Contracture and shrinking of the umbilical ring, dividing its closure the umbilical vessels running through the ring;
2. Clotting of the vessel contents, proliferation of connective tissue, and contraction of the muscle fiber of the vessels, as a result of this, a firm fibrous scar is thus formed at the site of the umbilicus.

We can easily understand that the scar tissue may remain weak for some time, and also may be subjected

to strain, and later give rise to hernia, which usually comes by way of the umbilical ring, or may even come through the abdominal wall in the vicinity of the ring. Women are more subject to this hernia than men, the proportion being about twelve to one. The relaxation of their abdominal muscles, especially distention due to pregnancy, tends toward this condition. These hernias often reach a very large size, and may contain omentum, stomach and large intestine. Usually it contains the former, and when of long standing has numerous pockets or sacs; is often irreducible and painful, and always a source of danger from strangulation. I had one case in which there was a complete diastasis of the recti muscles. There was an enormous mass hanging down, consisting of intestines, omentum and a distended gallbladder. The trouble began after pregnancy, and was given no attention till after the third child was born, when the extreme protrusion, discomfort and pain caused the patient to seek aid. Belts and pads were used in vain, and she finally came for operation. The adherent structures were separated with difficulty, the gallbladder was opened and a large number of stones removed. The gallbladder was closed without drainage (at present I would do a cholecystectomy) and gave no more trouble. The diastasis was closed by overlapping the fascia, and a continuous Cushing mattress suture was used. The patient made a good recovery and had no sign of recurrence after ten months.

Before the advent of the overlapping method in ventral hernias, the treatment of these conditions, especially when of large size, was very unsatisfactory and often meant a recurrence within a very short time. When muscle was used it formed a weak point of resistance to abdominal pressure, and we know that fascia is essential for support in these cases, for the aponeurotic structures are very strong, and by the overlapping we have a splendid plane of resistance. The technic is too well known to need any description before this section.

It is in connection with umbilical hernias and pendulous abdomens that I wish to dwell on the subject of lipectomy, or excision of fat from the abdominal wall. Kelly in 1910 put the operation on a firm basis, though Maylard, Schultz, and Meinhold had previously reported cases in which sections of fat were deliberately removed to restore contour and comfort to obese women, whose abdomens were large and whose fat was the cause of much discomfort. Lipectomy is a very beneficial procedure in nearly all indicated cases. We all know that when fat becomes excessive and fails to perform its functions it becomes a nuisance, and a burden to its owner. Fat has, among its uses, the preservation of structure and the aiding of beauty by rounding out or helping the symmetry of the body. An extra amount renders the usual activities of life a burden when exercise is needed, enjoyed or demanded. If sedentary habits are aided by the possession of too much fat, the vital organs are more or less affected in their power of metabolic change and the individual usually eats heartily with a continued increase in weight. When the fat is distributed evenly, we can only suggest diet, proper hygiene and exercise. Such patients need the care of a physician, and are of little general interest, for they usually pay little heed to the advice of the doctor, are often discouraged by slow improvement and become users of patent remedies, of whose virtues they read in skilful advertisements, and thus injure their systems by powerful, injurious con-

* From the State Hospital, Hazleton, Pa.
Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

coctions. Another class is different; here we have large areas of fat that can be removed, and give relief in most instances. Let us consider the accumulation of adipose tissue on the abdomen, as seen so constantly associated with umbilical hernia. Exercise is seldom taken in any sort of proper manner, sedentary habits lead to the usual hepatic troubles, to constipation, and more or less cardiac lesions. Hernia may or may not be present. The woman with a pendulous abdomen frequently wears a so-called form-fitting, or stomach-lifting, corset, in an effort to mold the form into a more pleasing appearance; and again these women are prone to eczema, or to chafing in the folds of fat lying in each groin. These individuals can be relieved of some of this surplus, and the folds of fat removed from the lower abdomen in sufficient amount to produce comfort and obliterate the soreness, or chafing. The operation, whether done deliberately for this purpose, or during the course of operation for umbilical or ventral hernia, is easy to carry out, and requires only careful attention to detail, such as hemostasis, careful apposition, and the provision for drainage at each end of the large incision, as there is oozing of serum and fatty débris for several days. If the abdomen is seized above and below, we find a large amount of tissue can be raised between the hands, which when brought together will give an idea of how much should be removed. The incision is elliptical, beginning well over on the side and extending to the corresponding point opposite, while its center below is a few inches above the pubis, and the upper above the umbilicus. It should go to the fascia, and then the whole amount of tissue in the area should be removed. The closure is easy and should be done with deep catgut sutures, reinforced with silkworm gut. We usually wipe out the wound with 3 per cent. iodine before closing, not forgetting to provide drainage, as already mentioned. The after-treatment, if hernia has been repaired, is rest in bed for from eighteen to twenty-five days; a semi-sitting posture is usually best. If lipectomy only is done, then a recumbent position for eight or ten days, followed by back-rest for a few more, and then out of bed. The diet is chiefly milk in small quantities and water with lemon juice. Patients frequently lose several pounds during convalescence, and if advice is followed as to diet and exercise, they will be greatly benefited for a long time. One case is reported in which 65 pounds was lost in a few weeks, including what was excised from the abdomen (Castle).

From one patient I removed nearly 16 pounds. She was a very stout woman who had an umbilical hernia. She made a good recovery, and four months later had lost a total of 30 pounds and felt better than she had for a long time. She certainly looked the part. There is little doubt but that lipectomy in properly selected cases is beneficial, and will give enough relief to last a long time, especially if postoperative instructions are followed regarding diet and exercise.

In connection with this subject there is a class of cases often trying to the surgeon, and in which a small lipectomy is most helpful. I refer to the difficulties of operating on stout patients in whom the thick wall of fat increases the distance from the surface to the parts to be reached, compelling the operator to work in a deep space with a wall of fat on each side. Some of these cases make accurate suturing very difficult by reason of this condition, and Howard Kelly¹ has made

a valuable suggestion by which the difficulties are overcome in a large measure by an oval incision of skin and fat down to the internal abdominal wall, removing the section either transversely or in a vertical direction, corresponding to, or at right angles with, the deeper incision. This removes the thickness of wall down to the fascia, and from there into the abdominal cavity the depth is not great and the opening and closing is made comparatively easy, while final closure of skin is not difficult. This also reduces some fat, though of course much less than in a regular planned excision or lipectomy.

Kelly,² in speaking of these cases, says in part:

I wish to emphasize the value of removing wedges of skin and fat in patients who are not troubled with obesity, but simply and solely for getting rid of part of the thickness of the abdominal wall and making the field of operation more accessible.

And as regards lipectomy itself he says:

I do it regularly whenever I have a patient who has a heavy pendulous mass of fat on her abdomen, or in whom the mass of fat is sufficient to make a crease in the lower abdomen and stands in the way of her taking proper care of her person. I consider the operation one of sufficient importance to be done solely for the relief it offers in appropriate cases.

In bad cases of umbilical hernias a valuable modification of the Mayo operation is made by carrying the incision through the fascia on both sides all the way to, or beyond, the outer border of the rectus muscle. This gives a strong, lasting, lateral support and takes the strain off the middle operation at the weakest point of the tissue (Kelly). Wells³ reports seven cases of umbilical hernia with lipectomy; one patient died from embolus on the seventh day. The latest statement of Dr. Kelly was in March, 1916, in which he says:

I do lipectomy constantly, either in conjunction with abdominal operations or simply to relieve the patient of the pendulous load of fat. I have often seen the results several years afterwards; one recently of five years' duration, in which there is no recurrence, and the abdomen remains with a straight front and well supported.

W. L. Estes states that he frequently makes use of lipectomy, and especially the removal of a section, or wedge, to facilitate easier work in the deep structures.

Dr. John G. Clark⁴ says that "where there is an excessive accumulation of fat in the anterior abdominal wall, and where it is giving a great deal of inconvenience, especially in association with a ventral hernia, we invariably take an oval wedge transversely out of the abdomen." Clark⁴ further reports the case of a woman who weighed 340 pounds, short in stature, and whose abdominal wall reached below the knees when she was standing. She was unable to walk on account of this mass, blood pressure was 180 mm. of mercury in one arm, and 240 in the other. She insisted on operation, though she was a bad surgical risk. He removed a wedge weighing 32 pounds. She was toxic for a short time after operation, but ultimately recovered, and went home.

Dr. T. C. Cullen⁵ reports a case of umbilical hernia in a woman, aged 35, weighing 464 pounds. The abdomen hung down to her knees, forcing her to keep off her feet as much as possible. She was becoming a semi-invalid, and insisted on having some relief. It was decided to do a lipectomy, as advocated by Kelly,

2. Kelly, Howard: Personal communication to the author.

3. Wells: *Am. Jour. Surg.*, 1916, xxx, 107.

4. Clark, John G.: Personal communication to the author.

5. Cullen, T. C.: *Diseases of the Umbilicus*.

1. Kelly, Howard: Removal of a Skin Fat Wedge, *Ann. Surg.*, liii, 364.

in connection with removal of the hernia. The size of the area removed, when measured, was 36 inches from side to side, and 19 inches from above downward. The omentum in the sac was so intimately blended with the walls that this portion was cut off and removed, together with sac and redundant tissue. The hernial opening was closed by the Mayo method, kangaroo tendon being used for mattress sutures. The abdominal wound was brought into apposition by silver wire and silkworm gut. Drainage was provided. The final result was excellent, and the abdominal incision contracted to 27 inches. Eight months later the patient was in excellent health. It is interesting to note that Cullen⁵ describes seven separate conditions of disease of hernia of the umbilicus, namely:

1. Hernia into the umbilical cord.
2. Amniotic hernia.
3. Congenital ripping off of a hernial protrusion.
4. Small umbilical hernia at birth.
5. Serous umbilical hernia.
6. Umbilical hernia in the adult.
7. Cysts of the umbilicus.

Simmons⁶ reports the end-results in seventy cases of umbilical hernia operated on in the Massachusetts General Hospital. He states that small hernias in children and thin adults may be cured by any operation that removes the sac and closes the defect in the wall.

Umbilical hernia in stout adults is difficult to cure, the Mayo operation giving the best results, and by other methods the percentage of recurrence is 46.4 and usually takes place in less than one year.

Our own patients whom we have been able to follow have shown recurrence in about 12 per cent. of cases, and these were in stout persons; but since the routine practice of lipectomy the cases having a return are fewer.

John H. Gibbon⁷ of Philadelphia reports a case of lipectomy in a woman, 47 years of age, weighing 315 pounds. The section removed weighed 21 pounds, and the incision was 38 inches long. Six months later this patient came under the care of Dr. McCrea, and again weighed 315 pounds. Under medication and diet she was reduced to 265 pounds, and she has managed to keep it down and is quite comfortable. Gibbon further states that he has several times combined lipectomy with the operation for ventral hernia or for some intra-abdominal condition.

My experience has been derived from 103 cases of umbilical hernia, in fifty-seven of which some excess fat was removed, and in forty-six a regular lipectomy operation was done. There were eighty-nine cases with no mortality. In thirteen cases with strangulation there were four deaths. One other death occurred twenty-two days after operation; 22 pounds of fat were removed and the patient, a man weighing 325 pounds, did well till after the second week, when his kidneys began to fail and he gradually succumbed. This was the only fatality in the lipectomies, and it is possible that the four deaths recorded might have been prevented had the patients been brought to the hospital sooner; but they were late cases and given the only chance. The average amount of fat removed was from 2 to 6 pounds. Dr. Gibbon's case shows the importance, as already mentioned, of careful diet and exercise following the removal of considerable fatty tissue, otherwise the patient will be helped for only a short time.

ABSTRACT OF DISCUSSION

DR. W. WAYNE BABCOCK, Philadelphia: In regard to deposits of fat in the anterior abdominal wall, which are so frequent, it is important to remember that fat is somewhat like glandular tissue and stores up excessive fat within its cells. When adipose tissue is excised it does not regenerate, and so, with removal of fat there is removed from the body in that particular zone the chances of fatty recurrence, and the completeness of the fatty removal indicates the degree of freedom from fat in that particular part of the patient's body thereafter. In the abdominal wall, as Dr. Lathrop has said, the best incision is a vertical one. The older transverse type is not as well adapted because in bringing the margins together there are developed at the flanks horn-like projections which are unsightly and must be removed to secure a good contour. The vertical incision may be so curved as to give the patient any shape which her particular type of body will permit. After the removal of the skin and fat with extensive undercutting there comes also the reconstruction or the reenforcement of the deeper layers of the anterior abdominal wall. The fat not only makes the patient unwieldy but by traction across the weakened anterior abdominal wall predisposes to hernia. Most careful reenforcement is sometimes insufficient because the tissues have become stretched and the muscles attenuated. In these cases other reenforcement is to be considered, and here we may consider a free transplant taken from the fascia lata or other fascia of the body, or what I have found more helpful, some alien substance. Of the alien substances, silver, in the form of filagree, has been suggested by Bartlett. It is of great value but has the rather unfortunate defect that as time goes on the silver strands tend to fragment and possibly cause pain. To overcome this, I have within the last two years laced the deep layers left weak after imbrication and suturing with a continuous lacing, as we lace a shoe, with fine silver chain such as is employed by jewelers. That having a caliber of about No. 2 catgut has a tensile strength of 13 or 14 pounds. The lacing can be done quickly with an ordinary needle. Sometimes after the reduction of, for instance, a very large scrotal hernia we find that the patient dies because the abdominal cavity has not become adapted to the sudden increase in tension. In one of my cases the tension resulted in cardiac failure the third day after the operation. In two cases the patient developed glycosuria which was accompanied by somnolence and symptoms of impending diabetic coma. Under large doses of alkalies both patients recovered, but the possibility of producing pancreatic diabetes from undue tension must be considered.

DR. H. O. MARCY, Boston: Horatio R. Storer of Boston did a great deal of excellent surgery. The first case of umbilical hernia operated on in Boston with recovery was by him in the early sixties. He was condemned by many and some said he should not be permitted to practice surgery. From that day to this there have been great changes. I wish to call your attention to a method of mine used many years ago in which instead of overlapping, I do what you might call flap splitting. I have never seen the abdominal wall give way when I have reconstructed the abdominal parietes in this way. Removal of fat is certainly a very interesting and profitable sequence to this. Most of these patients do have pendulous abdomens. I have gone one step farther; almost always one will find the omentum loaded with fat like leaf lard in the hog. This I have taken away in order to have room in the abdominal cavity for the retention and function of the abdominal organs. Having lost two patients from the greatly increased intra-abdominal pressure led me to study this all the more carefully, owing to the return of the contents of the hernial sac within the abdominal cavity. The lateral division of the abdominal wall brings the coapted surfaces into a very wide union. These are held in apposition by three layers of buried kangaroo tendon sutures.

DR. W. A. LATHROP, Hazleton, Pa.: I want to emphasize what Dr. Babcock said in reference to the importance of giving alkalies in cases where a large amount of fat is removed.

⁵ Simmons: Boston Med. and Surg. Jour., March 9, 1916.
⁷ Gibbon, John H.: Personal communication to the author.

THE ACTION OF VARIOUS "FEMALE" REMEDIES ON THE EXCISED UTERUS OF THE GUINEA-PIG *

J. D. PILCHER, M.D.

W. R. DELZELL

AND

G. E. BURMAN

OMAHA

Among the drugs listed as unimportant, inactive or useless in the reports of the Council on Pharmacy and Chemistry of the American Medical Association are a number that have been reputed to possess certain "tonic" or "sedative" actions on the uterus. These drugs have never been studied pharmacologically; clinical observations on their usefulness are either entirely wanting or are inconclusive, and undoubtedly they would have fallen into disrepute long ago had they not been foisted on the medical profession in the form of a long list of proprietary preparations and on the public in the form of "patent" medicines.

These drugs, and specimens of the claims that have been made for some of them in medical literature or in proprietary medicine advertising, are as follows:

Black haw (*Viburnum prunifolium*): "sedative, antispasmodic, nervine and tonic . . . of value in all congested, inflamed and irritable conditions of the uterus, ovaries and adnexa." "Will certainly relieve dysmenorrhea."

Blue cohosh (*Caulophyllum thalictroides*): ". . . quite an efficient remedy to increase the force of uterine contractions . . . of service in the treatment of spasmodic dysmenorrhea."

Cramp bark (*Viburnum opulus*): "A uterine tonic and sedative of surprising potency." ". . . highly beneficial in the cramps of disordered menstruation, in the convulsions of pregnancy, in spasmodic contraction of the bladder and in cramps and spasms in general . . . anti-abortion and alterative to the reproductive system."

Liferoor (*Senecio aureus*): "Regulates the functions of the uterus and allied organs, diminishing secretion when excessive or increasing it if scanty. It also exerts a tonic effect on the uterine adnexa, and is especially indicated in amenorrhea, menorrhagia and chlorosis."

Jamaica dogwood (*Ichthyomethia piscipula*, *Piscidia piscipula* or *Piscidia erythrina*): "Through its action on the muscular system it can supplement viburnum and neutralize hydrastis in spasmodic dysmenorrhea."

Pulsatilla (*Pulsatilla pratensis* or *Anemone pulsatilla*): "a curative in uterine colic and . . . a valuable remedy in inflammatory conditions of the uterus and ovaries . . . a valuable tonic stimulant to the uterine fibers."

St. Mary's thistle (*Silybum marianum*, *Mariana mariana*, *Carduus marianus*): ". . . there is no other remedy in the materia medica of equal value in the treatment of chronic uterine hemorrhage and

melena, inasmuch as it not only checks the immediate flow, but by continued use remedies the causes on which it depends, regulating and restoring the natural portal circulation, and, where amenorrhea depends on such irregularity, it tends to restore the normal flow."

Skullcap (*Scutellaria lateriflora*): ". . . possesses tonic, nervine and antispasmodic properties in a high degree . . . of inestimable value in the treatment of amenorrhea, dysmenorrhea, menorrhagia and kindred disorders."

Unicorn root (*Aletris farinosa*): "Exerts a specific influence upon the uterus, imparting tonicity and vigor to that organ."

Valerian (*Valeriana officinalis*): "is antispasmodic and a gentle stimulant to the nervous and circulatory systems . . . is a valuable remedy in all forms of hysteria."

Wild yam (*Dioscorea villosa*): ". . . a powerful antispasmodic, relieving uterine pains, cramps, etc."

In addition, several drugs were examined for which few specific claims have been made, or none at all, but which are ingredients of various more or less extravagantly advertised "patent" or proprietary medicines. These are: blessed thistle (*Cnicus benedictus* or *Carduus benedictus*), false unicorn (*Chamaelirium luteum* or *Helonias dioica*), lady's-slipper (*Cypripedium pubescens*), motherwort (*Leonurus cardiaca*), passion flower (*Passiflora incarnata*) and squaw vine (*Mitchella repens*). Mountain maple (*Acer spicatum*) was examined because it is said to be substituted for cramp bark (*Viburnum opulus*), which is believed not to have been on the American market for a number of years. As a control chestnut bark (*Castanea dentata*), a drug that has no uterine action, was employed.

This paper is a summary of a preliminary pharmacologic investigation of these drugs on the isolated uterus of the guinea-pig. The guinea-pig was chosen, as the uterus of this animal is usually more active under experimental conditions than that of other animals.

METHODS

A strip of the uterus was attached to a muscle lever and immersed in a bath of well oxygenated Tyrode's fluid¹ and the contractions recorded on smoked paper. On immersion in the bath there is usually a latent period of from a quarter of an hour to an hour before the movements are initiated or become regular; frequently the strips do not become active. After the registration of a satisfactory control tracing, the drugs were added to the bath in the proportion of 1 or 2 parts of the drug to 1,000 of the bath.

The strip remained in the bath until there was evidence either of the activity or inactivity of the added drug. Before a drug was deemed inactive it was left in contact with the strip of uterus for about fifteen minutes, as a rule, but occasionally for an hour or even longer, before renewing the bath and adding fresh drug. The active preparations, as a rule, caused a prompt change in the character of the tracing; usually they were allowed to act but a short time as it was found that prolonged action frequently destroyed the usefulness of the strips for other experiments. A few experiments were always made to show that the action of a given drug was persistent. The fluid extracts an

* From the Pharmacological Laboratory of the University of Nebraska, College of Medicine.

* This investigation was undertaken at the suggestion of the Therapeutic Research Committee of the American Medical Association; the Association assumed part of the expense of the investigation.

* The detailed results and tracings will appear elsewhere.

1. Tyrode's fluid contains the salts of the blood in isotonic quantities.

the freshly prepared infusions of each drug were employed.²

As the fluidextracts were alcoholic solutions, control experiments were made with equal amounts of alcohol, and these showed that the alcohol of the extract had no effect on the muscular strips in the concentrations used in these experiments; the fluidextracts, evaporated at about 45 C. (113 F.), manifested the same action as the fluidextracts themselves.

The interpretation of the activity of a drug was judged by the change in the character of the muscular contraction. Theoretically the action could be manifested in three ways, on the amplitude and rate of the excursion or on the muscular tone. Practically it was found that, with but one exception, the size of the excursion was the feature affected; the action on the rate was always secondary to this. In but a single instance was the tone primarily affected; secondarily, a number of drugs slightly decreased the muscular tone. When the contractions were altered the tendency was always toward a reduction in the amplitude of the excursions; in no instance did a drug appreciably increase the excursions.

RESULTS

The active drugs.—The following drugs lessened the amplitude of the excursions or, in the stronger solutions, caused their complete cessation: Unicorn root (*Aletris farinosa*), pulsatilla (*Pulsatilla pratensis*), Jamaica dogwood (*Ichthyomethia piscipula*), and figwort (*Scrophularia nodosa*); somewhat less active were valerian (*Valeriana officinalis*) and lady's-slipper (*Cypripedium pubescens*); the drugs possessing very weak actions were wild yam (*Dioscorea villosa*), life root (*Senecio aureus*) and skullcap (*Scutellaria lateriflora*). The infusions of figwort, Jamaica dogwood and lady's-slipper were active after the manner of the alcoholic preparations, but to a much lesser degree. The infusion of motherwort possessed very insignificant depressant properties, although the fluidextract was inactive. Blue cohosh (*Caulophyllum thalictroides*), even in the 1:2,000 solution, very promptly put the strips of uterus practically into a state of tonic contraction or tetanus. The action was very persistent and the normal muscular state was not resumed after the strips were placed in fresh Tyrode's solution. The infusion was quite inactive.

The inactive drugs.—The following were quite inactive or inert, both the fluidextract and the infusion: black haw (*Viburnum prunifolium*) the bark of both root and stem, cramp bark (*Viburnum opulus*), squaw vine (*Mitchella repens*), chestnut bark (*Casanea dentata*), false unicorn (*Chamaelirium luteum*), passion flower (*Passiflora incarnata*), blessed thistle

(*Cnicus benedictus*), St. Mary's thistle (*Silybum marianum* or *Carduus marianus*) and motherwort (*Leonurus cardiaca*); sodium valerianate was also inactive in solutions up to 1:1,000. The strips were allowed to remain in the solutions of these drugs in concentration up to 1:500 for some time (many of them for an hour) without evidence that the drugs changed the character of the tracings in any way. Control experiments showed that the strips were capable of being depressed or stimulated by these drugs so that there can be no question of their complete inactivity.

COMMENT ON RESULTS

The question arises, How far can the results of this work on the excised strips of uterus muscle be compared to the action in the intact animal and in the human uterus? There are no experimental data on the point at present, but judging by analogy to other drugs, notably pituitary extract and ergot, it may with perfect safety be assumed that the action would be the same on the uterus in situ as on the excised strips of uterus, provided the drug reached the uterus in a similar concentration; this refers to the action on the muscle directly and on the nerve endings; any action on the local circulation can be dismissed, as no known drug acts specifically on the circulation of any organ. The action on the human uterus would be the same, as a similar physiology implies a similar pharmacology. It is improbable, however, that the concentrations of the drug used in this work could be attained in the body in whatever way they were administered. From preliminary work on another form of smooth muscle (intestine) it seems highly probable that these drugs act in no sense specifically on the uterus but on smooth muscle in general, so that, even granted that they could be taken in sufficient dosage to exhibit their characteristic action on the uterus, it is more than probable that the action on the other forms of smooth muscle (intestine, blood vessels, etc.) would overbalance any favorable effect there might be on the uterus.

If the term "uterine tonic" implies a drug that increases the muscular tone of the uterus, with one possible exception (blue cohosh), the members of the group examined can be said to be absolutely void of any such action, for none of them increased the tone at all and many of them somewhat lessened the tone secondarily, although the majority were quite void of any action. Without question, then, the entire list of "uterine tonics," whose supposed activity depends on the presence of the drugs here reported, can be emphatically stated to be inactive; those containing blue cohosh may be a possible exception to the statement but, in view of the difference between the concentration likely to be attained in the body and that used in the experiment, it is highly improbable that this drug could manifest the same action in the body that it did on the excised uterine tissue. It is rather striking that some of the proprietary or "patent" nostrums are said to contain both cohosh and one or more of the depressant drugs; it is hardly worth while entering into a discussion of the result of mixing two or more preparations of this class with directly opposite physiologic actions.

The work shows further that the domestic use of teas made from these drugs, for any supposed action on the uterus, is quite irrational, for water either extracts but a very small part of any of the active principles of the drugs or, in the majority of them,

2. All the preparations used were furnished by the American Medical Association Chemical Laboratory. The crude drugs were identified and found true to name as follows, by Prof. Henry Kraemer: blue cohosh (*Caulophyllum thalictroides*), false unicorn (*Chamaelirium luteum*), figwort (*Scrophularia nodosa* or *marylandica*), Jamaica dogwood (*Ichthyomethia piscipula*), lady's-slipper (*Cypripedium pubescens*), life root (*Senecio aureus*), motherwort (*Leonurus cardiaca*), mountain maple (*Acer spicatum*), passion flower (*Passiflora incarnata*), pulsatilla (*Pulsatilla pratensis*), skullcap (*Scutellaria lateriflora*), squaw vine (*Mitchella repens*), unicorn root (*Aletris farinosa*), valerian (*Valeriana officinalis*); Prof. E. N. Gathercoal: black haw (*Viburnum prunifolium*), blessed thistle (*Cnicus benedictus*), and cramp bark (*Viburnum opulus*). A fluidextract was made by L. E. Warren of the American Medical Association Chemical Laboratory from each one of the following named uterine drugs: black haw (*Viburnum prunifolium*), bark of root; black haw, bark of stem; cramp bark (*Viburnum opulus*), and mountain maple (*Acer spicatum*); all other fluidextracts were made by different methods and their identity was not established, but, as the actions of two preparations of each drug was about the same, their identity is probably authentic.

none at all. The principles are probably of a resinous nature and therefore practically insoluble in water.

CONCLUSION

Not only are the drugs in this list unimportant, as they have been styled; they are also practically worthless. Their use is harmful as well as futile, since it tends to perpetuate therapeutic fallacies.

OPERATIVE TREATMENT FOR THREATENED GANGRENE OF THE FOOT

WITH SPECIAL REFERENCE TO REVERSAL OF THE CIRCULATION *

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Threatened or slow gangrene of the foot follows a diminution of the caliber of the blood vessels supplying the foot. This results from a disease which may be clearly systemic or which may manifest itself chiefly in the blood vessels of the lower extremities. Sudden occlusions, as by emboli, with consequent rapid gangrene, do not come under the title of this paper.

The diseases of the vessels which cause slow or threatened gangrene of the foot may be divided into four groups:

1. *Arteriosclerosis*.—This condition is caused by toxic products which may come from deranged metabolism, as in nephritis; from infectious diseases, as syphilis, or from general wear and tear, as in old age. It is found chiefly in the arteries. There is excessive thickening of the media or intima or of both.

2. *Intermittent Claudication*.—This disease was described by Charcot and occurs in the legs. It consists of a vasoconstrictor spasm in arteries that are already affected with arteriosclerosis. The spasm appears on exertion, when the tissues require an increase of blood, and causes painful cramps. During the cramps the legs are cold and pale or mottled. After rest the cramps may disappear, but pulsation of the tibial arteries is feeble or lacking.

3. *Raynaud's Disease*.—In this disease there is no organic pathologic condition, but the constriction of vessels is due to intense spasm of the small arterioles or venules just before they become capillaries. It may be of three types, a spasm of the arterioles alone, causing a bluish color; of the venules alone, making the affected parts red, or of both the arterioles and venules, causing a blanching. Any of these types may result in gangrene.

4. *Thrombo-Angiitis Obliterans*.—Leo Buerger of New York has made a careful study of this disease, which was formerly rather vaguely classified and was referred to clinically under various terms. The German writers considered it an obliterating endarteritis. Buerger has shown that thrombo-angiitis obliterans has many distinctive characteristics and that the occlusion of the vessels is not caused by a thickening of the intima, but by a thrombosis.¹ This disease occurs chiefly in the blood vessels of the lower extremity, though occasionally the upper extremity is affected. It begins, not in the arterioles or in the smallest arteries,

but in vessels of medium size, and then ascends. In the foot it is usual, according to Buerger, for the dorsalis pedis and plantar arteries to be involved first, and later the disease ascends to the tibials and sometimes to the popliteal artery. The deep veins are affected in about 40 per cent. of the cases. Occasionally a segment of apparently healthy blood vessel is found between diseased portions of the same vessel. Buerger has demonstrated that in the first stage of the disease the affected vessel shows signs of inflammatory change, and he seems to have proved quite clearly that thrombo-angiitis obliterans is due to some microbe or to a toxic material which, however, has not yet been isolated.

In the first stage there is a round cell infiltration of the media and adventitia of the vessel and usually of the tissue around the vessel. Soon after this, and sometimes almost accompanying it, a red clot forms in the vessel and practically always obliterates it. Then small foci appear in the clot, which Buerger refers to as "miliary abscesses." They are collections of pus cells and leukocytes that form in the thrombus, usually around its periphery. The leukocytes apparently come in from the media. Angioblasts then grow into the clot and the ordinary process of organization and canalization occurs in the thrombus as elsewhere in the body except in these small foci. Here the angioblasts seem to lose their power of producing blood vessels and terminate around the edge of these pus foci as endothelial cells or penetrate the foci and either fray out or produce giant cells. A little later the giant cells arrange themselves around the periphery of the focus, the leukocytes disintegrate, and the resemblance to a tubercle is marked. After this the degenerated products are absorbed and the focus becomes connective tissue. Then all traces of acute inflammatory process disappear. The leukocytes and wandering cells in the media and adventitia and perivascular tissue disappear and the obliterated or canalized vessel is left as the final product.

This is the life history of the disease as traced by Buerger. It begins with every evidence of acute inflammatory reaction, is followed by an apparently specific process in the tubercle-like formation, and ends in organization and canalization of the thrombus. The disease is sometimes extensive and often ends abruptly in a clot which projects into the lumen of a vessel that appears to be normal. It may progress in stages, so that, while the vessels in the foot may show the old type of organized and canalized thrombus, farther up in the leg the tubercle stage may be seen, and still farther in the upper tibials the acute inflammatory reaction with a red clot, pus foci, and infiltration of the blood vessel wall and perivascular tissue may appear.

Thrombo-angiitis obliterans occurs between the ages of 20 and 35 and rarely after 40. It is found chiefly in males. Most of the patients are Russian Jews, or descendants of Russian Jews, or Jews from the country around Poland, the eastern part of Austria-Hungary or eastern Germany. Koga, however, has found this disease among the Japanese, and the patient whose case is reported in this paper had no Jewish ancestry and was born and raised in Virginia. The symptoms depend largely on the extent of the disease. Buerger has found that the superficial veins are often involved and may give no symptoms in themselves. There may be vasomotor symptoms such as flushing of the leg or foot when it hangs down, followed by blanching when it is elevated. Ordinarily the foot is cold and of a dark bluish or purplish color. Often pain in

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Buerger: Am. Jour. Med. Sc., October, 1908, p. 567; *ibid.*, February, 1915, p. 210; Surg., Gynec. and Obst., November, 1914, p. 582; Jour. Med. Research, November, 1914, p. 181; Arch. Diagnosis, October, 1915.

the calf of the leg is severe and is more marked after exertion. These symptoms may be attributed partly to the mechanical occlusion of the vessels which produces anemia, and partly to the fact that nerves are sometimes pressed on or irritated by the scar tissue which may result from the inflammatory reaction in the perivascular tissues.

The treatment of threatened gangrene should embrace such constitutional measures as may be indicated. When the arterial disease is due to diabetes, the Allen treatment should be instituted. If from other causes, such as syphilis, appropriate remedies should be given. Locally, conservative measures as hot applications or hot air, particularly in cases of diabetic gangrene, sometimes accomplish much. De Witt Stetten² reports excellent results in a series of cases of diabetic gangrene which he treated along these lines, never making a radical amputation, but merely cutting away the gangrenous tissues at the line of demarcation.

For the treatment of gangrene due to thromboangiitis obliterans, a number of remedies have been suggested, some of them quite different.

Thus, Ochsner³ believes that his patients with this disease eat too much salted meat, while Koga⁴ recommends podermoclysis with saline or Ringer's solution as a remedy. Willy Meyer⁵ has obtained excellent results by the latter treatment, and thinks that the benefit is due to the fact that the solution in some way alters the quality of the blood. He has used it in more than forty patients, and gives twenty-four injections in each case. Five hundred cc. of Ringer's solution is given each time. Four regions of the body take up the solution most readily are chosen and the solution is injected in these regions in rotation. The injections

are given every day or every second or third day, according to the amount of discomfort that is caused. Dr. L. L. McArthur⁶ reports six cases of thromboangiitis obliterans which he has recently treated with podermoclysis of Locke's or Ringer's solution with satisfying results. Dr. A. J. Ochsner,⁷ in discussing a group of cases, has found that patients suffering from this disease are promptly relieved from pain after an injection of Ringer's solution.

Since in all of these diseases the arteries or arterioles are chiefly affected, it has been proposed, largely as a result of the experiments of Carrel and Guthrie,⁸ that the veins be utilized to carry the nutritive arterial blood

to the tissues. To accomplish this, the arterial current has been switched into a vein by means either of an end-to-end or a lateral anastomosis between the femoral artery and the femoral vein. This operation has been performed by a number of excellent surgeons, Wieting having probably done more than any one else to bring it into prominence.

In order to determine whether arterial blood, when switched into the veins, really reached the tissues for which it was intended, I undertook a series of experiments on dogs about three years ago. The femoral artery and femoral vein were divided about 2 inches below Poupart's ligament, and the central end of the artery was united to the distal end of the vein end to end by means of a double mattress suture, the technic of which has been described elsewhere.⁹ The animals were killed at periods varying from half an hour to forty-six days after operation. A cinnabar mass was injected into the circulation just above the anastomosis. A roentgenogram was taken and then a bismuth mass was injected into the abdominal aorta, after

which another roentgenogram was taken. The specimens were dissected by the late Dr. R. H. Whitehead, professor of anatomy at the University of Virginia, who found that the dissections corresponded quite closely to the Roentgen-ray findings. The report¹⁰ of these experiments and the report¹¹ of an experiment on another animal which was similarly injected and killed after sixty-nine days have been published.

All of these experiments show that in no instance did the injection material in the reversed circulation reach the foot; in most cases it went only a short distance below the knee. In all the animals that lived longer than a few days, the injected mass was quickly trans-

ferred by large anastomosing veins to the iliac veins and through them to the vena cava. The arterial blood must have followed the same course as the injected fluid, which, in the reversed circulation, rarely went lower than midway between the knee and the ankle. De Witt Stetten¹² arrives at the same conclusion, namely, that arterial blood in a reversed circulation goes but a short distance below the point of anastomosis and never reaches the tissue which most needs the nutrition. His deductions are from experiments on limbs that were amputated because of slow gangrene.

After the arterial blood is switched into the veins, the large valves in the veins are quickly broken down,



Fig. 1.—Foot before operation. The discoloration started at the stump of the great toe.

Stetten, De Witt: The Conservative Treatment of Diabetic Gangrene of the Lower Extremity, *THE JOURNAL A. M. A.*, April 12, 1913, p. 26.

Ochsner: *Surg., Gynec. and Obst.*, October, 1915, p. 536.

Koga: *Deutsch. Ztschr. f. Chir.*, cxxi, 371.

Meyer, Willy: *Ann. Surg.*, March, 1916, p. 292.

McArthur, L. L.: *Surg., Gynec. and Obst.*, May, 1916, p. 625.

Ochsner, A. J.: *Surg., Gynec. and Obst.*, May, 1916, p. 626.

Carrel and Guthrie: *Ann. Surg.*, February, 1906, p. 203.

9. Horsley, J. Shelton: *Surgery of the Blood Vessels*, St. Louis, C. V. Mosby Company, 1915, p. 46.

10. Horsley, J. S., and Whitehead, R. H.: A Study of Reversal of the Circulation in the Lower Extremity, *THE JOURNAL A. M. A.*, March 13, 1915, p. 873.

11. Horsley, J. S.: *Ann. Surg.*, March, 1916, p. 277.

12. Stetten, De Witt: *Surg., Gynec. and Obst.*, April, 1915, p. 381.

and the arterial blood in the reversed large vein then rushes into the smaller veins. The smaller valves in the small veins require relatively more force to overcome them than the larger valves in the large vein because of the relation of cubical contents to square surface, and soon the reversed arterial blood reaches a point at

cause it to remain in the tissues a longer time and so give up more of its nutrition than it could if the venous return were unobstructed.

Ligation of the femoral vein, as done by von Oppel, Coenen, Lilienthal and others, will produce this obstruction to the venous return more accurately and with much less danger than reversal of the circulation and is an operation that can be done in a few minutes under local anesthesia. It is indicated in threatened or early dry gangrene when the veins are not too greatly involved.

In two cases reported below, one gangrene from thrombo-angiitis obliterans and the other from arterio-sclerosis, this operation of ligating the femoral vein was done. In the first case it was done on one femoral vein, in the second case on both.

REPORT OF CASES

CASE 1.—History.—M., man, aged 26, single, is a carriage painter, though he has not worked at this trade for five years. He is an American, born in Virginia. There is no history of any Jewish ancestry. His father, aged 54, is in good health. There is no tuberculosis or cancer in the family except that his grandmother died of cancer of the neck. His mother died following childbirth. The patient had three brothers all of whom are dead; one died from typhoid, one was drowned and one died from an unknown cause.

Except for the present trouble, the patient has never been seriously sick, though he had mumps and chickenpox when young and a slight attack of malaria about seven years ago. He denies ever having had any venereal disease. Two Wassermanns have been made, both of which were negative.

The first symptoms began about September, 1909. Pus formed under the nails of the second and third toe of the right foot, accompanied by considerable pain. The toes and adjoining portion of the foot were very red and swollen



Fig. 2.—Photomicrograph showing old lesion of thrombo-angiitis obliterans in the posterior tibial artery. From a case of Dr. Leo Buerger, who kindly lent me the photomicrograph.

which the valves in the small veins check it permanently. These valves probably thicken, and the collateral circulation increases. With the increase of the collateral circulation the pressure on the obstructing valves is reduced and, instead of the constant pounding of the heart tending to break these valves, it seems to do just the reverse. This is clearly shown by an experiment in which the dog lived sixty-nine days and in which the arterial blood went but little farther down the leg than it did in a dog that was injected half an hour after the circulation was reversed. Valves that are not overcome within the first few minutes have less and less pressure on them until the collateral circulation develops to the maximum.

The benefit obtained by reversal of circulation in threatened gangrene is clearly not due to the fact that the arterial blood in the reversed vein reaches the affected tissue, but it is because the obstruction in the venous return causes blood delivered from the arteries to linger in the tissues longer than it otherwise would. If we suppose, for instance, that it takes a definite number of seconds for tissues to take up a proper amount of nourishment from the arterial blood and that the carrying power of the arteries has been reduced to one fifth of their normal capacity, while the veins have been but slightly affected, it can easily be seen that the small amount of arterial blood that does reach the tissues is taken away by the comparatively unimpaired venous circulation more quickly than normally, before it can give up proper nutriment to the tissues. On this account, then, the arterial blood, instead of remaining in the tissues the physiologic time, seems to be drained away too quickly, whereas the obstruction in the venous return produced by an arteriovenous anastomosis would dam back the arterial blood, and

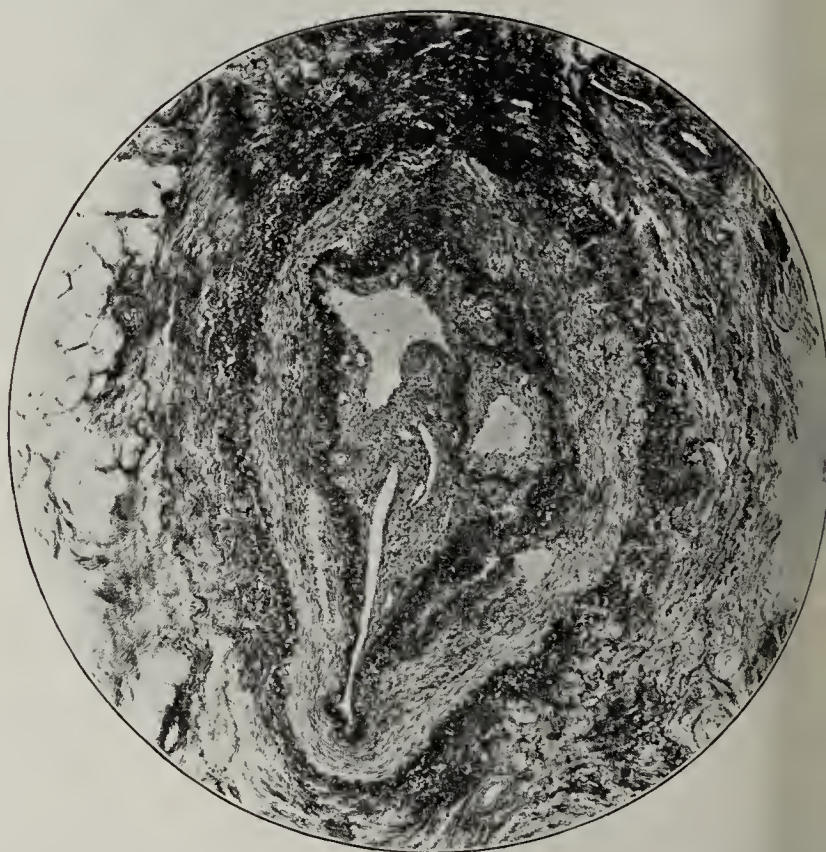


Fig. 3.—Another photomicrograph from a case of thrombo-angiitis obliterans of Dr. Buerger.

and became gangrenous. The affected toes were removed by Dr. Robert C. Bryan. Healing was sluggish and was not complete for nearly two years, but there has been no trouble with the right foot since. About September, 1913, the patient began suffering with the great toe and second toe of the left foot. These toes became red and painful, and amputation was done in May, 1914. Healing was slow, but was complete in a few months. For a year after the amputation he was

free from pain. About July, 1915, pain returned in the left foot, followed by dark redness on the inner side of the foot near the stump of the amputated great toe. The pain was intense and required large doses of morphin for its relief.

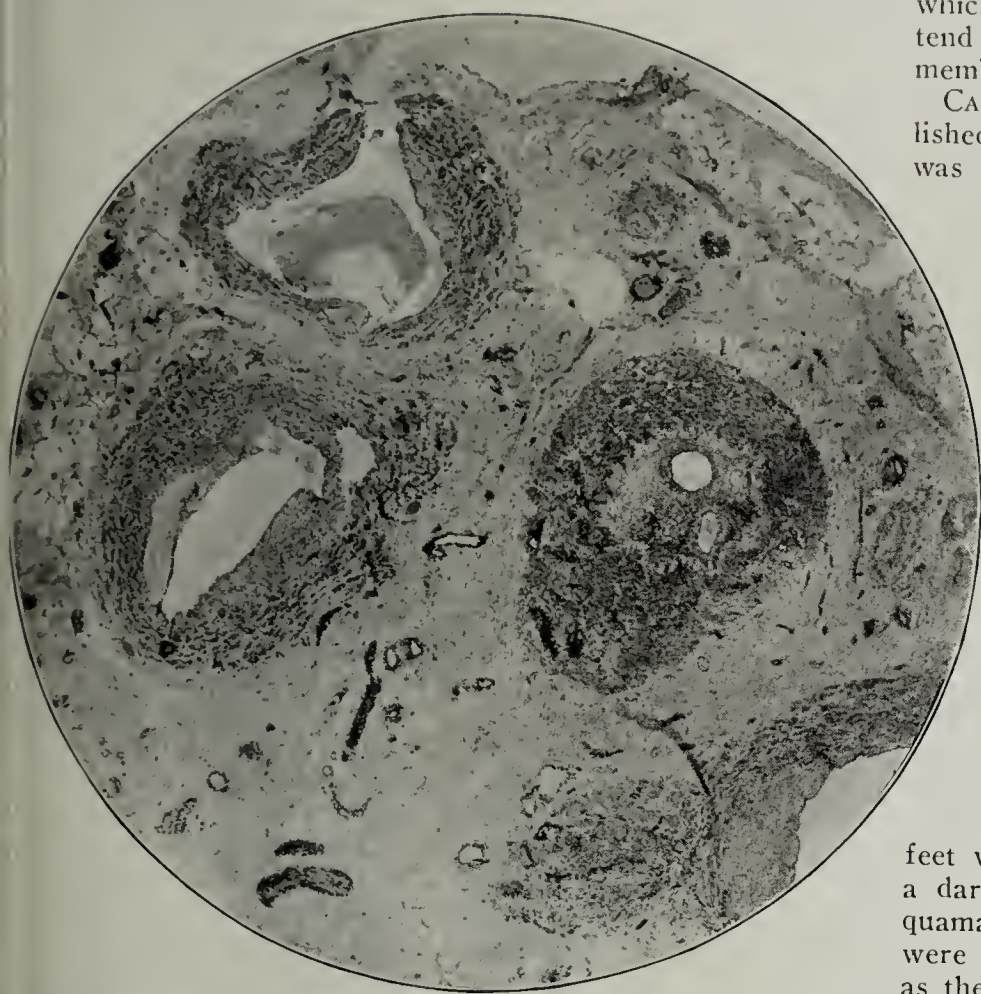


Fig. 4.—Photomicrograph in Case 1, $\times 20$. Section stained with hematoxylin and eosin; from posterior tibial vessels. Note the artery on the right and the accompanying veins. The veins are but slightly affected. The thrombus in the artery has been organized and is canalized by two vessels.

Sept. 9, 1915, the left femoral vein was ligated with catgut, under novocain, in the upper part of Hunter's canal. A few minutes after ligation, the left foot, which had been cold, became warm and congested. The condition of the foot seemed to improve for a few days, though the pain continued. Two weeks after the operation, however, gangrene began to spread, and dark mottled spots appeared over the dorsum of the foot. Amputation of the left leg was then done, Oct. 2, 1915, under ether, at about the junction of the upper and middle third of the leg. No tourniquet was used, the vessels being ligated as exposed. The wound was closed with silkworm-gut sutures, lightly tied. Healing was by first intention. The patient left the hospital in good condition, Nov. 6, 1915. There has been no pain or trouble of any kind in the stump of the leg since the operation, and there is at present, even months after operation, no tenderness on pressure on the stump. The patient has ordered an artificial leg. He has some pain in the hands and wrists, which may be due to the use of crutches.

Laboratory Examination.—Portions of the posterior tibial and of the anterior tibial vessels were dissected from the amputated leg, and serial sections were made in the laboratory of Dr. H. T. Marshall, professor of pathology in the University of Virginia, Department of Medicine. The sections were variously stained with hematoxylin and eosin, orcein, or van Gieson's stain. The findings show, according to Dr. Marshall, who has devoted much time to a study of these sections, evidence of old thrombus deposit. Dr. Leo Buerger, who kindly examined the sections, reports that they undoubtedly show lesions of old thrombo-angiitis obliterans. The inner elastic membrane is distinctly seen. The sections stained with orcein, or elastic tissue stain, show plainly that there is no excess of elastic tissue within the inner elastic membrane, which does occur in the endarteritis of arteriosclerosis. Organiza-

tion and canalization of the thrombus is seen in the sections. Two fairly large vessels canalize the old thrombus, and one of them in a section stained with orcein (Fig. 7) can be seen to approach the internal elastic membrane, a feature which, according to Buerger, is distinctive, as these vessels tend to divide and may actually penetrate the internal elastic membrane and enter the media.

CASE 2.—A preliminary report¹³ on this case has been published. At the time the article which contained the report was written, the patient was living, though when the proof sheet was received he had died and a note was made to that effect.

History.—Man, aged 70, white, had had a positive Wassermann reaction. In December, 1913, he began losing strength and weight, and his physician, Dr. George Ross, found both sugar and albumin in the urine in considerable quantities. In the fall of 1914 a dark line appeared on the heel of the right foot, and a corn on the little toe of the same foot became painful and red, and a little later showed marked discoloration. A scratch on the right leg, about 2 inches above the external malleolus, was the beginning of an ulcer which gradually extended until it became an inch in diameter. On admission to the hospital, April 9, 1915, this ulcer, evidently the result of a small area of superficial gangrene, had attained its largest size. The little toe of the right foot was completely gangrenous with a line of demarcation around its base. There was an area of dry gangrene covering the right heel, $2\frac{1}{2}$ inches in diameter. Both feet were swollen and painful. On the left heel there was a dark crack $1\frac{1}{4}$ inches long. The skin was red and desquamating over the dorsum of the left foot, though the toes were pale. The left foot was undergoing the same changes as the right foot underwent before gangrene set in.

Operation and Results.—On the day of admission, April 9, 1915, the femoral veins in both thighs were ligated with

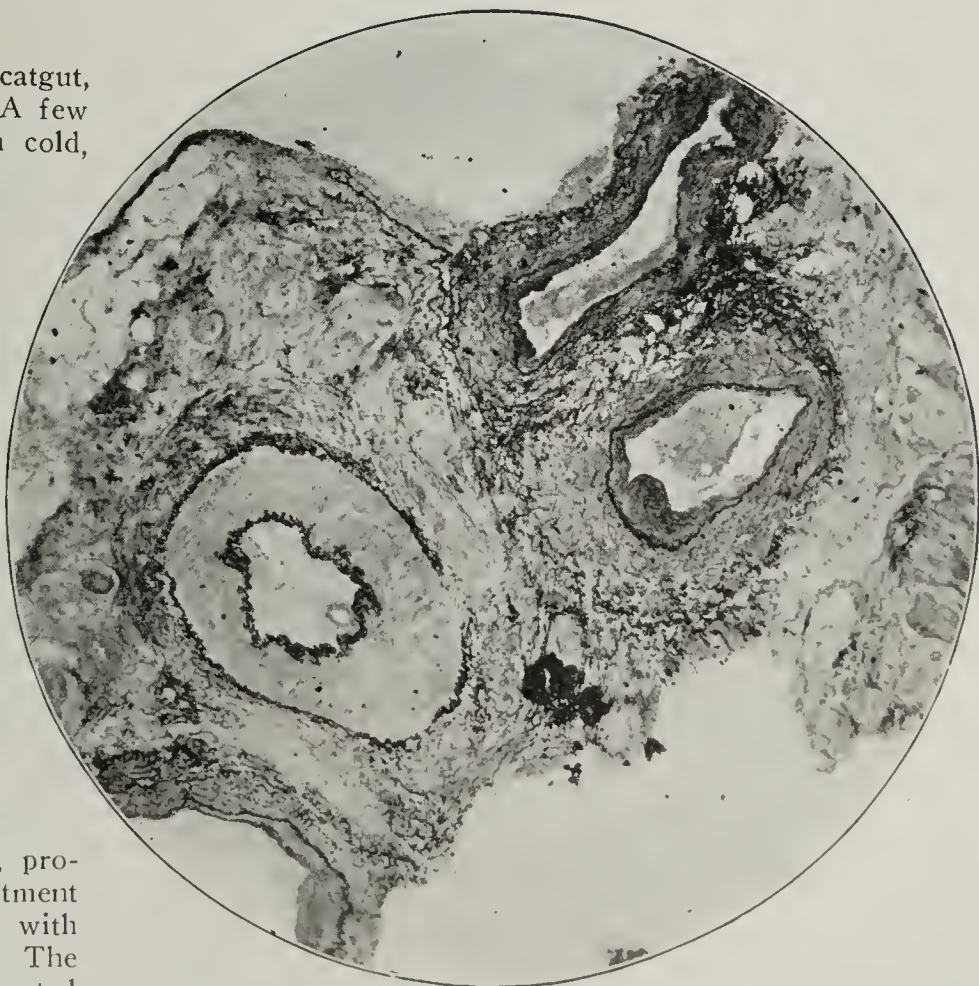


Fig. 5.—Photomicrograph in Case 1, $\times 20$. This section is stained with orcein, which brings out the elastic tissue, and shows the old clot in the artery which is organized and canalized by two vessels. Posterior tibial vessels. Note the distinct absence of elastic tissue within the organized thrombus.

catgut, under local anesthesia, in the upper part of Hunter's canal. The superficial veins in both legs became filled and

13. Horsley, J. S.: South. Med. Jour., November, 1915.

prominent immediately after the ligation. The gangrenous right toe was removed. The day following the operation there was less pain, the edema in the left foot had entirely disappeared, and that in the right foot was almost gone.

successful, there was some temporary improvement in each case, slight though it was in the first. The results, however, compare very well with the favorable results usually reported from operations for reversal of the circulation by arteriovenous anastomosis in which the improvement consists in a better color and more warmth in the foot with lessening of pain. Results of this kind can be equally well obtained by ligating the femoral vein. In very early cases of slow gangrene in which the veins are unaffected or but slightly involved, it is possible that this simple operation may give relief for a long time or, in a few instances, may be permanently beneficial.

ABSTRACT OF DISCUSSION

DR. DE WITT STETTEN, New York: I wish Dr. Horsley would abandon the term "reversal of the circulation." I know that we have identical opinions on arteriovenous anastomosis, which we have reached simultaneously but by different routes. My injection experiments on limbs amputated for gangrene of various sorts where arteriovenous anastomosis would have been indicated show conclusively that the arterial circulation to the periphery, even in very advanced arterial disease, is better and easier than the retrograde venous circulation, because of the obstruction of the valves and the short-circuiting of the blood through anastomoses of venous collaterals. But, the operation is dangerous and the results have been most unsatisfactory in the vast majority of cases. The few so-called successful results have been obtained more in spite of than because of the operation, as various factors play a rôle in the improvement, as improvement has occurred after definite closure and failure has followed perfect patency of the arteriovenous fistula. Even if the anastomosis function-

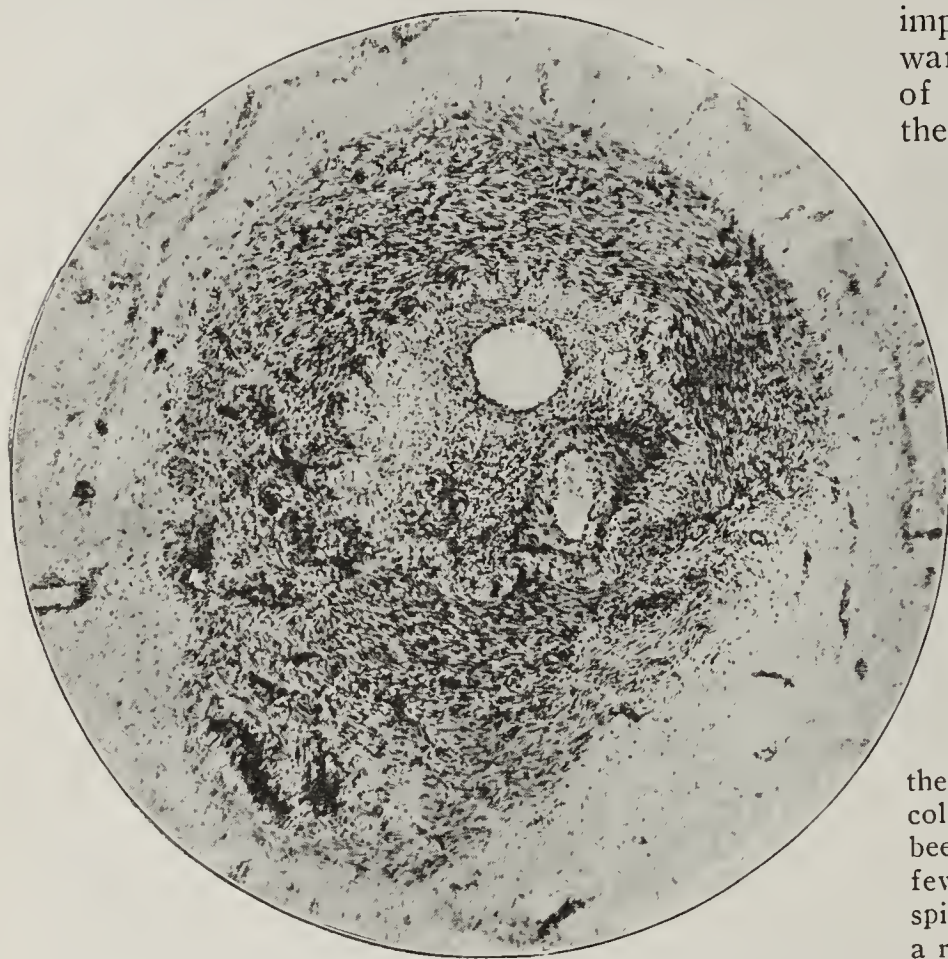


Fig. 6.—Photomicrograph in Case 1, from section stained with hematoxylin, $\times 45$. The inner elastic membrane is shown and within this is the old organized clot, canalized by two vessels. From posterior tibial artery.

This was unusual, for ligation of the veins is supposed to predispose to edema if it does not cause it. Probably the better balanced circulation permitted the arterial blood to take up the fluid in the tissues. Two weeks after operation the patient was discharged from the hospital. At that time there was no swelling in either foot, and the pain was practically gone. The wound at the base of the little toe of the right foot had a few granulations, and the gangrenous tissue in the right heel was beginning to separate. The ulcer above the external malleolus was healing, and the patient expressed himself as feeling much better.

May 3, 1915, I saw the patient at his residence. The swelling had returned in both feet, though it was not so bad as before the operation. Pain had also increased, and the small discolored crack in the left heel was unchanged. The ulcer above the right malleolus had entirely healed and was covered with smooth skin. Later the stump of the little toe on the right foot became infected at the patient's home where dressings could not be well done, and pus burrowed into the foot. The leg was amputated under local anesthesia, May 15, 1915. No tourniquet was used. Though the healing was slow, there was no gangrene. The diabetes and albuminuria continued. About the middle of June, gangrene of the left foot spread rapidly from the little toe. The patient died, July 10, 1915. No further operation was done as, with sugar and albumin abundant in his urine, further operation was obviously useless. The patient was syphilitic, diabetic, nephritic and 70 years old. We had no right to expect much in a case of this kind, but the patient was satisfied that he had obtained benefit, particularly in the decrease of pain and in the healing of the ulcer above the external malleolus.

CONCLUSIONS

While in neither of these cases were the clinical results after ligation of the femoral vein permanently

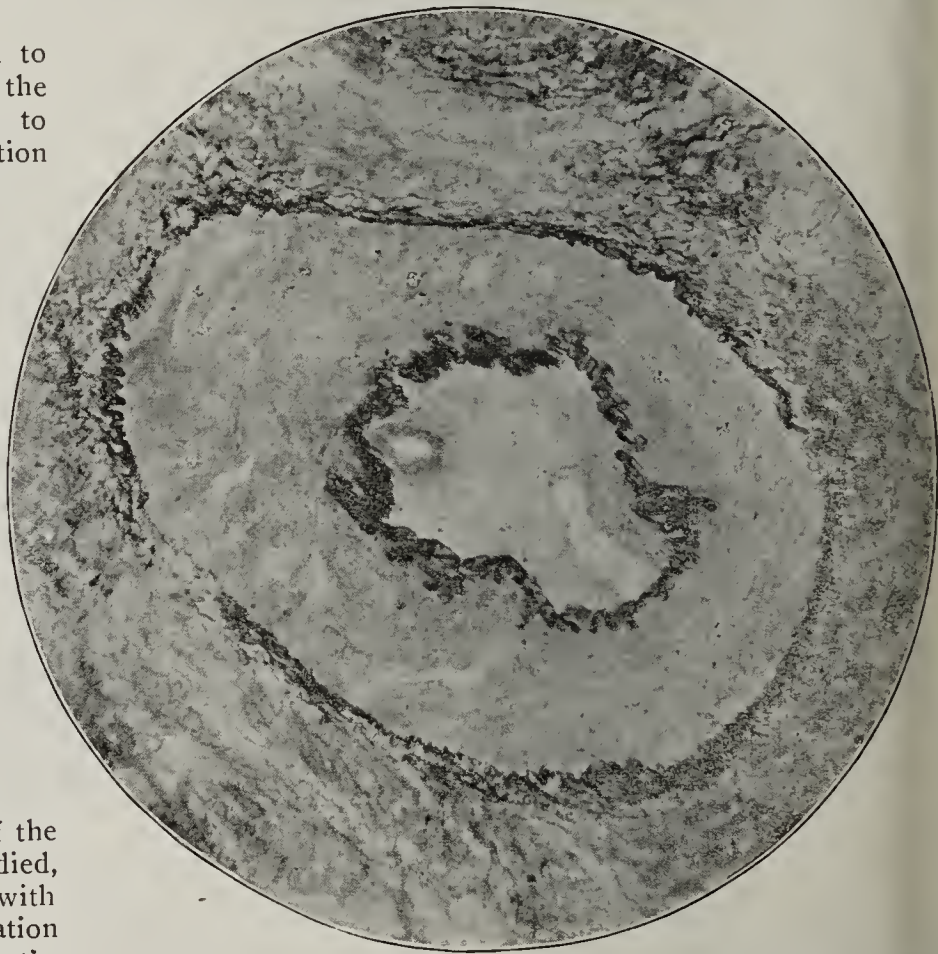


Fig. 7.—Photomicrograph in Case 1, from section stained with orcein to bring out the elastic tissue. $\times 45$. From posterior tibial artery.

ates, which it rarely does, there can be no circulatory improvement, but rather the reverse. Even if the operation were definitely proved useful, the possible indications would be restricted to almost nil. Dr. Horsley's animal experiments have substantiated my conclusions. Regarding von Oppel's

ligation of the femoral vein, I did feel with Dr. Horsley that whatever success followed arteriovenous anastomosis was due to the same circulatory conditions that followed ligation, yet, while I do not wish to be understood as doubting the utility of ligation, I must confess that, if it helps, I cannot quite understand the reason. I still favor ultraconservatism in the treatment of all types of gangrene—avoiding any operation as long as possible. Besides systemic treatment of the patient and surgical treatment of the wound, baking, warm baths, alternating hot and cold baths, posture, rest, moist dressings, etc., have given the best results, which, while not as striking nor as prompt in the thrombo-angiitis obliterans and senile varieties as in the diabetic cases, are nevertheless obtained with patience, and many limbs and lives are saved. The treatment by hypodermoclyses, I believe, improves the patient's general tone and thus aids in the recovery. Concerning the microbic theory of thrombo-angiitis obliterans, I cannot conceive of an infectious disease limited to one sex and practically to one race. Among the many patients I have treated, I have never seen a female, and except for one Russian Christian, all the rest have been Russian, Polish or Galician Jews. I am convinced that the causative factors of this disease are of a nature similar to those of hemophilia, i. e., that some abnormality of the blood or instability of the vascular system has developed in certain racial groups, that this is transmitted to the males and becomes evident between the ages of 20 and 35. Although, as yet, definite proof of the hereditary nature of the disease is lacking, certain observations by Dr. Garbat tend to confirm these impressions.

DR. CHARLES GOODMAN, New York: In reply to the arguments against the advisability of performing an arteriovenous anastomosis for presenile gangrene, I should like to call attention to the many instances in surgery in which an operation is condemned theoretically on anatomic and physiologic grounds, and yet yields a surprising practical benefit. Take, for example, gastro-enterostomy. The jejunum was never meant to have any direct communication with the stomach, yet with the modern perfected technic this operation has attained a recognized place in surgery. Intravenous saline infusion after hemorrhage and shock is another instance. We cannot forget that there is such a thing as the adaptability of living tissue to changed conditions without which we could not practice surgery. So, in arteriovenous anastomosis for the relief of obstructed circulation of the extremities, it is not definitely known how much of the circulation reaches the periphery or how the reversal of the circulation takes place, but we have clinical evidence that the symptoms were relieved shortly after the operation for an indefinite period. All writers agree that these cases eventually come to a high amputation. We have had clinical evidences that trophic ulcers which had resisted all other forms of treatment take on appearances of repair and heal. An extremity previously cold and cadaverous has become warm and pink, pulsation could be felt distinctly in the veins peripheral to the anastomosis, and superficial veins have become distended. Pain has been relieved and the parts threatened

or the actual seat of gangrene returned to normal. We cannot disprove the practicability of the operation as a palliative measure under proper indications. A study of the disease from an ethnological and historical point of view led me to believe that endarteritis obliterans and thrombo-angiitis are late manifestations of a previous typhus infection. Serologic tests have shown a complete agglutination reaction in at least three of twenty-one specimens of blood. We had a three plus complement fixation reaction in one patient and a four plus complement in two. One of these with the most pronounced reaction had active lesions.

DR. NATHANIEL GINSBURG, Philadelphia: In considering this form of peripheral vascular disturbance, it is most important to distinguish sharply between the various types of circulatory failure. Dr. Horsley has contributed some very important observations to our knowledge concerning the possibility of so-called reversal of the circulation. I have long believed that this operation is founded on a faulty anatomic and physiologic basis, and that laboratory experimentation with animals could only be applied to the human being so far as the technical features of the anastomosis are concerned.

With reference to diabetic gangrene, and peripheral gangrene due to arteriosclerotic changes, it is my belief that surgery in the first type of cases should be sparing, and as conservative as possible. In this class of cases I pay particular attention to the acidosis present, making every effort to reduce the ketonuria by means of the Allen treatment and other measures which have for their purpose the rapid and effective reduction in the sugar content in the blood. With regard to senile gangrene, no measure can overcome the pathology present in the peripheral vessels, and a circulatory failure cannot be reestablished by any means at our disposal. Peripheral gangrene, known as thrombo-angiitis obliterans, is a distinct clinical entity about whose syndrome we have little knowledge so far as the etiologic factors are concerned. It is important to

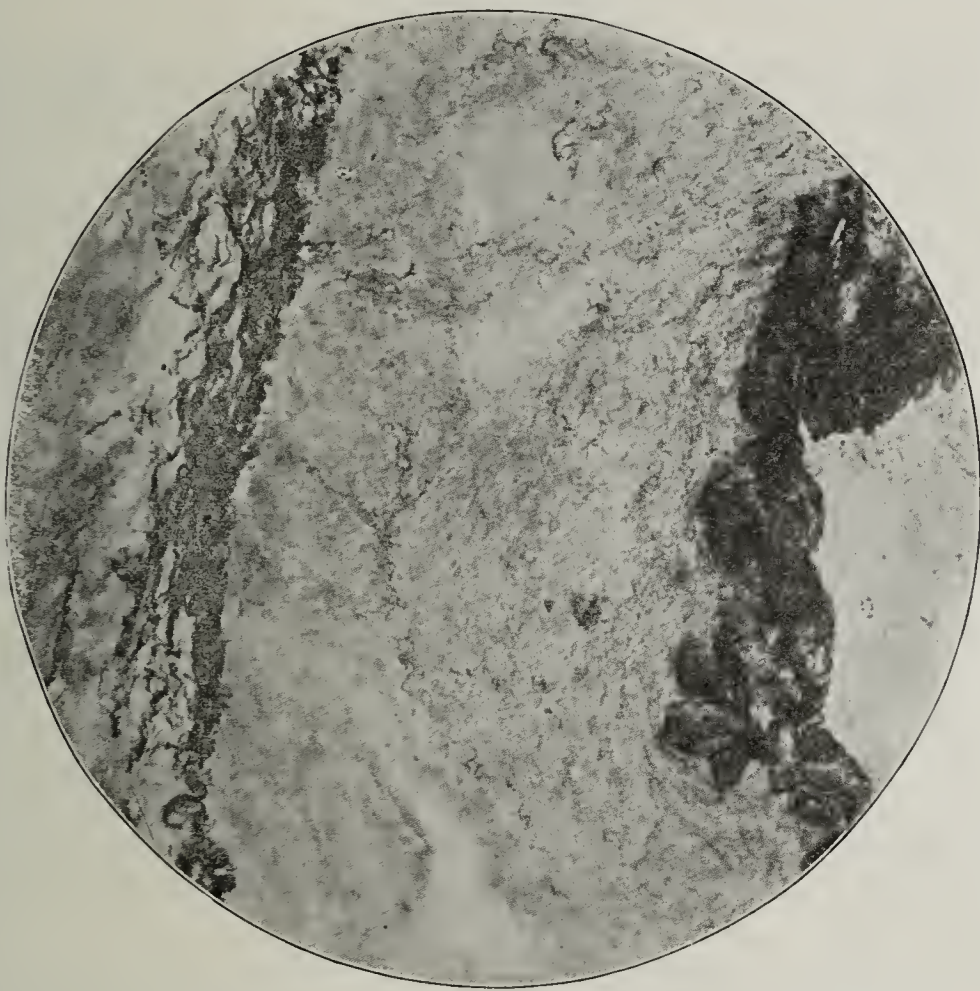


Fig. 8.—Higher power ($\times 150$) of Figure 7, showing inner and outer elastic membrane.

distinguish this class of cases of peripheral blood vessel disturbance, and to confine to this class those young or middle aged adult males of Russian, Galician, or Lithuanian birth of the Hebrew race, in whom this disease is always found. While it is true that Ochsner has observed this condition in Swedes, and Kogo and Mayesima of Japan have studied and reported the occurrence of this condition in the Japanese, in this country practically all the cases observed have been in the type above stated and exclusively in the male sex. I have been impressed by the fact that some vague toxic factor is the underlying cause of this condition. These patients, as a rule, are inveterate cigaret smokers and have been exposed, through occupation and dire necessity, to climatic conditions which, plus constant static position, have predisposed to peripheral circulatory failure. The large majority of these cases includes men engaged in baking, barbering, street vendors and machine workers, where there is constant standing on the feet over long periods of time. Von Oppel has performed femoral vein ligation in these cases, believing that the peripheral venous stasis thereby induced in the affected limbs, from the physiologic point of view, has the same rela-

tive surgical value as arteriovenous anastomosis. Kogo and Mayesima found that these patients have an increased viscosity of the blood, and they have made effectual attempts by employing sodium citrate solution for intravenous injection to reduce the increased viscosity. They do not report in their list of fifteen cases any instance of femoral vein ligation. Garbat of New York recently stated that multiple injections of 2 per cent. sodium citrate solution into the veins did not have a deleterious effect. I have employed femoral vein ligation in four cases with coincident injections of Ringer's solution, and 2 per cent. solution of sodium citrate. There is every reason to believe that in three of these cases a very marked benefit has resulted, and in one instance the patient has begged for the same procedure in the other limb. I hope to report these and other cases with more detail with reference to the end results attained, and the real value attaching to femoral vein ligation in cases of this particular type. We have tried foot baths, heat, Bier's hyperemia, electrotherapy, heliotherapy, and the employment of many drugs, all of which have been of no value so far as the course of the disease is concerned. Finally, it must be borne in mind that the disease we are treating is one in which there is definite pathologic change in the peripheral blood vessels, evidenced by microscopic study of the sections removed; the disease being seen in its late stages and therefore often beyond any other palliative means of treatment.

DR. CARL BECK, Chicago: Dr. Horsley mentioned that Dr. Carrel depended on the change of color when judging the results of his anastomosis, declaring that the brighter color of the vein indicated that arterial blood was passing through it. Dr. Carrel depended, as I can state from actual experience with him, on the pulsation of the vein. This was clearly proved to me to be the case in one instance, which I have not published myself, but which is included in the publication of Dr. Halsted of Chicago, to whom I gave the details of the case when he published a series

of anastomoses of blood vessels. I have had several cases in which I reversed the circulation by anastomosis, but this particular one was of the greatest interest. The patient was a man with gangrene of both feet, progressive, and without tendency to demarcation. After some weeks of observation, we decided to make an arteriovenous anastomosis, which we did without any mishap. Demarcation took place at once, not only on the limb which was operated on but also on the other limb. The dead portions of the feet, clear up to the tarsocrural joint, dropped off, and when the stumps granulated, we decided to amputate the badly looking stumps and make healthy and functionally good stumps by reamputation.

That the artery drained into the vein was proved to me by the spurting of every vein on the side where the anastomosis had been performed. Two interns operated at the same time and I watched the operation: On one side spurting of veins, on the other none at all. That shows that anastomosis will reverse the circulation. Whether it will be beneficial for gangrene is another question.

DR. GEORGE MORRIS DORRANCE, Philadelphia: Since the time that Dr. Carrel introduced his method of reversing the circulation, none of our experimental or clinical work has been satisfactory. We studied the reversal in the dog by injecting thorium above the anastomosis with approximately the same pressure as the dog's heart and found by Roentgen ray that practically all of it returned from the first or second branch of the vein and we did not obtain a complete reversal. In man, you have the added difficulty of an arteriosclerotic artery. At best there will be a large number of closures of the anastomoses. From a careful analysis of both the clinical and laboratory work, I find that what little success is obtained is due to ligation of the vein. Experiments made on the cadaver, though faulty, have led to the same conclusions. Of course, it is here necessary to first wash out the vessels. Working along these lines, I cannot see what is the use of fooling with these cases and dragging them along. Why not amputate early, providing the ligation of the vein does not give you results? Get these people back to work again.

DR. ERNEST LAPLACE, Philadelphia: Dr. Dorrance has given us the keynote to the practical side of the question. This

gangrene is not a local trouble. It is a local manifestation the real nature of which is unknown to us and is a puzzle in surgical pathology today. It affects certain people of the Jewish race and the male sex only, so far as we know. In the vast majority of cases I believe the specific treatment will do some good with or without knowing exactly the reason it does so. The disease is more manifest in the toe because the circulation is weakest there. After the amputation what then? In the vast majority of instances on the eighth day there is a black line around the edge of the stump and there is a repetition of the condition. I believe it is poor surgery under the circumstances to sew that wound up. I have had almost 100 cases of this in the last twenty-five years and found it unsafe to sew these wounds up. There is some poison that prevents healing of the wound. There is something lacking in the blood of that particular case. This struck me long ago as being the case and therefore I determined about ten years ago to substitute human serum to the wound. Ascitic serum is kept on ice at 1 C.; this is used to bathe the wound constantly. The wound will generate healthy granulations and heal kindly. Though I have not published this before I have still to see a recurrence in cases treated as above. A necessary amputation high up should be treated in the same way. I believe that in ordinary serum there is something which the patient needs to make the wound a healthy one. I believe the results are so striking that it is now time that I should make them known.

DR. J. FRANK CORBETT, Minneapolis: When one attempts to review the literature of senile gangrene one is impressed by the multiplicity of remedial measures. Each particular remedy has been accredited with success. None of these have ever come into general use. Therefore one is inclined to conclude that the collateral circulation accomplishes a great deal sometimes and is given very little credit. I do not believe that experimental work on animals is of much

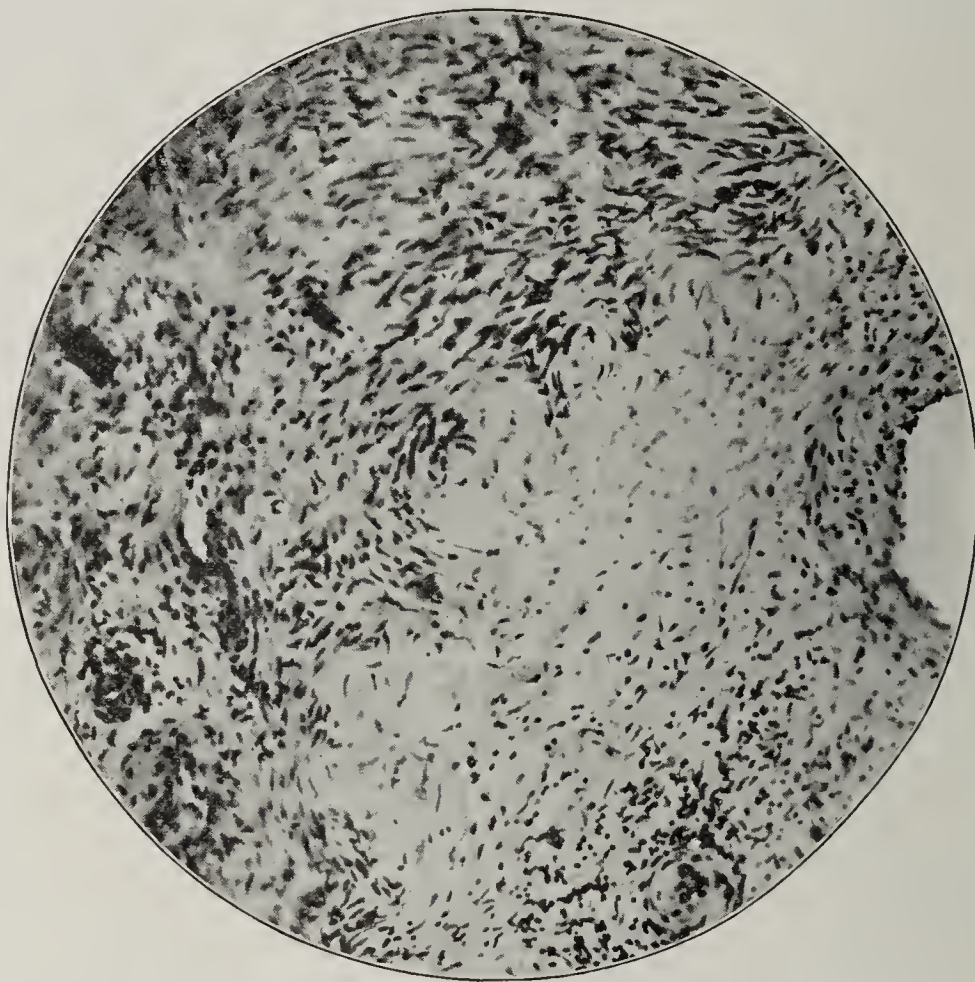


Fig. 9.—Higher power ($\times 150$) of Figure 6. On the right is part of the lumen of one of the canalizing vessels. Through the center of the photograph runs the inner elastic membrane. To the left is the media, which is still well vascularized.

value in determining the treatment of senile gangrene. In the first place, gangrene is common in the lower extremity and the blood supply of the leg in animals is very different from that of man. In addition to that, when we come to study the limbs which have been amputated for senile gangrene we find there are many general changes aside from the local anatomic changes. When we take such a limb and perfuse it with Ringer's solution under conditions imitating the blood pressure and pulse pressure of that member, we find that through the arterial side the rate of flow is very different in senile gangrene from what it is normally. In addition to that we find even in cases that are not recognized as diabetic changes in the blood sugar. I have been surprised at the high sugar content of the blood of some of our cases where nothing came through in the urine. In addition to this, these cases are usually complicated with kidney lesions and we find that the blood has an increased urea and other components. I am just beginning a study on the viscosity of the blood, in which, to my surprise, I find an increased viscosity occurs in other conditions besides thrombo-angiitis obliterans. Therefore, I do not believe we are at the present time in a position to say positively that we have a remedy in anything short of amputation. In the normal limb it is impossible to reverse the circulation in twenty-four hours of perfusion with the best apparatus I could make represent the heart's action. Sometimes after hours of such perfusion we got a few cubic centimeters of fluid. I do not believe at the blood that we get through by breaking down these damaged vein valves and working back was anywhere near enough to supply the vitality of the limb. But possibly some such condition as that may account for the early successes and improvements reported by Bernheim.

DR. J. SHELTON HORSLEY, Richmond, Va.: I am not proposing any operation that cures cases of threatened gangrene. Ligation of the femoral vein is a procedure originally proposed by von Oppel and, in certain types of threatened gangrene, seems to help. In the early stages of thrombo-angiitis just before the clot forms all of the coats of the vessel are infiltrated with small round cells and the infiltration does not disappear until the clot is well organized. This certainly seems to indicate an inflammatory origin. Practical clinical knowledge should go hand in hand with laboratory work. The gentlemen who object to the conclusions that we have reached are not convinced by the evidence, which includes the arterial injection method of studying blood vessels, roentgenograms, dissections by a professor of anatomy, and then the work of Stetten on limbs amputated for this very disease. I confess I do not know what will move them. The reversed circulation will, of course, spurt if it is cut before the blood reaches the valves in the smaller veins. It is mainly the relation of the arterial contents to square surface, and if a large varicose vein would reach to the foot probably the reversed injection would go there also. This does not in any way alter the conclusion. Our experimental work together with the experimental work of Stetten on amputated limbs shows that in no single instance did the reversed circulation ever reach the

foot. The clinical improvement following reversal of the circulation has already been explained in the paper and is due to the balancing of the circulation. I am not an advocate of any one method of treatment for slow or threatened gangrene, though I think in certain instances ligation of the femoral vein may be helpful.

TUBERCULOSIS OF THE CERVICAL LYMPHATICS

A STUDY OF SIX HUNDRED AND EIGHTY-SEVEN CASES *

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Modern students of tuberculosis believe that tuberculous infection usually comes in childhood and that it may develop then, or be quiescent, or be cured. If quiescent, it may show renewed activity at later periods of life. Baldwin¹ says:

Childhood is the time of infection, youth the time of super-infection, and that from extension of the primary disease.

McCleave² says:

It is now generally conceded that infection with the tubercle bacillus is, in the majority of cases, an incident of early life, and that, regardless of the time of development of clinical symptoms, tuberculosis is, in its origin at least, essentially a disease of childhood.

Francine³ says:

This infection during childhood does not, as a rule, develop into pulmonary tuberculosis at that time, but lies dormant in the lymphatic system, or is latent until adult life, when it breaks forth or manifests itself in pulmonary localization. It is largely children infected by contact in

their homes who furnish later the ever oncoming crop of consumptives.

A large number of similar quotations could be made to show the present general belief that primary tuberculous infection usually occurs in childhood and that this fact should be appreciated if we would combat the disease intelligently.

Tuberculosis of the neck lymphatics may be advantageously studied from this point of view. Childhood is the period when the infection most commonly comes; and this infection may be cured, it may lie dormant with the possibility of later activity, or it may extend rapidly. In each of these events it presents definite

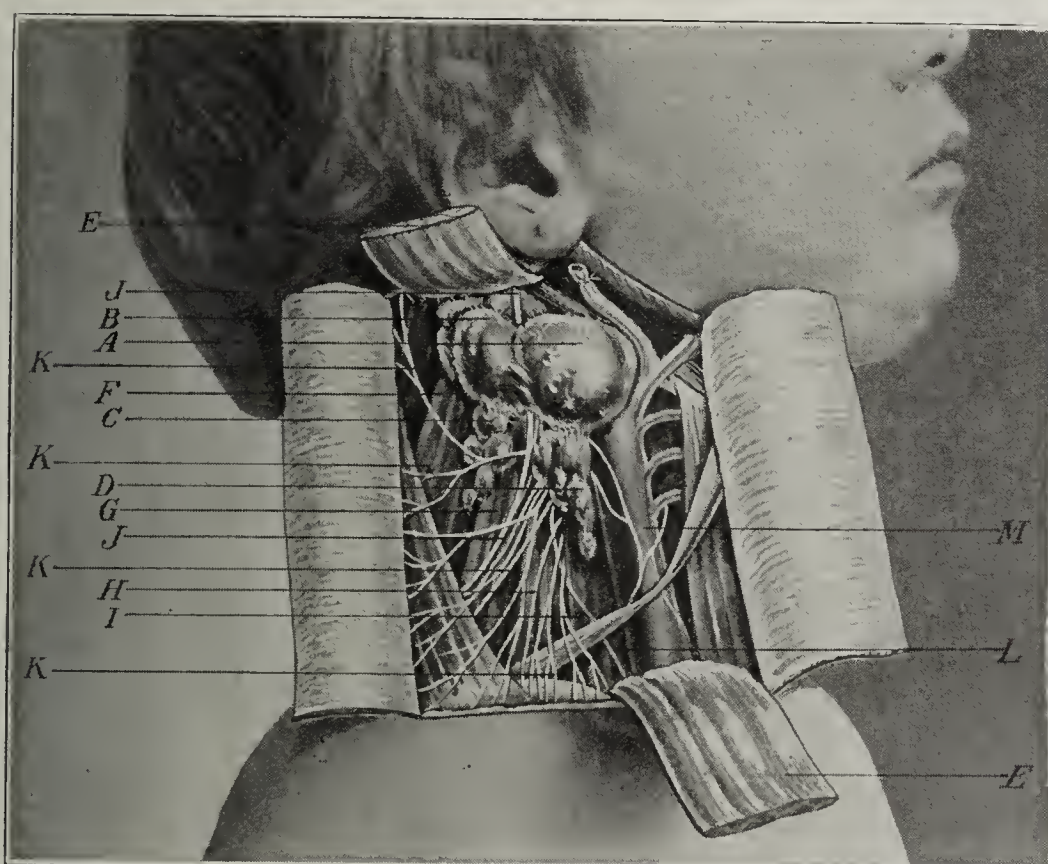


Fig. 1.—Early stage of tuberculosis of the neck lymphatics: A, tonsillar node, caseous; B, tuberculous nodes of the subparotid group; C, posterior nodes; D, nodes of the deep jugular chain; E, E, sternomastoid muscle; F, levator anguli scapulae muscle; G, scalenus posticus muscle; H, scalenus medius muscle; I, scalenus anticus muscle; J, J, spinal accessory nerve; K, K, K, branches of the cervical plexus; L, phrenic nerve; M, internal jugular vein.

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Baldwin: Bull. Johns Hopkins Hosp., 1913, xxiv, 209.

2. McCleave, T. C.: The Relation of Bovine Tuberculosis to Early Tuberculosis in Children, Am. Jour. Dis. Child., September, 1914, p. 210.

3. Francine, A. P.: The Underlying Factors in the Spread of Tuberculosis, THE JOURNAL A. M. A., March 7, 1914, p. 767.

clinical pictures, and since the nodes are near the surface, there is a remarkable opportunity to study the peculiarities of the disease.

This paper is based on a study of 687 cases in which operation was performed by myself or by my associates or assistants under my observation during the last twenty-two years. The cases have been followed with great care. During a part of the time a special fund has been available for that purpose, and a great many patients have been brought to the hospital for

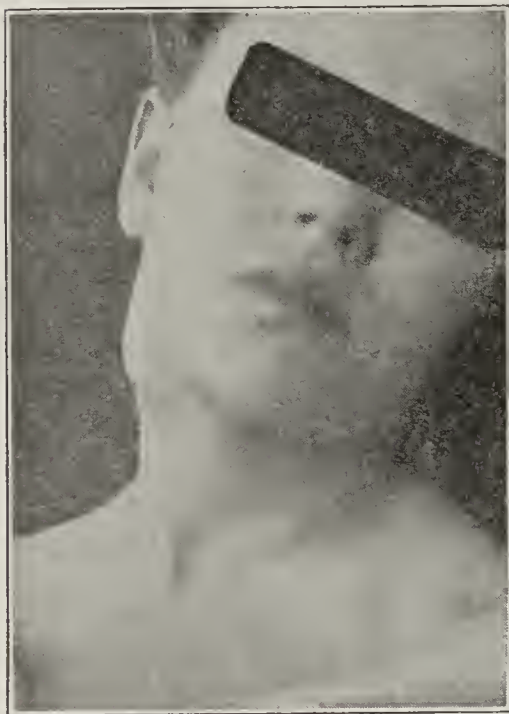


Fig. 2.—Patient in early stage of tuberculosis of the neck lymphatics.

inspection from time to time. The mass of observation thus accumulated has been large, although there is a limit to the possibility of tracing the class of people who live in the New York tenements. There were also periods when little "following up" was done. During certain parts of this time the greater portion of the patients have been children between the ages of 3 and 14 years, and the results with them have been wonderfully satisfactory. During other parts there have been many adults with widely disseminated tuberculosis, and the results with them have been discouraging. It seems best, therefore, to group the patients according to the period of development which their tuberculosis has reached and to study the characteristics of each group.

GROUP 1

Whether tubercle bacilli are inhaled with the air or swallowed with the food, the crypts of the tonsils, faucial and pharyngeal, offer possible lodging places. The faucial tonsils are particularly likely to harbor them. Enlargement of the upper cervical lymphatics promptly follows such infection, thus establishing what we may call the early stage of lymphatic neck tuberculosis. The proper understanding of this stage is important.

The route of infection from the tonsil to the tonsillar lymph node is a very short one. This has been graphically described by Wood.⁴ The tonsillar node is one of a group of nodes which lie beneath the parotid gland and the mastoid process and which are covered by the sternomastoid muscle. This group constitutes the first great line of defense against the invading tubercle bacilli. The invaders cause swelling, fibrosis, caseation and possibly abscess formation, but if the defense holds there is a distinct stage when the process is still local and has extended very little beyond this upper group of lymph nodes.

Figure 1 indicates the condition. Figures 2 and 3 indicate the appearance of patients who have this condition.

Of the 687 patients who form the basis of this paper, 452 were observed in this stage. Many of them, how-

ever, had somewhat more extensive inflammation than Figure 1 indicates. Since infections into the submental, submaxillary and parotid nodes also drain into the upper part of the jugular chain, some of them are also included in this group. The average age of the entire group was 8.03 years.

Sixty-seven of these patients were followed from six to twenty years; 23 were followed into the sixth year; 36 into the fifth year; 53 into the fourth year; 65 into the third year; 65 into the second year, and 49 into the first year; 98 were not observed after leaving the hospital; 91 per cent. of the patients traced were apparently cured when last seen; 8.75 per cent. showed slight evidence of recurrence; 0.25 per cent., that is one patient, had died of intercurrent disease—typhoid fever; 8 per cent. had secondary operations during the period of observation.

Thus we see that for this class of patients the results are eminently satisfactory. It is hard to think of another form of surgical operation which gives better results. These results were obtained in spite of bad hygienic conditions, since most of these patients had to return to insanitary tenement house surroundings.

It has been suggested that many of these cases had the bovine type of tuberculosis and that this accounted for the good results.

Drs. Park and Krumwiede⁵ have examined many of these cases to determine this question. It is interesting to note their findings for patients from 5 to 10 years, which showed the bovine type in only 29.6 per cent.

GROUP 2

The patient's power of dealing with tuberculosis largely determines the stage of the disease in which we see him. Many of those in Group 1 seek surgical aid because abscesses form within the subparotid nodes and break through the node capsule and cause unsightly

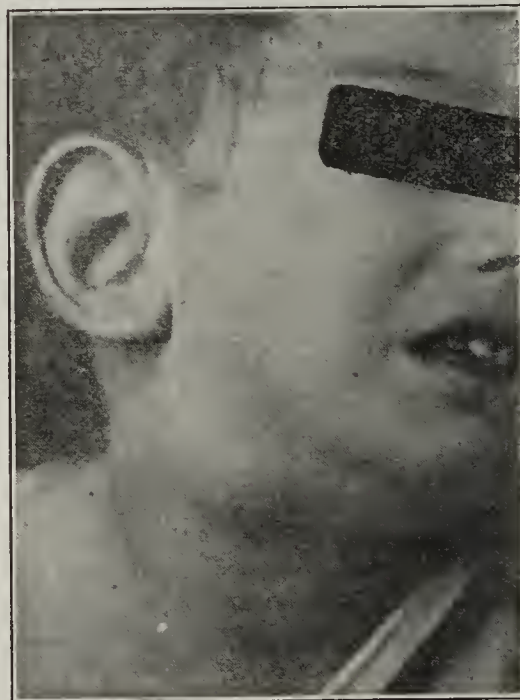


Fig. 3.—Patient in early stage of tuberculosis of the neck lymphatics.

swellings. If these abscesses break and form sinuses or if the inflammation progresses without abscess formation, the nodes along the entire jugular chain and those along the trapezius border may become enlarged. This constitutes another pathologic and clinical picture which we may study in Group 2. Figure 4 indicates the gross pathologic condition in this group and Figures 5 and 6 show the appearance

of two of the patients. There were 18 patients in this group. Their average age was 15.9 years, nearly double that of Group 1. Sixty-nine of them were over 20 years of age. Twenty-nine of these patients were followed from six to twenty years; 11 were followed into the sixth year; 18 into the fifth year; 14 into the fourth year

4. Wood, G. B.: *Am. Jour. Med. Sc.*, April, 1906, p. 620.

5. Park and Krumwiede: *Jour. Med. Research*, 1910, xxiii, 205.

24 into the third year; 19 into the second year, and 10 into the first year; 60 were not observed after leaving the hospital; 68.2 per cent. of the patients traced were apparently cured when last seen; 23.8 per cent. showed recurrences when last seen; 5.5 per cent. had died of intercurrent disease, partly tuberculous; 2.4 per cent., or three patients, died in the hospital, two from hemorrhage, and one from thrombosis; 28.5 per cent. of the traced patients had two or more operations.

It is thus seen that the results obtained in Group 2 were greatly inferior to those obtained in Group 1. We believe that nearly all of these patients passed through the stage shown in Group 1. It would have been much better if they had had their operations then. Very few patients who have thorough operations when in Group 1 ever reach Group 2.

GROUP 3

There is another division, those with diffuse tuberculosis, which we may call Group 3. The patients show little power of resisting tuberculosis. The neck infection quickly involves a great number of nodes, and there are usually evidences of tuberculosis in other parts of the body. There were fifty patients in this group. Their average age was 12.7 years, about midway between Groups 1 and 2. Thirteen of these patients were followed from six to seventeen years; 3 were followed into the sixth year; 5 into the fifth year; 2 into the fourth year; 5 into the third year; 9 into the second year, and 6 into the first year; 76 were not observed after leaving the hospital; 1 died in the hospital; 34 per cent. of the patients traced were apparently cured when last seen; 43.2 per cent. were suffering from recurrences or other forms of tuberculosis; 20.4 per cent. had died of intercurrent disease, largely tuberculosis; 1 patient died in the hospital, soon after a minor palliative operation.

Figures 7 and 8 indicate the appearance of two patients in this group.

It is manifest that treatment of this type of cases is far from satisfactory. If, however, one third of them are apparently cured after long periods of observation, we have some encouragement.

COMMENT

On studying these groups of cases it is easy to see why so much confusion exists about this subject. Certain types of cases predominate in individual clinics. Those observers who see mainly cases of Group 1 will have very optimistic ideas about the curability of the

disease. For instance: One continuous sequence of 100 patients in this series showed 86 per cent. in Group 1. During the follow up work in which these patients figured, there were 106 patients examined: ninety-four of them were recorded as strong, vigorous, ruddy or in good health. Seven were recorded as pale or not strong, and only five were advised to have further operation for recurrences. On the other hand, when the work has been in a hospital, to which a different type of patients came—where many patients were in Groups 2 and 3, the results have been much less satisfactory, and complications and recurrences have been more frequent.

Much confusion exists about the term "operation" as applied to these cases. If the incision of an abscess, or the removal of a single node, is called an "operation," we shall have very poor operative results; if the term "operation" means the removal of all the enlarged lymph nodes in the neck, we shall have very good operative results. The most common error comes in those patients who have cold abscesses. When these

abscesses are incised, a smooth layer of inflammatory tissue is found within. This constitutes the deep abscess wall, and seems continuous with the deep fascia. One may easily believe that the abscess comprises the entire swelling, and that there are no enlarged nodes still deeper in the neck, and in this belief, may be content with simply draining the abscess.

As a fact, these cases regularly have groups of nodes in the usual location beneath the sternomastoid muscle, and unless these nodes are found and removed, the operation

is futile. The tubercular detritus, the so-called "pus" of the cold abscess, is no bar to thorough operation, since it seems to have little or no infective tendency, and healing takes place about as kindly as though it had not been present. Failure to appreciate the extent of the disease is a very common error. Inadequate and badly placed incisions and incomplete operations follow.

The technic of operation cannot be given in this paper.⁶

All operations should be done with due regard to the anatomy of the neck, and with careful precautions against nerve injury, particularly avoiding the spinal accessory nerve, and the lowest branch of the facial nerve. Transverse incisions give suitable exposures

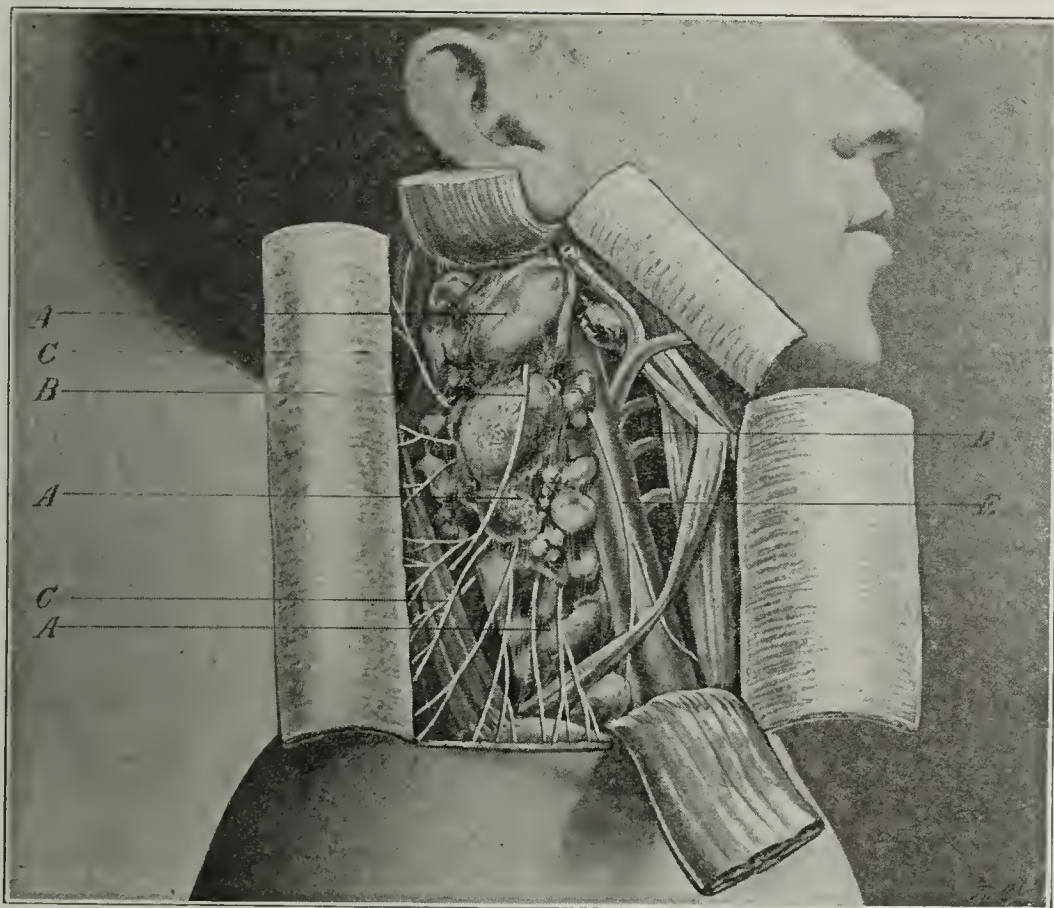


Fig. 4.—Late stage of tuberculosis of neck lymphatics: A, A, A, tuberculous lymph nodes; B, spinal accessory nerve; C, C, branches of cervical plexus; D, internal jugular vein; E, communicans hypoglossi nerve.

6. Details of the technic used for most of these cases were published in *Annals of Surgery*, 1905, xlii, 49, and 1908, xlviii, 169. Judd (*Ann. Surg.*, 1910, lli, 759) gives the details of operation for extensive cases by the posterior incision, and Mitchell (*Bull. Johns Hopkins Hosp.*, 1902, xiii, 161) describes the operation by anterior incision.

for the majority of the cases, and have the great advantage of leaving scars which do not stretch, and hence are almost invisible. With the aid of suitable retraction, extensive dissections can be done through these transverse scars. In the far advanced cases, however, the scar is not the important factor, and longitudinal incisions should be used, since they give easier access to the masses of enlarged nodes.

It is not the purpose of this paper to make exhaustive comparisons between the different forms of treatment which are used for this disease. There are many of them: Roentgen-ray, sea bathing, heliotherapy, tuberculin, Bier's hyperemia, etc. It is rather my purpose to call attention to the natural history of the disease, and to the results of the treatment which I have used. I have, however, visited various institutions in which these measures are used, both in this country and abroad, and have noted at least three elements which should be considered: (1) differences in diagnosis; (2) differences in interpretation of what constitutes an operation, and (3) differences in interpretation of what constitutes a cure.

Dr. Farr, who saw many of these cases in the Wilkes Dispensary, states that probably five patients with hyperplastic adenitis apply there for every one with tuberculous adenitis. If a small proportion of them had been diagnosticated tuberculous, we would have had a very exaggerated idea of the curability of the disease.

2. It is astonishing to note the class of cases which are cited as operative failures. This has already been referred to. We do not talk about the operative treatment of appendicitis when the appendix is regularly left in position, nor about the operative treatment of cancer, unless every effort is made to remove all the cancerous material, nor do we talk about prostatectomy unless the prostate has been removed. We surely should not talk about the surgical removal of tuberculous neck lymphatics unless there is evidence that thorough operations have been done.

3. There seems to be only one way of determining the condition of the lymph nodes, that is, to study enough of them after removal to form a fair comparison between the preoperative appearance and the post-

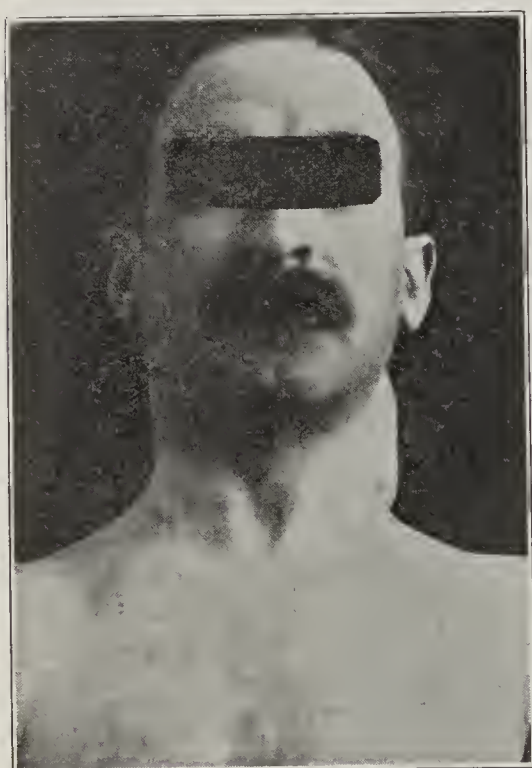


Fig. 5.—Late stage of tuberculosis of the neck lymphatics, Group 2.

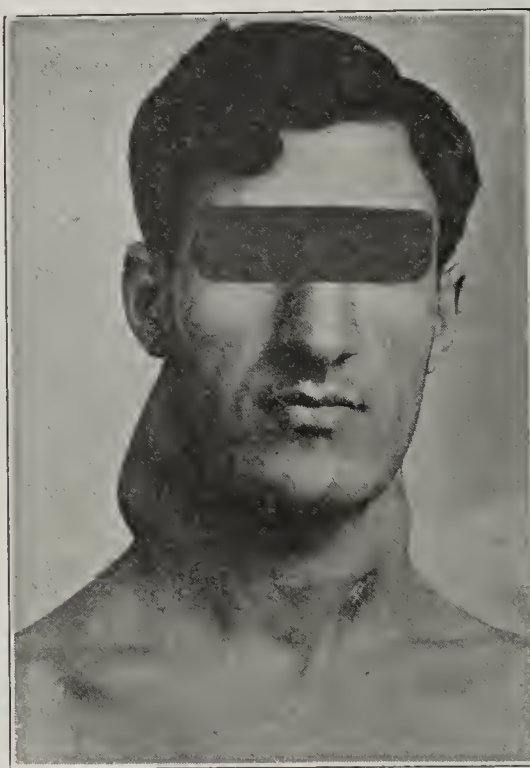


Fig. 6.—Late stage of tuberculosis of the neck lymphatics, Group 2.



Fig. 7.—Late stage of tuberculosis of the neck lymphatics, Group 2.

1. Clinicians who do not have the opportunity of removing the lymph nodes and having them examined microscopically have come to consider many cases tuberculous which have not been so considered in this study. For example, Hawes says:

In regard to the diagnosis of tuberculous adenitis, Allen believes that 60 per cent. of enlarged glands in children are tuberculous; Philip is of the opinion that enlarged cervical glands should be considered tuberculous unless there is definite indication to the contrary. It is my custom to consider these enlarged glands as tuberculous, if, on careful examination of the patient and treatment of all possible sources of infection, no other cause can be found.

It is manifest that on this basis many cases are treated as tuberculous which have not been so considered in our work, just as the older observers considered hip joint inflammations tuberculous, which we now know to be due to the pyogenic bacteria.

Very early in this study, such nodes, when removed, were found to show only hyperplasia; and since we do not advise the removal of hyperplastic nodes, every effort was made to avoid operation on them.

operative findings. It is possible that a patient should have a ruddy appearance and yet should have masses of tuberculous lymph nodes in the neck. Such patients have been considered cured by careful and honest advocates of some of the methods of treatment here given, but have not been classed as cured in this study.

If, therefore, we make a comparison between operative and nonoperative methods of treatment, we must remember that those who see the lymph nodes, and those who do not see them, must of necessity have different conceptions of the conditions with which they are dealing. With this in view, we must believe that our patients should have the advantage of such forms of treatment as are likely to help them. If operation gives them the best likelihood of cure, they should have operation. If operation plus another form of treatment is desirable, they should have both. If another form of treatment gives a quicker and better cure, it should be used; but a patient should not be allowed to drag from Stage 1 to Stage 2 while indefinite forms of treatment are being tried, nor should he be kept under treatment for months, or even years.

with discharging sinuses and disturbed health when a forty minute operation and ten days' after-treatment would result in cure.

ABSTRACT OF DISCUSSION

DR. JOHN F. GOLDEN, Chicago: I think Dr. Dowd's division is the same as ours, that is, cases occurring in children and in adults. Tuberculosis of the cervical lymph glands in children



Fig. 8.—Chain of tuberculous lymph nodes removed from patient in Group 2.

has a tendency to cure itself without the aid of surgical intervention. In the adult it is quite different and the division might be carried to the descending infections which become limited in the chain. When it is stopped at a point and held, the patient's resistance tends to cure. There is still another type in which the tuberculosis of the cervical glands ascends from the mediastinum; also tuberculosis of the cervical lymph glands coincident with a tuberculosis of the lung, peritoneum or elsewhere. The differentiation of these types and the cure of the tuberculosis are accomplished not by removing the glands but rather by increasing the patient's resistance. We have found the tuberculin method the best. We use the standard solutions hypodermically both diagnostically and therapeutically, together with the administration of fats in the forms of an emulsion of cod-liver oil, butter and cream. We educate the patient to take his temperature at regular daily intervals as a control to the administration of the tuberculin. Uniformly in children we secure by this method a recession of the glands, some of them breaking down and discharging a cheesy substance, but uniformly progressing to a cure without enucleation. The usual diagnostic test used by us is one twentieth of a drop of pure tuberculin. This is given after the patient has been educated to take his temperature at three-hour intervals during the day. The temperature range from sixteen to twenty-four hours later is a good index to the extent of the infection and the degree of resistance of the patient. In cases in which we find a tuberculosis of the cervical lymphatics and the patient gives a great degree of reaction, temperature, nausea, vomiting and headache, there is as a rule a tuberculosis elsewhere.

DR. ROBERT T. MORRIS, New York: Perhaps the majority of cases of tuberculosis of the lymph glands of the neck, in the various groups in young patients and in older patients in cases in which the glands have not already broken down, do not require operation at all, provided that the patient

is so situated at hospital or in the private house that he may have the full benefit of our knowledge of the subject. First, I would emphasize that tuberculin must be used properly. Unless tuberculin is used properly it may be injurious. Next, increasing the general resistance of the patient is most important. The full meaning of that is not clear to any except those who have made a special study of tuberculosis and who know that no two patients are to be treated alike. In the cases suitable for local treatment, not operative, my best resource for dealing with many of these cases is along the lines of the Bier idea of hyperemia. In some cases we have had very successful results from using iodoform and oil injection. It is rather tedious and troublesome for young patients, who do not bear it well. They do not allow us to handle them. In other cases we have done well with Roentgen ray. But best of all has been the idea brought forward by Bier. In order to carry that out in suitable cases I have the patient rest the neck against a hot water bag for several minutes, then an ice bag, again the hot water bag for several minutes, then the ice bag for several minutes. Many children will play with their toys and older patients will read something which they had not the opportunity to read before because they have been too busy, if you persuade them that by carrying on the method of Bier hyperemia you may so stimulate the leukocytosis that tuberculosis disappears. It is a slow process and requires patience on the part of the patients. Most of these patients of all classes are curable without any sort of operation whatsoever, provided they are managed according to the best methods of today.

DR. W. E. LADD, Boston: For the last four or five years I have been following the teaching of Dr. Dowd. I cannot disagree with him on many points but would like to emphasize some. I have operated in about 160 cases of tubercular cervical adenitis, mostly in children. One hundred and thirty of these have been followed for from six months to five years. Of that number 93 per cent. are apparently cured, which is practically the same result as Dr. Dowd gets. The importance of the portal of entry should be emphasized.



Fig. 9.—Patient with diffuse tuberculosis, Group 3.



Fig. 10.—Patient with diffuse tuberculosis, Group 3.

In my series of cases the tonsil was believed to harbor the primary focus in from 75 to 80 per cent. of the cases. Many of these have been examined microscopically and show miliary tubercles often situated close to the crypts or close to the posterior capsule of the tonsil. I believe it is just as illogical to remove the glands from the neck without removing the tonsils as to remove tonsils without removing the glands from the neck. In either case you leave tuberculosis behind. In removing the tonsil the capsule should

be included as otherwise foci of tuberculosis may be left and be the starting of later trouble. I believe very strongly with Dr. Dowd that these cases should be taken when the glands are confined to the upper triangle of the neck, the subparotid group, when the operation is easier to perform and more effective. If you are going to wait and try tuberculin, hygiene without operation, Roentgen ray, heliotherapy and other forms of treatment you are going to let a great many cases progress to tuberculosis which is much more disseminated and much more difficult to cure. At the Children's Hospital in Boston, we get many cases which have gone for two or three years under other forms of treatment and present as the result a large number of sinuses—a difficult situation to handle. In the early cases the results of surgery are most satisfactory. One other point I believe to be worth mentioning is the type of infection. Raw's studies showing that surgical tuberculosis, that is, glandular and bone tuberculosis, does not exist in countries where cow's milk is not used, though phthisis is common, are suggestive. The work of Mitchell of Edinburgh who found that a very high percentage of these cases were due to the bovine type of bacillus is also suggestive that milk may be responsible for the high prevalence of this disease. If further investigations show this to be so the importance of furnishing a nontubercular milk supply becomes apparent.

DR. WILLY MEYER, New York: Dr. Dowd showed that the very beginning of the trouble usually is that group of glands which is situated in the upper triangle of the neck. No doubt if we take these cases in time we will prevent further trouble. The difficulty is that we do not get these cases always at this period. Sometimes we see them with the big chain of glands in front and behind the sternocleidomastoid. I do not know a better method if patients have been sick for a number of years and the glands are hard and firmly adherent, than to make, in the male at least, an incision in front and behind the sternocleidomastoid and divide the muscle transversely, forming an upper and lower flap. Then taking the internal jugular as a guide we can make a thorough extirpation. In the female we must try to get along in such cases with one incision, posterior to the muscle and not running up so high, to avoid scarring as much as possible. For glands in the upper triangle there is no better incision than the one Dr. Dowd showed. Dr. Morris mentioned conservative treatment, and he touched on Bier's hyperemia. He has seen results follow alternating with heat and cold applications. We can simplify the treatment by having the patient wear an elastic bandage around the neck, an ordinary garter elastic, with a hook sewed on at one end and a number of eyes at the other, for eleven out of every twelve hours. Children as well as grown people do not object to it. On the contrary, it often reduces pain and stiffness. As soon as glands have broken down, aspirate and inject iodoform-glycerin, or stab the abscess and aspirate with a Bier's suction cup. I have seen very good results from this method, even in the presence of hard glands, which is very exceptional.

DR. CHARLES N. DOWD, New York: The statement, that glandular enlargements in children's necks tend to subside, must be taken with reserve. The hyperplastic glands do subside; probably some of the tuberculous ones also subside; but the patients about whom this paper is written are the ones whose swellings did not subside. Most of them had had various forms of treatment before we saw them and came to us because the swellings failed to subside under this treatment. A more general understanding of the natural history of the disease is important. Nearly all the patients show the conditions of Group I at the beginning and have a great tendency to pass into the stages shown in Group II and Group III. The question of diagnosis is very important and has led to much confusion. Clinicians who do not remove the lymph nodes have a great tendency to call them tuberculous when they really are simply hyperplastic. I have had many consultations and conversations with them, have read their standards of diagnosis, have seen their patients and have removed some of the hyperplastic nodes at their request. It is manifest that any form of treatment which is applied to hyperplastic nodes is likely to be successful and is mis-

leading if the clinician thinks he has cured tuberculosis. My associates and I have taken great pains to visit clinics where tuberculin is used, since we are earnestly seeking the best way to cure this disease. I can mention one tuberculin clinic where there were more patients than in any other part of the institution to which it belonged and where I saw a whole series of these patients. There was not a single one who seemed to be cured by tuberculin. There were a number of patients who had lumps which needed operation; and there was one who had had a good operation and had only been treated with tuberculin for the induration which followed. The opinion held in that clinic was that when the patients ceased to be hypersensitive to tuberculin they were cured, even if they still had enlarged glands. The difference in opinion as to what constitutes an operation has led to great confusion. Patients are shown as operative failures who never have had thorough operations. The location of the scars makes this certain. The point which I especially wish to emphasize is that it is not fair to let patients drag along from Group I to Group II or III while something is being done which simply hides what is going on within the neck. We ought to take care of these patients in the curable stage, the same as we take care of patients with appendicitis, gall-bladder inflammation or kidney stones. Take care of them when you can cure them and do not let them drag along.

OSTEOCLASIS AND OSTEOTOMY*

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CHICAGO

Osteotomy is the oldest and the most popular operation for the correction of severe rachitic deformities of the legs in children, yet it has many disadvantages when compared with osteoclasis performed with the aid of the perfected Grattan osteoclast. Some of its disadvantages are: the production of a compound instead of a simple fracture; time required for operation; the danger of infection which, though it may be slight, nevertheless exists; time, care and expense necessary for antiseptic precautions, and the pain that always accompanies an open wound. But the most serious objection to osteotomy is the delayed union as compared with union after osteoclasis. This is undoubtedly due to the severing of the continuity of the bone shaft and the carrying of soft tissue into the open space with the chisel. This delayed union has frequently to be supplemented by postoperative treatment, which is never required after rapid osteoclasis.

Tubby¹ says that "nonunion after osteoclasis is scarcely, if at all, known, whereas it is seen from time to time after osteotomy."

Neither osteotomy nor osteoclasis should be performed on rachitic bone during the subacute stage. The roentgenogram will show a clearly outlined epiphysis when lime is deposited sufficiently to produce a fair degree of eburnation.

Under favoring conditions of a raw food diet and fresh air, eburnation is usually a process of only weeks or months.

The earliest observers noticed that knockknee produced flatfoot, but the fact practically escapes attention that a mild degree of knockknee, that is just notice-

* Read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Tubby, A. H.: Deformities, Including Diseases of the Bones and Joints, London, 1914.

able in the child, will frequently be sufficient in adult life to throw the center of gravity inside the inner border of the foot and produce a disabling flatfoot. In such cases the only remedy must be a supracondy-

complete in the tibia that it will fracture with a loud snap. Osteokampsis is the name given by Adolph Lorenz to the bending and stretching of bone without fracture.



Fig. 1 (Case 1).—Knockknees producing flat and pronated feet.

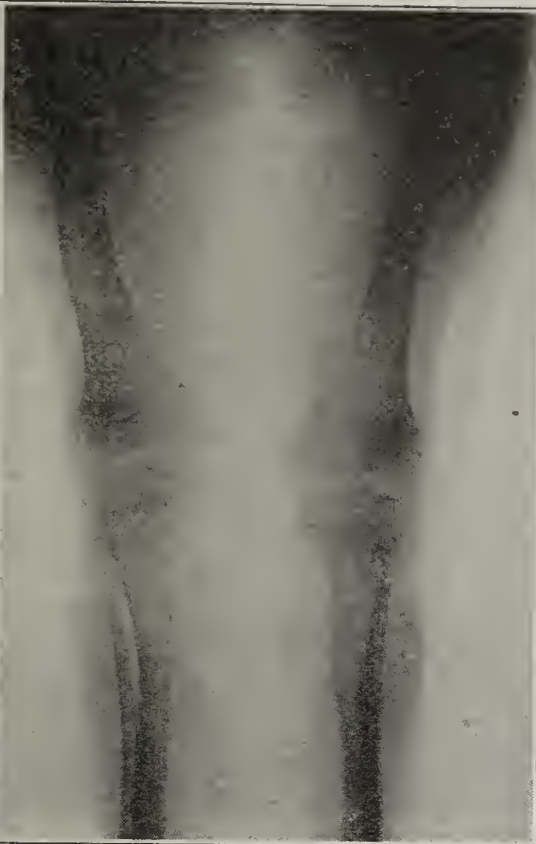


Fig. 2.—Roentgenogram in Case 1 two months after an eight second supracondyloid bending without fracture in the Grattan osteoclast.



Fig. 3 (Case 1).—Six weeks after bloodless correction of the knockknees, showing arches of the feet restored.

oid osteotomy, which the adult patient invariably looks on with abhorrence. This emphasizes the necessity of correcting mild knockknees in children when a slight

Figure 1 (Case 1) presents pronounced knockknees, and the roentgenogram (Fig. 2), taken two months after correction by osteokampsis, shows that the lower



Fig. 4 (Case 2).—Bowlegs; patient standing with the feet widely apart in the voluntary attempt to bring the outrolled feet on a plane with the floor.



Fig. 5.—Roentgenogram in Case 2 after an eight second bloodless overcorrection in the osteoclast without fracture.



Fig. 6 (Case 2).—Six weeks after rapid bloodless osteokampsis, showing that both the bowlegs and the abducted feet have been corrected.

upracondyloid bending in the osteoclast will produce an ideal correction. Experience shows that the lower end of the femur will bend in the osteoclast without fracture several years after eburnation has become so

ends of the femoral shafts took extreme inbends without fracture, and Figure 3 shows the same patient with symmetrical legs and the pronated feet corrected.

Bowlegs in a child should never be corrected by

osteotomy for the reason that an angular deformity is left, at the point where the chisel entered the bone.

In France I have seen bowleg cases in which attempts had been made to overcome the angularity left by osteotomy by driving the chisel into the bones of the legs at several different locations.

Unfortunate attempts are occasionally made to correct deformities of the legs by osteoclasis or osteotomy of the tibia without fracturing the fibula. The fibula always participates in the deformity, and the unfractured fibula usually neutralizes attempts to lengthen or correct a deformed tibia.

The deformity of bowleg is usually an exaggeration of the normal outbend of the lower femoral shaft, and a more pronounced and long distributed outbend of the tibial shaft.

In osteoclasis for the correction of bowlegs the pressure bar should be placed opposite the apex of the outbend and against the outside of the leg, to insure the prompt bending or fracturing of the fibula at the same time as the tibia. Then a few quick turns of the screw

appreciate the ease and rapidity with which anterior bent tibias can be bloodlessly corrected by the modern method of rapid osteoclasis.

For the correction of anterior bent tibias the pressure bar of the osteoclast should be placed opposite the apex of the deformity and against the outside of the leg. The fracture of the tibia and fibula should be in the direction of the least resistance and should be complete in eight seconds, and the deformity corrected by manual force and ready for plaster of Paris in another eight seconds. Symmetrical and functionally perfect legs will almost invariably result.

Figure 7 (Case 3) presents anterior bent tibias; the roentgenogram (Fig. 8), taken two months after correction, shows dark shadows of dense new bone filling the opened spaces in the tibias, and Figure 9 shows the same patient with symmetrical and useful legs.

It should be remembered that any operation that lengthens the leg must be preceded by a tenotomy of the Achilles tendon. If this precaution is neglected, the strong pull of the tendon will prevent a good cor-



Fig. 7 (Case 3).—Anterior bent tibias.



Fig. 8.—Roentgenogram in Case 3 taken two months after correction, showing dark shadows of dense new bone filling opened spaces in the tibias.



Fig. 9 (Case 3).—After rapid bloodless osteoclasis, showing symmetrical and useful legs.

gives the tibia a long distributed inbend curve. Even in well eburnated bones this overcorrection is frequently accomplished sufficiently to rectify the local deformity, and also to neutralize the other outbends without any fracture whatever. When fracture does take place it is only after the bone has bent a long way toward overcorrection, and the roentgenogram will show that the fracture is only subperiosteal and partial. The distributed corrective curve should be held in plaster of Paris for five weeks, and the result will invariably be symmetrical and functionally perfect legs. Figure 4 (Case 2), Bernard G., presents pronounced bowlegs, and the roentgenogram of the case after correction (Fig. 5) shows that the tibias took a long distributed overcorrection inbend without fracture, and Figure 6 of the same case shows symmetrical and useful legs.

All the American textbooks agree that "osteotomy is more satisfactory" for the correction of anterior bent tibias, for the reason that very few operators

rection, and a tenotomy will have to be done later to let the heels down to the floor.

Osteotomy is the only available operation for the correction of bone deformities of all patients over 12 years of age, and when the bones have been eburnated to an abnormal strength.

In adult life the soft parts do not stretch as readily and the bones have lost the pliability of childhood.

For the correction of anterior bent tibias in the adult, cuneiform osteotomy is the only practical operation.

For the correction of knockknees in the adult the McEwen supracondyloid osteotomy is usually preferred.

Figure 10, Nettie Z., aged 13 years, came into the service of Drs. Blanchard and Parker at the Home for Destitute Crippled Children, showing an anomalous case of neglected rachitic deformity with the general appearance of bowlegs and a tilt of the body to the right. The lower ends of the femoral shafts were twisted full 90 degrees, so that the patellas looked

directly outward. There was a marked anterior bend in the lower third of the shaft of the right femur, but both tibias remained normally straight. When the patient flexed either knee the foot came up in front of the opposite leg, making locomotion impossible. After supracondyloid osteotomy the condyles were rotated inward 90 degrees and the legs put into plaster of Paris in a straight position with the condyles of the right femur tilted forward. When the plaster was removed six weeks later, the legs were found to be symmetrical, and locomotion was perfect.

It is the position in which the legs are put in plaster of Paris after either an osteotomy or osteoclasis that determines both the anatomic and functional result.

While osteotomy has a broader field of usefulness than osteoclasis, there should be a more universal appreciation of the fact that a slight bending of the pliable bones of young children will usually correct bad rachitic deformities of the legs, and that they should not be unnecessarily subjected to the more severe and trying operation.

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ABSTRACT OF DISCUSSION

DR. J. TORRENCE RUGH, Philadelphia: I have nothing but commendation for the paper and there are one or two points in it that should be emphasized. One is that if the bones, in osteoclasis, are not entirely fractured, overcorrection must be the rule. It has been my experience that unless the bone is bent to the position of overcorrection, there is so much tension of the soft parts afterward that pressure-sores may develop over the bony parts. Another point is that for the general surgeon, or the man who is not so well equipped in paraphernalia as is a man who confines his work entirely to orthopedic surgery, the possession of an osteoclast is not always possible and may not always be necessary. For such individuals, I think that the operation of osteotomy will prove just as satisfactory as osteoclasis. A bone may be bent after it has been partially severed, and if the osteotome is driven through one half of the bone, the rest of the bone, by careful twisting with the hand, may be bent in the manner desired. For an outward bend, the inner plate should be cut through, and vice versa. In this manner, an incomplete fracture may be secured with the osteotome as well as by an osteoclast; and the result is as satisfactory in every way. The disadvantage of an open wound is practically a negative one. There is one criticism that I wish to offer. It is a plea for the presentation of photographs of these reported cases in such a way that the audience can get a true estimate of them.

DR. CHARLES A. PARKER, Chicago: Dr. Blanchard spoke of the rarity of nonunion in osteoclasis. I have a case that is not united yet. It was put in position after simple osteoclasis, without difficulty, and without any displacement; but it has not united yet, after two or three years. As to the number of bones that may be broken at one time, it was set at four by Dr. Blanchard. Recently, however, in a little colored girl, who had an anteriorly bent tibia and knock-knees, we broke both bones in the right leg, both bones in the left, and both thigh bones at one operation. She is doing well.

DR. EDWIN W. RYERSON, Chicago: There is one point about osteoclasis that should be realized, and that is, that we cannot do it in all bow-leg cases, because a certain number of these cases have the bend so low in the tibia that it is not safe to use the osteoclast. In cases in which

the deformity is very low, the osteoclast may slip over the end of the bone and injure the joint, so that it is better in these cases to do an osteotomy. I do not like to do osteoclasis on the femur. We cannot get the line of fracture quite close enough to the lower end of the femur. I have felt that there was danger in doing an osteoclasis of the lower end of the femur; and it has, therefore, been my custom, for seventeen or eighteen years, to do an osteotomy in all cases of knock-knees with the deformity in the femur. I have seen no nonunions or infections, or any other untoward result whatever, and I regard this procedure as just about as safe, except on theoretical grounds, as osteoclasis. The Rizzoli osteoclast is much slower than the Grattan. It used to be employed in the Children's Hospital in Boston. The Grattan osteoclast, which we use in Chicago, is excellent. I have used it in many cases, and do not hesitate to employ it in the cases of children up to the age of 12 years. I used it a few days ago in the case of a strong girl of 12 with eburnated tibias and in this instance, it made a slight tear in the skin over the tibia. This has never before happened with me, but I have seen other surgeons make slight tears in the skin with osteoclasts. Of course, such a lesion in skin that is unprepared, as is the case when osteo-



Fig. 10 (Case 4).—Rachitic twisted femurs simulating bowlegs.

Fig. 11 (Case 4).—After a McEwen osteotomy and redressment, showing symmetrical and functionally perfect legs.

clasis is performed, is more serious than is a skin wound by a chisel or knife when the surface has been thoroughly prepared for operation.

DR. ROLAND MEISENBACH, Buffalo: I was interested to hear Dr. Blanchard say that osteoclasis could also be applied to the antero-posterior bow-legs. Owing to the tensility of the Achilles tendon, I have been in the habit of doing osteoclasis on lateral bow-legs and using the osteotome on antero-posterior. I believe it is quite possible to do the osteoclasis near the epiphysis, if one is careful in the use of the osteoclast. I use the Grattan osteoclast, and the success of much of the work depends on the quickness and power of the osteoclast; also on the quickness with which the operator stops the osteoclast after correction has been established. For this reason, I have had my osteoclast so modified that its handle is dumb bell shape, giving greater force and momentum to the machine. I believe osteoclasis has many advantages over osteotomy in many instances.

DR. EDWARD S. HATCH, New Orleans: In my part of the country we have bow-legs and knock-knees always with us. I have been doing about half of my cases by osteoclasis and

half by osteotomy, and have not been able to see any marked difference in the results. In small children, I break the bones by hand and the results seem to be as good as those from osteoclasis.

DR. WALLACE BLANCHARD: Rachitic deformities have fallen off about 60 per cent. in Chicago since immigration has declined on account of the war. The children that are brought from warm climates to America get along well and do not develop rickets, but the children born of recent immigrants from Italy and Greece develop severe rickets. I found, at one time, that 50 per cent. of all of our cases came from Italy, Greece and Syria. We get many rachitic deformities in colored children coming from the far South. Concerning correction and overcorrection, we put up severe cases of bow-legs so that they look like knock-knees while they are in plaster, so thoroughly are they overcorrected, and we put up knock-knees so that they look like bow-legs in plaster. A good share of the apparent overcorrection is lost in the plaster and under the cotton lining of the plaster. In regard to nonunion: The roentgenograms show a well-defined epiphysis when the case has eburnated sufficiently to be past the danger of rachitic nonunion. Dr. Parker's case was probably still in the subacute stage. That was very likely the reason why he got nonunion, although the boy was old enough for complete eburnation to have occurred.

LUES MALIGNA

WITH REPORT OF TWO CASES

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In spite of the voluminous and often redundant literature on syphilis in our day, there is a significant lack of mention of that fulminant type of syphilis which we designate "lues maligna."

During the past five months, two patients with lues maligna have been admitted to the wards of the Rochester Municipal Hospital. Through the courtesy of Dr. George W. Goler, attending physician, and health officer of Rochester, N. Y., I am able to report the following histories:

CASE 1.—Two years before the patient, M. G., girl, aged 9 years, was born, her father contracted syphilis. For the past year, he has been confined in a hospital for the insane, with a diagnosis of paresis. The mother admits a history of chronic sore throat and general alopecia, but denies any eruption, condylomas, etc. A Wassermann test, made on the mother in January, 1916, was 1 plus. The patient was born at term after an uneventful labor. Until 7 years of age, she appeared to be a robust, healthy child. Two years ago, the mother noticed that the glands in the neck were enlarged. However, the general health was unaffected. One year later, the removal of adenoids and hypertrophied tonsils was advised. Shortly after the operation, a chronic serous nasal discharge developed. The fauces remained slightly inflamed, and there was continuous slight sore throat. The condition remained the same for about six months. The nasal discharge persisted in spite of continued treatment. Ten months after the tonsillectomy, and two months before her admission to this hospital, the nasal discharge began to be purulent, and, as the mother said, "matter seemed to come from between her teeth." The odor was that of necrotic tissue. Several small pieces of

bone were discharged from a sinus that had formed in the palate. After this, there was a regurgitation of liquids through the nose. Shortly after her admission to the hospital, the entire alveolar process on the left side of the superior maxilla separated en masse. A Wassermann test, made on her entrance into the hospital, was plus 4, reaction complete. She received 0.45 gm. of salvarsan, and inunctions of mercurial ointment thrice daily.

Salvarsan was administered five times at intervals of about two weeks. The amount given varied from 0.4 to 0.5 gm. One month after her admission, the uvula, pillars of the fauces, and the posterior wall of the pharynx became necrotic. Toward the end, deglutition became impossible; there was continuous slight hemorrhage. Death occurred three months after entrance into the hospital, and one year after the removal of the tonsils and adenoids. About one week before death, the left cheek became necrotic, and a sinus communicated with the oral cavity. This area of necrosis was spreading rapidly. Necropsy was not permitted.

CASE 2.—W. E., man, aged 42, colored, single, porter in hotel, whose father was dead, of unknown cause, whose mother, two brothers, and two sisters were living and well, and one brother died in infancy of unknown cause, had pertussis in childhood; but otherwise had always been well. He used alcohol and tobacco to excess. Twenty years before admission, a sore appeared on the glans penis. He was told that he had syphilis, and treatment by mouth was begun and kept up for nine months. He had received no specific medication since that time. He denied any history of eruption, alopecia, condylomas, or other manifestation of syphilis other than the history of the primary lesion.

About six weeks before admission, he consulted a physician for the relief of a mild sore throat. There seemed to be some purulent material in the crypts of the tonsils. These areas were touched with a silver nitrate stick, and an antiseptic gargle was prescribed. The condition seemed to improve under this treatment. Three weeks later, he returned to his physician complaining of pain in the wrists and ankles. The temperature was 101. He was ordered to bed, and salicylates were given in moderate doses. It was thought that the sore throat and pain were of rheumatic origin. Three days after, a necrotic odor was noticed on the breath. An examination of the throat revealed an area of necrosis on the tonsils, and a partial destruction of the uvula. When the throat became involved the second time, a few scattered purpuric spots appeared on the legs and trunk. These purpuric areas increased in number and size. They were more numerous on the arms, legs and back. There was no pain or itching.

Two weeks later, a purulent discharge was seen to escape from beneath the prepuce. The prepuce could not be retracted. Two days after the discharge was first noticed, a small necrotic area appeared on the dorsum of the prepuce. This spread rapidly, until it involved the entire prepuce, part of the glans, and nearly all of the shaft of the penis. Five days before admission, several large bullae developed on the inner surface of both thighs. These were opened, and rapidly became deep, sloughing areas.

For the past three days, there had developed a marked mental slowness. At his previous visits, the physician had considered him to be of normal mentality.

The white cell count was 12,000; the differential count gave polymorphonuclears, 77 per cent.; small lymphocytes, 16 per cent.; large lymphocytes, 6 per cent.; eosinophils, 1 per cent. Five c.c. of blood were mixed with 75 c.c. of glucose bouillon and incubated for three days. There was no growth at the end of that time. Until this time, a possible syphilitic cause was not considered. The history of infection twenty years



Lesions in Case 2.

before had not been obtained. A Wassermann test was found to be strongly positive. He was now admitted to the hospital.

Salvarsan, 0.6 gm., was given, and massive doses of mercury were ordered to be given by inunction. In the following five days, there was total destruction of tonsils and uvula. A deep slough appeared on the posterior part of the dorsum of the tongue and on the inner side of the cheek opposite the last left molar tooth. The ulceration extended forward until nearly the entire tongue became necrotic. The palate was breaking down, and a sinus into the nose was being formed. During this time, the ulcerative process destroyed the glans penis and part of the corpus cavernosum. The corpus spongiosum was unaffected, and micturition remained normal until death. The heart sounds indicated great myocardial degeneration; there were no valvular murmurs. The urine showed considerable albumin with hyaline and granular casts.

Necropsy was performed twelve hours after death. The pleura and peritoneum were normal. The lungs were very edematous, with several hemorrhagic spots on the lower surface of the right lung. The heart muscle was much degenerated. The valves were normal. There was an area of aortitis 2 by 4 cm. at the beginning of the aorta. The liver was slightly cirrhotic, the capsule not adherent. The spleen was very light in color and much softer than normal. The right kidney was hypertrophied (compensatory?). There was moderate parenchymatous nephritis. The left kidney was entirely cystic. There was no trace of kidney substance. Smears, made from the liver and spleen, and stained with silver nitrate after the method of Stern, showed the presence of the *Spirochaeta pallida*.

In these histories, several interesting features are common to both:

1. They fulfilled the requirements of our definition of lues maligna: the great destruction of tissue with symptoms of a toxemia, and the total absence of response to antisyphilitic medication, however vigorously employed.

2. In each, there was a long period of apparent good health followed by a rapid development of late syphilitic manifestations.

3. In each, the tonsil was the starting point of the illness and of the necrotic process.

4. In each, the severe systemic disturbance and the rapid destruction of tissue were preceded by trauma—sm to the tonsil or peritonsillar structures; in one case mechanically by the tonsillectomy, and in the other by the application of the caustic.

Did nests of the spirochetes lie dormant, or perhaps encysted in the tonsil, needing only the irritation and trauma to force them into the blood or lymph channels? The blood culture showed the absence of the ordinary bacteria of suppuration, while the presence of the spirochete must point conclusively to a pure syphilitic infection.

However, some other condition is also operative to produce the clinical picture. Probably, we must conceive a different strain of the spirochete of greater virulence, or a natural or acquired lack of defense on the part of the organism, humeral or cellular.

War Mortality.—Of the Boer War (1899-1901) only two features need be noticed. First, that typhoid attacked 57,684 men and killed 8,022, while the Boers only killed 7,781. Bacteria were more deadly than bullets, as Osler has said. Secondly, the modern missile was for the first time in general use, with the result that instead of about 15 per cent. of the wounded losing their lives, only about 8.8 per cent. died. The wounds from the new missile were much less severe and healed more quickly than ever before. The first aid packet had come to the aid of the soldier.—W. W. Keen, Before and After Lister, *Science*, 1915, xli, 845.

INTRASPINAL INJECTIONS OF MAGNESIUM SULPHATE IN DELIRIUM TREMENS*

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This is a preliminary report based on the study of twelve cases of delirium tremens occurring in the Philadelphia General Hospital. The suggestion for this treatment came from the relief given a patient suffering with tetanus who had marked delirium and considerable excitability, followed by recovery.

In the cases treated, lumbar puncture was performed and varying quantities of cerebrospinal fluid were removed according to the amount of pressure found. The amount removed varied from 10 to 40 c.c. After removal of the cerebrospinal fluid, a cubic centimeter for every 25 pounds of body weight of a 25 per cent. solution of magnesium sulphate, at a temperature ranging between 95 and 100, was introduced by means of a cubic centimeter syringe, through the lumbar puncture needle into the canal. These treatments were all given with the patient in a sitting posture. After the introduction was completed, the patient was returned to a semirecumbent position. No patient received a second treatment. All these patients required almost constant attention for twenty-four hours after the treatment was instituted, careful attention being paid to the nourishment, bladder and rectum. There were ten recoveries and two deaths. It might be mentioned that the chemically pure magnesium sulphate was used and was specially prepared in ampules. A digest of the clinical histories of three cases may prove of interest.

REPORT OF CASES

CASE 1.—R. H., man, aged 38, admitted Nov. 24, 1915, meat cutter by occupation, weight 150 pounds, before admission had been drinking for a little over a week, on an average, ten whiskies a day. He was markedly hallucinatory, could neither sleep nor eat, and was extremely nervous. The family history had no bearing on the present trouble. The patient was noisy, talkative, rambled incoherently, and had marked motor restlessness and tremors of the lips, tongue and extremities. He required mechanical restraint. No physical disorder was found. The knee reflexes were slightly exaggerated. This was a fully developed case of delirium tremens.

November 25, delirium and motor restlessness continued. Sedatives were administered with little results and restraint continued. November 26, the patient's condition was unchanged from that of the 25th. At 5:30 p. m. lumbar puncture was performed and 20 c.c. of cerebrospinal fluid removed. Six c.c. of a 25 per cent. solution of magnesium sulphate were introduced. At 6:40 p. m. the patient had developed an inability to raise either limb on command, but gripped the hand with a powerful grip when told. There was no loss of consciousness. Pain and touch senses were almost abolished, but the patient was sensible to deep pressure. Both knee reflexes and plantar reflexes were abolished. The patient slept during the night. When aroused he could speak only in whispered tones. There was relaxation of bladder and rectum. November 27, he was entirely quiet and rational. There was gradual restoration of function and reflexes during the day. The patient continued to do well, with no after-effects. December 6, he was discharged from the hospital cured. This case, in a general way, illustrates the clinical course of the patients who developed the paraplegic state. In the remaining cases there was weakness with diminished reflexes.

CASE 2 is one in which an attack of delirium tremens had certainly been aborted. T. B., man, aged 30, stevedore by

* Read before the Philadelphia Neurological Society, Dec. 17, 1915.

occupation, white, weight about 160 pounds, admitted to the hospital Nov. 17, 1915, began to use intoxicating liquors at 15 years of age. For the past six months had indulged more freely. He drank in all a pint of whisky a day. Two days before admission, he began to feel sick, shaky and restless, had marked insomnia, could eat very little, had hallucinations of hearing of an obscene character, and also had hallucinations of sight. He said that if he could take another drink these voices would leave him. In the evening of the 17th this patient was admitted to the Psychopathic Ward of the Philadelphia General Hospital in an extremely restless condition with hallucinations both of hearing and of sight. Motor restlessness was so extreme that he had to be restrained. November 18, in the morning, restraints were removed, but the patient still continued restless and had tremors about the lips and fingers on extension. He had had no sleep the night before. He also continued hallucinatory. At 3 p. m. lumbar puncture was performed, and 30 c.c. of clear cerebrospinal fluid were removed under pressure and 7 c.c. of a 25 per cent. solution of magnesium sulphate were introduced. On the evening of this day, he showed some weakness of the lower limbs, and both the plantars and knee reflexes were diminished. There was no involvement of bladder and rectum. The patient was not unconscious, but was inclined to be a little restless, not sufficiently, however, to require restraint.

Next morning the patient was rational, all the hallucinations had disappeared, and during the day there was complete restoration of function and reflexes. December 9 the patient was discharged from the hospital. There were no after-effects.

CASE 3.—M. D., man, aged 43, weight 180 pounds, was admitted Dec. 13, 1915, with a marked case of delirium tremens. This patient's mental condition precluded the possibility of obtaining a history. The history accompanying the patient did state that "yesterday he had 2 grains of morphin sulphate, one fiftieth grain of hyoscin hydrobromate, and 3 ounces of the syrup bromidum. Added to this, he received 10 grains of trional and 2 drams of paraldehyd." On admission, he was in a low muttering delirium, with marked tremors and motor restlessness, and pin point pupils. The skin was warm and dry and there was suppression of urine.

December 14, at 11 a. m., lumbar puncture was performed and 25 c.c. of cerebrospinal fluid were removed and 4 c.c. of magnesium sulphate introduced. This small quantity of solution was given because of the weakened condition of the patient, despite his extreme restlessness. In two hours a paraplegic state developed. The patient died twelve hours after the treatment.

SUMMARY OF TWELVE CASES

Seven of the twelve patients developed a paraplegic state in from one to two hours following the introduction of the magnesium sulphate with lost knee jerks, lost plantar reflexes, and relaxation of both sphincters. The return of partial function occurred in from twelve to twenty-four hours after the development of the paraplegic state, with the gradual return of the reflexes and complete motor power. Complete restoration of reflexes and function occurred usually in from thirty-six to forty-eight hours.

The remaining five patients had weakness of the lower limbs with lessened reflexes. These patients usually suffered from retention of urine. Other constitutional disturbances noted were that the temperature rose from 1 to 3 degrees, and the respiration became more rapid and shallow. There was also some acceleration of the pulse. Those patients who had developed a paraplegic state could only speak in whispers. In others there was no change in voice sounds.

The rapidity with which the delirium and restlessness subside, with restoration to the normal within twenty-four hours following this treatment, is certainly of value, in view of the little good sedatives do and of the high mortality among these cases.

Therapeutics

BLOOD PRESSURE

(Continued from page 436)

ALTITUDE

It has long been known that altitude increases the heart rate and tends to lower the systolic and diastolic blood pressures; that these conditions, though actively present at first, gradually return to normal, and that after a prolonged stay at the altitude may become nearly normal for the individual. Bürker³⁰ showed that altitude increases the red blood cells from 4 to 11.5 per cent., and the hemoglobin from 7 to 10 per cent. The greatest increase in these readings is in the first few days. It has also been shown that with every 100 mm. of fall of atmospheric pressure there is an increased hemoglobin percentage of 10 per cent. over that at the sea level.³¹

Schneider and Havens³² find that in low altitudes abdominal massage increases the red corpuscles, and the percentage of hemoglobin in the peripheral vessels. While there is thus apparently a reserve of red corpuscles while the individual is in a low altitude, in a high altitude they find such reserve to be absent; in other words, abdominal massage did not cause this increase in red corpuscles in the peripheral vessels. This absence of reserve is easily accounted for by the fact that after one reaches the high altitude there is an increase in red corpuscles and hemoglobin in the peripheral blood.

Schneider and Hedblom³³ showed that the fall in systolic pressure at altitudes is greater and more certain than the fall in diastolic, some individuals even having a rise in diastolic pressure. This rise in diastolic pressure is probably caused by dyspnea.

Schrumpf,³⁴ on the other hand, finds that normal blood pressure is not much affected by an ascent of about 6,500 feet, while patients with arteriosclerosis and hypertension, without kidney disease, have a fall in pressure. A patient with coronary disease should certainly not go to any great altitude, while patients with compensated valvular lesions, he found, were not injured by ordinary heights. He found that altitude seemed to decrease high systolic and diastolic pressures, while it even elevated those which were below normal, and caused these patients to feel better.

Any person who has a circulatory disturbance, and who must or does go to a higher altitude, should rest for a series of days, until his blood pressure and blood have reached an equilibrium.

Smith³⁵ made a series of observations on blood pressures at Fort Stanton, which has an altitude of 6,230 feet. He took the blood pressure readings in fifty-four young adults, seventeen of whom were women, and found that the average systolic reading in the men was 129 mm., and in the women 121, while the average diastolic in the men was 84, and in the women 82. Therefore he agrees with Schrumpf that the effect of altitude on normal blood pressure has been overestimated. In tuberculosis he found that the effect of

30. Bürker, K.; Jooss, E.; Moll, E., and Neumann, E.: *Ztschr. f. Biol.*, 1913, lxi, 379. The Influence of Altitude on the Blood, editorial, *THE JOURNAL A. M. A.*, Nov. 1, 1913, p. 1634.

31. Blood and Respiration at Moderate Altitudes, editorial, *THE JOURNAL A. M. A.*, Feb. 20, 1915, p. 670.

32. Schneider and Havens: *Am. Jour. Physiol.*, March, 1915.

33. Schneider and Hedblom: *Am. Jour. Physiol.*, November, 1908.

34. Schrumpf: *Deutsch. Arch. f. klin. Med.*, 1914, cxiii, 466.

35. Smith, F. C.: The Effect of Altitude on Blood Pressure, *THE JOURNAL A. M. A.*, May 29, 1915, p. 1812.

altitude was not great. He does not believe that this amount of altitude, namely, a little more than 6,000 feet, makes much difference in an ordinary tuberculous patient. He did not find that artificial pneumothorax made any important change in the blood pressure. His findings do not quite agree with Peters and Bullock,³⁶ who studied 600 cases of tuberculosis at an altitude of 5,000 feet, and found the blood pressure was increased, both in normal and in consumptive individuals. They also found that the increase in blood pressure, which kept gradually rising up to a certain limit, was indicative that the tuberculous patient was not much toxic; therefore the increase in blood pressure was of good prognosis.

CONDITIONS CAUSING CHANGE IN BLOOD PRESSURE

Woolley³⁷ quotes Starling as finding that the blood vessels dilate from physical and chemical changes in the musculature, and that this dilatation is caused by deficient oxidation and accumulation of the products of metabolism, including carbon dioxide. This dilatation ordinarily is transient and not associated with exudation, but in inflammation the dilatation is persistent and there is exudation. The carbon dioxide increase during exercise stimulates a greater circulation of oxygen in the tissues which later counteracts the normal increase in acid products. In inflammatory processes, however, the acid accumulates too rapidly to allow of saturation. In this case the circulation becomes slowed and the cells become affected.

Besides these changes in the blood vessels of the muscles, the general blood pressure becomes raised on exercise, the heart more rapid and the temperature somewhat elevated, and the breathing is increased. This increased heart rate does not stop immediately on cessation of the exercise, but persists for a longer or shorter time. The better trained the individual, the sooner the speed of the heart becomes normal.

Benedict and Cathcart³⁸ have found that the increased absorption of oxygen, showing increased metabolism, persists after exercise as long as the heart action is increased.

Newburgh and Lawrence³⁹ have found that increased temperature in animals, equal to that occurring in persons suffering with infection, reduces the blood pressure, causing a hypotension. This shows that high temperature alone in an individual sooner or later causes hypotension.

Although prolonged pain may cause a fall of blood pressure from shock, the first acute pain may cause a rise in blood pressure, and Curschmann⁴⁰ found that the blood pressure was high in the gastro-intestinal crises of tabes and in colic, and that the application of faradic electricity to the thigh could raise the blood pressure from 8 to 10 mm. in normal individuals.

The positive effect of decomposition products in the intestine, more especially such as come from meat proteins, is well recognized; but the importance, in high pressure cases, of the absorption of toxins derived from imperfectly digested food remaining in the bowels over night is not sufficiently recognized. Patients with high blood pressure should not eat a heavy evening meal, and especially should they not

eat meat. Willson⁴¹ well describes the condition caused by the absorption of these toxins. If the heart muscle is intact, he finds such absorption in high pressure cases will show diastolic as well as systolic increase:

The vessels pulsate and throb; the skin is pale; the head aches; the tongue is coated; the breath is foul; vertigo is often distressing; and not infrequently the hands and feet feel distended and swollen. A thorough house-cleaning of the gastro-intestinal canal causes the expulsion of the offending substances and the expulsion of gas, whereupon the blood pressure often resumes its normal level and the symptoms disappear.

Wilson suggests that not only the meat proteins, but also the oxyphenylethylamin in overripe cheese may often cause this poisoning; and cheese is frequently eaten by these people at bedtime. Of course if any particular fruit or article of food causes intestinal upset in a given individual, they should be avoided.

When the heart is hypertrophied in disease, the cavities of the ventricles are probably also generally enlarged, and therefore they propel more blood at each contraction than in normal persons and thus increase the blood pressure.

The blood pressure is raised not only by intestinal toxemia and uremia, but also by lead poisoning and the conditions generally present in gout.

It has been pointed out by Daland⁴² that nervous exhaustion may raise the blood pressure in those who are neurotic, and he finds that this hypertension may exist for months in some cases. On the other hand, in neurasthenics the blood pressure is generally lowered. As he points out, there is often a very great increase in the systolic blood pressure at the menopause, while the diastolic pressure may not be high. This makes a very large pressure pulse. This suggests the possibility of disturbances of the glands of internal secretion. This hypertension is generally improved under proper treatment.

Schwarzmann⁴³ studied the blood pressure in eighty cases of acute infection, and found that a high diastolic blood pressure during such illness indicates a tendency to paralysis of the abdominal vessels, and hence a sluggish circulation in the vessels of the abdomen. He found that in seriously ill patients this high diastolic pressure is of bad prognosis. He also found that a lower systolic pressure with a lower diastolic pressure is not a sign that the heart is weakening, but only that the visceral tone is growing less. On the other hand, when the diastolic pressure rises while the systolic falls, this is a sign of failing heart.

Newburgh and Minot⁴⁴ find that the blood pressure course in pneumonia does not suggest that there is a failure of the vasomotor center. They found that "low systolic pressures are not invariably of evil omen." They also found that the systolic pressure in fatal cases is often higher than in those in which the patients recovered, and they found that the rate of the pulse is more important in determining the treatment than the blood pressure measurements.

The work which has been described under this section is of interest as indicating the newer experimental work on the physiology of blood pressure. Much of it is new, however, and it is difficult to draw absolute therapeutic conclusions from the evidence offered.

(To be continued)

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A CHAPTER IN THE HISTORY OF THE NERVOUS SYSTEM

Abraham Jacobi has remarked that in America the history of medicine is almost never taught, and that as long as our universities do not teach it, the pupils feel encouraged to neglect it. Many reasons might be urged for the study of the history of science. It gives some idea of how men who have accomplished things have lived and thought and worked. It furnishes a perspective view of the way in which the medical disciplines, like others, have come into their present form. The continuity of development in science is brought to light. A medical historian has intimated that the history of medicine furnishes valuable and fruitful lessons of what not to do—lessons often neglected so that the same gross errors have been repeated over and over. Clifford once remarked that scientific thought is human progress itself; and few experiences can furnish a more wholesome reminder of the limitations of human knowledge and, above all, of the importance of rejecting superstition and maintaining the open mind, than the stories of the development of scientific truth. There is a tendency even among devotees of medicine to acquire an attitude of complacent belief in current doctrines and therapeutic procedures. This never makes for advancement either in the science of medicine or in the arts of practice. History serves to recall the need of the tolerant point of view and the willingness to listen to the new without preliminary bias.

Langley has remarked that the death of a theory is often not due to its being definitely disproved, but to the general progress of scientific knowledge which robs it of its credibility; it was in this way that the theory of "animal spirits" died. He has recently prepared a sketch of the progress of discovery in the eighteenth century as regards certain portions of the nervous system.¹ Great are the changes that have occurred in the intervening years! We are taken

back to the days two hundred years ago when it was the current belief that all the nerves of the body had their origin in the brain and that the brain was the sole source of nervous influence. There had already been a theory of the nature of nerve influence which regarded the nerves as tense cords; and nervous influences were oscillations or vibrations set up in them. But the theory generally adopted and handed down to the eighteenth century physicians as to the nature of the nervous influences was that the brain concocted, or secreted from the blood, an attenuated "subtle" fluid which it forced down small tubes in the nerves, the tubes being too small to be visible. The fluid was spoken of as "animal spirits." Earlier the term had meant the vapor or emanation of the "animus or rational soul"; at this time animal spirits were simply the medium by which the mind and body influenced one another. There was no sort of agreement, says Langley, as to the way in which the nerves caused motion; whether by the animal spirits setting up fermentation with something in the muscle fibers, or with something in the blood, or by the animal spirits flowing into the muscle and distending it, or in other ways.

The new century led to progress with the abandonment of the older doctrines. The nature of the nervous influence was now acknowledged to be unknown, but it had been suggested that it was of the nature of electricity; it was spoken of as nervous power or *vis nervosa*. The peculiar functions of the sympathetic nervous system, and what has latterly been described as the autonomic or visceral system, began to be considered. The latter means the nervous system of the glands and of the involuntary muscles; it governs the "organic" functions of the body. In 1727 Petit contested the cerebral origin of the intercostal nerve—sometimes but not usually called the great sympathetic. Before long it was maintained that this nerve sent fibers to the viscera, the glands and the blood vessels; and the viscera received nerves also from the vagus and from the sacral nerves. The intercostal also sent fibers to the diaphragm, and by some it was held that the movement of the diaphragm in sleep and other similar involuntary motions were carried out by way of the intercostal nerve.

For the most part nerves were supposed to run through the ganglia to their terminations, forming in them a special kind of nerve plexus; but some believed that a new organization occurred in the ganglia, and that new nerve fibers were sent off from them. Except on anatomic grounds, there was no definite distinction between spinal and other ganglia. In order to account for the absence of voluntary control over the viscera, and the absence of feeling in them normally, the theory had been put forward that the ganglia prevented nerve influence below a certain intensity from passing through the nerves. The idea that the nervous ganglia were "small brains" dates from Winslow, 1732.

1. Langley, J. N.: Sketch of the Progress of Discovery in the Eighteenth Century as Regards the Autonomic Nervous System, *Jour. Physiol.*, 1916, L, 225. Most of the facts cited above regarding the history of the physiology of the nervous system are taken from this paper.

Whytt, 1751, brought clinical experience largely to bear on the problems of the autonomic nervous system. He used the more neutral term "nervous power or influence" for "animal spirits," and he stated definitely that it was prepared in the spinal marrow as well as in the brain. He accounted for the different duration of life of different parts of the body, after removal from it, by differences in the constitution of the nerves, so that the nervous power contained in them lasted unequal times in different cases. He considered that in normal life there was a constant flow of nervous power to the muscles and to the sphincters of the bladder or anus, keeping them in a constant state of tension.

Haller, 1752, brought out the differences between the sensitiveness of the viscera on the one hand, and of the skin and muscles on the other. In addition to these claims regarding sensibility, he formulated the theory that contraction could be brought about by stimuli without the intervention of nerves, or of any other intermediary agent. It is interesting to note in passing that the effect of strong emotions and passions on the vital organs was considered by Johnstone, 1771, to be due to the impressions on the brain being much more violent than those set up by the will, and thus the nervous power was able to pass through the ganglia.

Langley reminds us that at the end of the eighteenth century the theory that the brain was the ultimate source of nervous power was still held, and perhaps generally held; but it had received a considerable shock from further cases recorded a little after the middle of the century and at later times, of full term fetuses having apparently normal viscera, nerves and muscles, but living no brain.

There were comparatively few new experiments contributed to physiology during the century under review. The galvanic method of stimulation was still to make a great contribution in subsequent years and pave the way for the modern conceptions of the innervation of the viscera.

THE SIGNIFICANCE OF AMMONIUM SALTS IN NUTRITION

Living objects are distinguished from the lifeless by the possession of certain properties which the latter lack. Protoplasm, the physical basis of living things, may exhibit irritability, movement, growth and metabolism whether it be in the cells and structures of animals or in those of plants. Living matter, Mathews states, is a substance found in all living things, essentially the same in all, but differing somewhat in its physical appearance and chemical composition in each particular kind of cell. The physical and psychologic complex of phenomena to which is given the collective name of "life" is associated always, so far as we know, with this substance, although each individual property

may be independent of it. With the development in biology of this somewhat unified point of view has come a natural tendency to observe the fundamental similarities between animals and plants. Thus it has been remarked that the contrast which seemingly exists between these groups of living organs consists merely in the facts that in the animal organism the processes of oxidation and splitting are predominant, whereas in the plant chiefly those of reduction and synthesis have thus far been studied.

Doubtless there is no extremely sharp boundary line between animals and plants, the differences being more of a quantitative than a qualitative kind. It has presumably been under the influence of this idea that a number of present-day investigators have at various times begun studies of the value of nitrogen in the form of ammonia as a protein sparer or protein former in the animal organism. In this country the problem has been attacked in particular by Underhill¹ at Yale University. His work indicates that in any consideration of the influence of ammonium salts on intermediary metabolism a distinction must be recognized between ammonium salts of organic acids and those of inorganic nature. The ability of the organism to dispose of these two types of salts is radically different. All of the inorganic ammonium salts tested and some of those of organic nature cause a distinct excess of total nitrogen output over the normal. These salts apparently stimulate nitrogenous catabolism. In the case of salts like ammonium citrate or ammonium acetate, however, the nitrogen usually does not reappear as ammonia in the urine. It may be converted into urea or may be temporarily retained in some form.

These facts have lately been corroborated by Caldwell and Clotworthy.² Thus they found, with respect to the manner in which the extra ammonia nitrogen taken with the food or injected into the body is excreted, that the mode of elimination depends on the ammonium salt employed, and apparently on the ions into which the ammonium salt is dissociated. For instance, the added nitrogen in the case of ammonium acetate is excreted in the form of urea. In the case of ammonium chlorid and ammonium phosphate, it is excreted both as urea and as ammonia. The acetic acid derived from ammonium acetate is a much weaker acid than the hydrochloric acid, or the phosphoric acid derived from the ammonium chlorid and ammonium phosphate, respectively. The body does not find it necessary to protect itself by the production of ammonia, to neutralize the acetic acid, but it is com-

1. Underhill, F. P.: Studies on the Metabolism of Ammonium Salts, I, The Elimination of Ingested Ammonium Salts in the Dog upon an Adequate Mixed Diet, *Jour. Biol. Chem.*, 1913, xv, 327; II, A Note on the Elimination of Ingested Ammonium Salts During a Period of Prolonged Inanition, *ibid.*, p. 337. Underhill, F. P., and Goldschmidt, S.: III, The Utilization of Ammonium Salts with a Non-Nitrogenous Diet, *ibid.*, p. 341.

2. Caldwell, W., and Clotworthy, H. R. S.: The Fate of Inorganic Nitrogen in the Metabolism of the Dog, *Biochem. Jour.*, 1916, x, 14.

pelled to protect itself in the case of hydrochloric acid and phosphoric acid.

Abderhalden,³ who has found that ammonium salts, and especially ammonium acetate, can influence at times the nitrogen balance in the sense of a retention, now contends that there are no grounds, from the results which he has obtained, for the assumption that protein can be formed, as it is in plants, from ammonia and nitrogen-free compounds, such as carbohydrates and fats. We can readily agree, therefore, in the conclusion of the most recent investigators that the analogy between the plant cell and the animal cell does not seem to hold in respect to nitrogen; for while syntheses are not denied to the animal cell, it has not yet been shown that the latter is able to manufacture complex organic substances from very simple inorganic constituents. Limitations are thus set by Nature to any extreme program of simplified nutrition.

ENDEMIC GOITER

The causation of endemic goiter has furnished a topic of engrossing interest which gains prominence in the United States as newer areas of the noticeable distribution of this disease are being brought to the attention of students of the medical sciences. At one time considerable credence was given to the assumed correlation between the geologic formation of certain regions and the incidence of thyroid growths. The strata were believed to contain and yield to the waters issuing from them undefined substances that are noxious in the sense of inducing thyroid hyperplasia. Although this broader contention, supported by the assertions of the Birchers, has been quite generally abandoned, the possibility of some etiologic connection between potable waters and endemic goiter has continued to clamor for recognition up to the present day. If water is not the vehicle for a defined chemical substance, it may conceivably be a carrier of biologic agencies, such as organisms responsible for specific diseased conditions. It has been a decided advantage for the investigations in this domain that some of the lower animals, notably the rat, have shown themselves suitable for the development of typical thyroid overgrowth, and consequently available for the investigation of its incidence on a large scale under carefully controlled experimental conditions. The discovery of characteristic thyroid hyperplasia in fishes has likewise served to ventilate the question as to whether this apparently endemic phenomenon is due to dietary and environmental factors or to infectious agencies. Both views have been supported in this country.

The most recent elaborate inquiry into the origin of endemic goiter conducted at the Hygienic Institute of the University of Zürich in Switzerland, a country

notable for the frequency of this thyroid disease, affords some new facts which must be reckoned with in the future studies of the subject. Hirschfeld and Klinger¹ have found that rats kept in regions in which goiter is endemic develop thyroid hyperplasia. This outcome is without any apparent relation to geologic factors or the sources of the supply of drinking water. In a goiter-free region these hyperplasias were not developed in animals from the same original stock. Furthermore, a transfer of goitered rats to these regions of immunity gradually brought about a complete return of the involved glands to the normal. Here, then, was an experimental opportunity to study the control and origin of the disease.

The possible rôle of drinking water naturally elicited early attention. These most recent Swiss investigators have found that the cause of the endemic goiter cannot be attributed to any agency, either a dissolved substance or an organism, which is found in the water exclusively; for in the goiter region goiter developed in rats which received distilled and sterilized water to drink, while in the goiter-free regions the supply of water obtained from regions where goiter is endemic failed to provoke any hyperplasia whatever. It may be recalled that this finding is not in accord with the reports of several investigators who have seen goiter develop when water from an involved region was supplied. Hirschfeld and Klinger point out, however, that if suitable control experiments are undertaken under these conditions, goiter may appear independently of the character or source of the drinking water. It is the region or locality factor rather than the water offered that determines the outcome. They propose, therefore, to abandon the long cherished idea of the existence of a specific *kropfwasser*—a goiter-producing water.

Nor is the evidence more convincing for the theory of either the contagious or infectious character of endemic goiter—a hypothesis which also might easily be reconciled with the experience of localized incidence of the disease. Contact and common surroundings with goiter-bearing animals and nests transported from goiter regions did not increase the appearance of goiter in the unaffected localities. The views championed by McCarrison,² particularly with reference to the existence of intestinal etiologic factors, likewise failed of support in the Swiss experiments. On the other hand, the possibility of a microbiotic origin of goiter cannot be said to be absolutely excluded at the present time.

Hirschfeld and Klinger¹ submit that endemic goiter need not be regarded solely as the expression of an intoxication of chemical or infectious nature, which

3. Abderhalden, E., and Hirsch, P.: Fortgesetzte Untersuchungen über die synthetischen Fähigkeiten der tierischen Zelle, Versuche über die Verwertung verschiedener Stickstoffquellen im Organismus des Hundes, Ztschr. f. physiol. Chem., 1913, lxxxii, 1.

1. Hirschfeld, L., and Klinger, R.: Experimentelle Untersuchungen über den endemischen Kropf, Arch. f. Hyg., 1916, lxxxv, 139.

2. McCarrison: The Etiology of Endemic Goiter, London, 1911; Endemic Goiter, editorial, THE JOURNAL A. M. A., March 8, 1913, 751; Endemic Goiter and Radio-Activity, June 7, 1913, p. 1798; Revision of Hypotheses Regarding Endemic Goiter, Feb. 14, 1914, p. 53.

as hitherto been customary, but prefer tentatively to look on the disease as due to a pathologic condition of metabolism of as yet unknown character. In view of the peculiar distribution of the malady, the well defined circumscribed nature of the defect, and the possibility of producing the disease experimentally in the ways cited, they regard it as not unlikely that a specific etiologic factor is at work. Yet it is by no means excluded that the goiter is the outcome of a cooperation of a number of independent disturbances which attain more than a fortuitous coincidence in certain regions. A way to test these views experimentally appears to be available.

FOOD ABUSES IN WAR TIMES

In referring to the fact that the annual consumption of sucrose has reached over 85 pounds per capita in the United States, a quantity equivalent to 2,000 calories daily for a family of five, we recently quoted the following significant remark by Lusk: This quantity of sugar costs the nation a million and a half dollars daily, and the rich harvest to be reaped by the replacement of only a part of this by saccharin, which has no fuel value whatever, is obvious.¹

Recently the interesting report of Dr. A. E. Taylor on the conditions of diet and nutrition in the camp maintained for interned British civilians at Ruhleben, Germany, was reviewed as an indication of how the food problem of a country left largely to its limited natural resources was being met.² A subsequent report by the same American investigator³ indicates a more serious situation from the standpoint of the possible adequacy of the ration, the diets furnished now being essentially fat-free. Fish and margarin have been withdrawn. Diplomatic complications have arisen to make a scientific discussion of the problem of the nutritional needs of the interned civilians impossible at present.

One fact, however, which is quoted on the authority of Taylor's report to Ambassador Gerard, is as significant as it will be surprising. In the absence of vegetables one week, rhubarb was served once. No sugar was furnished with it, but instead, according to Dr. Taylor's report, instructions were given to the kitchen men to employ saccharin for sweetening, and this was supplied for the purpose. The camp as a unit protested to the kitchen against the peculiar after-taste that followed the eating of the rhubarb. This might be expected if the dosage was not regulated with intelligent oversight and experience. Prior to the war the use of saccharin in foodstuffs was absolutely prohibited in Germany. In view of current tendencies in

the United States, too much emphasis cannot be given to Taylor's advice in his governmental report. He says: "It is a truism in modern food laws the world over that the consumer should never be subjected to sophistication or substitution without his knowledge and consent. If the authorities in Ruhleben are not able to furnish sugar with such foods as are normally prepared with sugar, the correct procedure would be frankly to notify the men to this effect, offer the individual men saccharin for their use, if they choose to employ it, leave it to other men to furnish their own sugar if they wish, and not impose on 3,000 men an artificial sweetening agent without their knowledge or consent." These words express a sentiment which deserves widespread diffusion on this side of the Atlantic, where war does not excuse objectionable practices in the food industries.

Current Comment

PERPETUATING PATENTS BY TRADE NAMES

The patent on aspirin¹ (acetylsalicylic acid), controlled by the Bayer Company, American representative of the Farbenfabriken of Elberfeld Company, will expire next year (1917). THE JOURNAL has previously stated that the grant of this patent was regrettable and worked injustice to American citizens. It is unnecessary again to go into the grounds for this statement; neither in the Farbenfabriken's home country, Germany, nor in any other country except in the United States, has a patent been granted for this product. Owing to their monopoly, the manufacturers have been able to exact a much higher price for acetylsalicylic acid, or aspirin, in this country, than elsewhere. Naturally, the Bayer Company, the American agents, view with disfavor the prospect of being compelled to share this rich field with competitors. The foregoing furnishes the answer to inquiries which have reached us from all over the country with regard to the campaign of publicity which the Bayer Company has inaugurated in the lay press. A presumably authentic and apparently candid exposition of the methods used and the motives behind the aspirin advertising is furnished in *Printers' Ink*:²

"The manufacturers of aspirin are about to launch an extensive advertising campaign to clinch the market as far as possible before the expiration of their patent rights next year. . . . The purpose of the campaign is to identify the product with the trademark of the Bayer Company and to this extent hamper competition after the expiration of the patent."

The business of the Bayer Company, the article goes on to say, has been hurt by the sale of worthless or even harmful imitations put on the market by irresponsible and unauthorized persons when the present war stopped importations from Germany.

"The public knew aspirin, but did not know who made it [*italics ours*]. . . . When the Bayer Company, Inc., took

1. Lusk, Graham: Food Economics, Jour. Washington Acad. Sc., 16, vi, 393.

2. A Report on Nutrition in a German Internment Camp, editorial, THE JOURNAL A. M. A., July 8, 1916, p. 125.

3. Further Correspondence Respecting the Conditions of Diet and Nutrition in the Internment Camp at Ruhleben, presented to both Houses of Parliament, London, Miscellaneous No. 21, 1916.

1. Granted Feb. 27, 1900.

2. *Printers' Ink*, June 29, 1916, p. 189; July 13, 1916, p. 100.

over the manufacture of aspirin in this country, the first steps were taken to identify the product with the firm who made it. . . . Of course, there are good reasons why the makers were loth to advertise the product or to exploit their trademark. As every one knows, the advertising of a medical proposition is an extremely ticklish subject. . . . It is easy to make a misstep. Aspirin is one of those proprietary drugs that are extensively prescribed by physicians. If anything were done that might possibly associate this drug with the patent medicines that are in disfavor with the profession, the valuable influence and cooperation of thousands of doctors might be lost. It is believed that this knotty phase of the question is being answered in the present advertising. . . . Since nothing is mentioned about 'medicine,' 'cures' or 'ailments,' it is anticipated that there will be but little objection to the copy. All that the advertising attempts to do is to link up the name 'Bayer' with aspirin. . . . The nearest the copy gets to medical talk is in this sentence in very small type at the bottom of the advertisement, 'The trade-mark "Aspirin" (Reg. U. S. Patent Office) is a guarantee that the monoacetic acid ester of salicylic acid in these tablets is of the reliable Bayer manufacture.'

From this it appears that, not content with seventeen years of monopoly, the aspirin people are attempting to retain a hold on the market *in perpetuo* by associating the name of the company with the trade name "aspirin." There can be no better time than the present, therefore, for the medical profession to substitute, for the nondescriptive name "aspirin," the descriptive and correct name acetylsalicylic acid.

MIRACLES IN THE WAR ZONE

The *Outlook* publishes, in a recent issue,¹ the "War Letters of an American Woman." The writer describes the results of a treatment of burns which she witnessed at a Paris hospital, and admits at the outset that she finds it hard to write collectedly on the subject. She was evidently in the proper condition — "sensitive" is, we believe, the technical term — to show high receptivity for the miraculous. The tar, which had been sprayed on the soldiers by the enemy, long miles away at the front, was still burning, she says, when they reached the hospital in Paris. Such a beginning leads the reader to anticipate something sensational; he is not disappointed. Enough miracles are related to make fortunes for half a dozen shrines and to justify a carload of relics. "And do you know, will you believe," she writes, "that very man — that apparent wreck, every feature of whose face was then indistinguishable, eyes closed, *lips and parts of his face burned to the bone*, teeth all exposed like a grinning mask, . . . ten days after . . . the deep wounds are filled up, the flesh fast healing over with new skin, that . . . there will not be, within another week, *even a scar?*" At the risk of being discourteous, the physician will answer this question in the negative. These marvels are credited to a dressing,² a proprietary product which has been for more than a dozen years on the French market and which has been also exploited here. Though this product is in composition intermediate between paraffin cerate and resin cerate, it sells, under its proprietary name, at \$4 a pound.

1. The *Outlook*, Aug. 2, 1916, p. 794.

2. See Ambrine, *Queries and Minor Notes*, this issue, p. 535.

The correspondent of the *Outlook* draws a touching picture of the discoverer. The researches which culminated in this discovery have left him prematurely old and broken in fortune. "He deserves the recognition and the thanks due to a great benefactor of the human race. But he doesn't ask it. He is the most modest of men." Alas! That such modesty should not be allowed to blush unseen. Not only does "An American Woman" indiscreetly publish his name and address, but the American agents for this remedy, in their ruthless rapacity and sordid commercialism, ride roughshod over his modesty and for years have been freely using his name in their advertising literature. The greatest miracle is that, by the instrumentality of a credulous and uncritical lay writer, the esteemed *Outlook* has been ambushed into spreading a gratuitous advertisement over two of its most valuable pages.

EFFICIENCY EXPERTS, SOCIOLOGISTS AND DOCTORS

The efficiency expert was investigating the hospital. He reached a twenty-bed ward just at the luncheon hour. Twenty well filled trays were placed before the patients. Six trays, untouched, were removed thirty-five minutes later. "Absolute waste," said the efficiency expert. "Find out which patients want something and send up trays only for those that are hungry." "But a well filled, beautiful tray will sometimes create an appetite," said the physician. "Oh!" said the efficiency expert. The lady sociologist had carefully thought over the matter of birth control and obstetrics and sat down to write out her thesis:

Medical men have done much to help population (and at the same time to increase obstetrical practice!) by inventing bugaboos. For example, it is frequently stated by medical men and is quite generally believed by women, that if a first childbirth is delayed until the age of thirty years the pain and dangers of the process will be gravely increased, and that therefore women will find it advantageous to begin bearing children early in life.

One also reads that women who bear children live longer on the average than those who do not, which is taken to mean that child bearing has a favorable influence on longevity.

A third bugaboo is that if a child is reared alone, without brothers and sisters, he will grow up selfish, egotistic, and an undesirable citizen. Figures are, however, so far lacking to show the disastrous consequences of being an only child.

"Well," said the physician, "the lady is clearly in error. For example—" But what's the use! "Show me the maker," said Aesop, "stick to your last."

THE ARTIFICIAL PURIFICATION OF OYSTERS

The biologic conditions most favorable for the production of high class oysters are too frequently associated with those which tend to produce pollution. This circumstance has caused disease from the consumption of contaminated oysters. Three radical remedies which have been suggested for this danger are: alteration of sewage disposal outfalls, removal of the beds, and prohibition of the fishing of oysters from polluted areas. In many cases, for economic reasons

none of these remedies are available. It has been found that if contaminated oysters are placed in unpolluted tidal or stream water they will purify themselves in a very short time. In the summer months, only a few hours are required, and in the hibernating period, a few days. This method has been put into practice in Europe, but two factors militate against its universal application. The people of the United States are accustomed to purchasing oysters of a good quality at a low price. The cost of this operation would be prohibitive. Moreover, it would rarely be possible, in the immediate neighborhood of the oyster beds, to find unpolluted water areas for purification purposes with a saline content similar to that of the waters in which the oysters have been grown. These facts have stimulated the search for other methods of purification. Mr. W. F. Wells,¹ sanitary chemist in the United States Public Health Service, has obtained entirely satisfactory results by the use of small quantities of bleaching powder. He places oysters in basins or floats containing a suitable quantity of water, and then treats them with two doses of a suspension of calcium hypochlorite. The second dose is given after six hours. In each case a quantity of bleaching powder is used which gives 1 part of available chlorine in 4,000,000 parts of water. The experiments are believed to prove that in this simple and inexpensive manner, oysters which have lain in polluted water can be purified to such a degree as to pass the most rigid standard, without in any way interfering with the normal life of the oyster, or producing any appreciable difference in flavor.

FOREIGN CORRESPONDENCE

On various occasions, letters have appeared in our Knocks and Boosts department which indicated that some of our readers regarded *THE JOURNAL* as unneutral. According to some of the writers, *THE JOURNAL* was biased in favor of the Allies; according to others, in favor of the Central powers. Among the reasons mentioned for these views were that (1) *THE JOURNAL* placed the London letter before the Berlin letter; (2) the Berlin letter appeared before the London letter; (3) some sentence in an editorial, in a news item, or even in an original article had favored one side or the other. Now *THE JOURNAL* is unneutral because it is publishing letters from Paris and London, but not from Berlin or Vienna. One subscriber has discontinued his subscription for this reason. While *THE JOURNAL* regrets losing a subscriber, it regrets still more that it cannot get the letters. Our occasional correspondent at Budapest, from last accounts, was a prisoner in Russia. Our Vienna correspondent, when last heard from, was working in a base hospital at the front. We have just had word from our Berlin correspondent that he stopped sending letters because, among other reasons, he was not getting *THE JOURNAL* and had not received the remittances which had been sent him, therefore concluding that his communications were not getting through. We expect, however, to

have his regular letters soon. Incidentally, it will be noticed that no German or Austrian journal has been listed recently in our Current Medical Literature department. This, of course, is because none has been received: the date of the last Berlin journal that reached us is April 17, and of the last Vienna journal, March 9.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Quarantine Against Poliomyelitis.—The state board of health on July 10, established a state quarantine against infantile paralysis and detailed six inspectors to board and inspect all overland trains before entering the state.

Fight Against Rabies Expensive.—During the fight which California has been making against the spread of rabies, 7,162 coyotes were killed, as well as many other rabies-carrying animals, and the cost of the campaign was \$10,500.

Personal.—Dr. Lorne B. Graham, San Francisco, has returned after two years' service in hospitals in London, in Red Cross work, on convoy ships in the Mediterranean, and finally on duty with a Canadian regiment at the front.—Dr. Charles W. Girdlestone has been elected city health officer of Riverside, succeeding Dr. George E. Tucker, resigned.

ILLINOIS

Personal.—Dr. J. Howard Beard, Urbana, has been appointed health officer of the University of Illinois.—Dr. Harry W. Ackemann, Rockford, Captain, M. C., Ill. N. G., assigned Third Illinois Infantry, has been obliged to return from the southern frontier on account of illness.

New Rules for Healers.—New rules governing the examination for "practitioners other than licensed physicians" go into effect September 1. The new rules for these "other practitioners" require a high school training and four full years of technical work for full credit on the point of education preparation. There are at present about 1,800 "other practitioners" licensed in Illinois.

Anterior Poliomyelitis.—The State Board of Health has issued a pamphlet, brief and clearly expressed, giving information and advice regarding acute anterior poliomyelitis, together with an abstract of the rules and regulations of the board regarding the disease. Copies of this pamphlet may be obtained on application to Dr. C. St. Clair Drake, executive officer of the State Board of Health, Springfield.

Cattle Quarantine Removed.—On July 21, the secretary of agriculture ordered release from tuberculosis cattle quarantine for Lake, McHenry, Kane, Dupage and Cook counties, effective August 1. The quarantine has been in force since October, 1914.—The State of Illinois, on August 5, became officially free from foot and mouth disease and on that day the last quarantined farm in Christian County was released from restrictions.

Chicago

The Aid of Morons.—At a conference between Judge Scully, the county commissioner, and the members of the State Board of Administration, July 27, it was voted to place under the charge of Dr. Harold D. Singer and assistants, the Psychopathic Hospital, at the disposal of the state for experimental work.—The establishment of a farm colony for morons and feeble-minded, and for the arrest and cure of all drug addicts, were also recommended by the conference.

Personal.—Dr. Norman MacL. Harris of the University of Chicago, has been made captain in the Canadian Army Medical Corps.—Dr. Nathan S. Davis, III, has been commissioned first lieutenant Medical Corps, and assigned to Battery C, First Illinois Artillery.—Dr. and Mrs. George P. Marquis have started on a trip for Alaska.—Dr. Daniel F. Hayes, who has been at work for a year in Etaples, France, with the Murphy unit, has returned.—Dr. Hubert

1. Wells, W. F.: Artificial Purification of Oysters, Pub. Health Rep., July 14, 1916.

Dunn has reached Berlin and will join the staff of the Wisconsin Red Cross unit in Germany.—Capt. George L. Lipshulch was appointed camp surgeon at Camp Dunne, Springfield, August 7, succeeding Lieut.-Col. Jacob Frank, mustered out of the federal service.

Infantile Paralysis.—Richard T. Crane, in a telegram to Mayor Mitchell of New York, announces a gift of \$25,000 to the individual who may offer the best cure for infantile paralysis, or the best solution to that problem, within a year.—Health Commissioner Robertson has asked Mayor Thompson to allow a portion of the contingent campaign fund to be used to prevent the spread of infantile paralysis in Chicago, as the \$5,000 provided by the City Council for that purpose will be exhausted this week. Up to August 8, forty cases of infantile paralysis had been reported in Chicago. One case is reported from Aurora and two new cases were reported from Evanston, August 7.

INDIANA

Personal.—Dr. Warren D. Calvin, Fort Wayne, has been commissioned first lieutenant, Medical Reserve Corps, and detailed on the examination of recruits.

Work of State Charities Board.—Reports show that the agents of the state board of charities made 1,204 calls, in the quarter ended July 31, on children over whom the board has supervision. In the three months application was made for 150 children and 102 children were placed in homes. One hundred and sixteen applications were investigated; twenty-five were rejected as unfit. Fifty-six children were placed for the first time. Fifteen children were returned to county support. Forty-three visits to orphans' homes were made by the agents. Fifty-six calls were made on county officials in regard to children's work. One hundred and nine special investigations were made, 432 days were spent in the work and the cost to the state was \$2,993.69 and to the counties for the children's traveling expense, \$168.67.

LOUISIANA

New Sanatorium Staff.—Dr. E. M. Ellis has taken over the Crowley sanatorium under a five year lease, and has associated with him Drs. John W. Faulk, Albin B. Cross, Ralph B. Roney and Mansseh S. Hoffpauir.

Increased Entrance Requirement.—An official communication just received from the School of Medicine of the Tulane University of Louisiana states that after Jan. 1, 1918, the entrance requirement of that institution will be two years of college work, which must include courses in physics, chemistry and biology, with laboratory work, and one year of French or German.

New State Board Car.—The new laboratory car of the state board of health is making its first tour of the state under the charge of Dr. Oscar Dowling. The car is completely equipped with all instruments necessary to bacteriologic work and carries a small automobile which is sent out as soon as the car reaches the station, to collect samples of milk and water for immediate analysis.

Hospital News.—The Great Southern Lumber Company, Bogalusa, has established an eight-room hospital to assist in the demonstration of the cause and cure of pellagra.—Drs. John A. Hendricks and Thomas P. Lloyd, both of Shreveport, and Henry J. Parsons, Mansfield, have asked for bids for the erection of a four story, fireproof building for the Highland Sanitarium, Shreveport, to accommodate about sixty patients and to cost about \$80,000.

Personal.—Dr. Stephen W. Stafford has been elected superintendent of the New Orleans Charity Hospital.—Dr. G. C. Chandler has been reelected president of the Shreveport Board of Health and local health officer.—Dr. Joseph J. Holt has been reelected president of the New Orleans Parking Commission.—Dr. Gustavus Mann, New Orleans, has been appointed consulting chemist for the Freeport Oil Company of Texas with headquarters at Huston.—Dr. Thomas A. Roy, Avoyelles, has been reappointed a member of the state board of health.

MARYLAND

Infantile Paralysis.—The second death in Baltimore from infantile paralysis occurred August 4 at the Harriet Lane Home, Johns Hopkins Hospital.—Three suspects have been reported to the department, but none of these is said to have infantile paralysis.—A positive case has been reported to the State Board of Health from Salisbury.—A child living in Hampton is suspected of having infantile paralysis.—A suspected case is reported at Lansdowne,

Baltimore County.—The health commissioner is having all children arriving from New York, met at the station by health wardens and the homes of these children are inspected at intervals during the two weeks following their arrival in Baltimore.

Personal.—Dr. James J. Mills, instructor of ophthalmology at Johns Hopkins Medical School, sailed August 6 on the *Rochambeau* for Bordeaux, France. He has been engaged by the chief physician of the town of Biarritz to assist in the treatment of injuries to the eyes of the soldiers and expects to return in September.—Dr. William H. Welch sailed from New York August 6 for England to study institutions from which he may get ideas for the organization of the Rockefeller School of Hygiene and Public Health, which will be established in Baltimore. Dr. Welch will also study the manner in which England has been organized in scientific and other lines for the war, as head of the National Academy of Sciences. He will be accompanied by Dr. George Ellery Kale, chairman of the organization committee of the academy.

MASSACHUSETTS

Infantile Paralysis.—There have been seventy-one cases of infantile paralysis reported in Massachusetts since July 1. Of these, eight have occurred in Westfield.

Personal.—Dr. John G. Perman, Worcester, has been appointed trustee of the Worcester State Hospital.—Dr. Sarah E. Coppinger, Boston, has resigned as a trustee of the Foxboro State Hospital.—Dr. Arthur P. Noyes has been appointed senior assistant physician at the Psychopathic Hospital, succeeding Dr. George E. McPherson, resigned.—Dr. Douglas A. Thom, assistant physician and pathologist at the Monson State Hospital, has been appointed assistant pathologist to the State Board of Insanity with headquarters at the Summer Street Department of the Grafton State Hospital, Worcester.—Dr. Emily A. Pratt of the Henry Haywood Memorial Hospital, Gardner, has been appointed assistant physician at the State Infirmary, succeeding Dr. Hattie E. Chalmers, resigned.—Dr. Arthur E. Timme has completed a four months' course of training at the Psychopathic Hospital.—Dr. A. Louis Gramsch, Lowell, has been appointed lieutenant, Medical Corps, Massachusetts V. M., and assigned to duty with Field Ambulance No. 2.—Dr. Charles D. McCarthy, Jr., Malden, who has been ill with spinal meningitis in the American Hospital, Neuilly, France, is reported to be convalescent.

MICHIGAN

Bounties for Rats.—The county clerk of Branch County has issued orders for the payment of bounties for 5,000 rats killed since Sept. 1, 1914.

Site for Tuberculosis Hospital.—A site has been selected for the new Keweenaw County Tuberculosis Sanatorium overlooking Lake Superior, east of Eagle River Falls. Plans are being considered for the erection of a building to accommodate at first from ten to fifteen patients.

Tuberculosis Survey.—The tuberculosis survey of Dickinson County commenced, July 31, and the party is in charge of Dr. William DeKleine, director of the survey, assisted by physicians and visiting nurses.—The survey in Ontonagon County commenced, July 10, and in Gogebic County, July 17.

State Society Meeting.—The annual convention of the Michigan State Medical Association will be held in Houghton, August 15 to 17, under the presidency of Dr. Alfred W. Hornbogen, Marquette.—The Upper Peninsula Medical Society will hold its meeting with the state society, August 16.

Tribute to Dr. Jenks.—Special resolutions were adopted by the faculty of the Detroit College of Medicine and Surgery, June 4, bearing tribute to the high respect in which the late Dr. Nathan Jenks was held. The resolutions were ordered to be spread on the minutes of the faculty and a copy was ordered to be sent to Dr. Jenks' family.

Asylum Boards Hold Conference.—At the midsummer meeting of the joint board of trustees of the state hospitals held in Kalamazoo, July 18, Dr. Adolph Meyer, psychiatrist-in-chief of Johns Hopkins Hospital, Baltimore, spoke on "The Extra-Institutional Responsibilities of State Hospitals for Mental Diseases"; and George A. Hastings, executive secretary of the Committee on Mental Hygiene, New York, spoke on "Meeting the Mentally Sick Half Way."

Personal.—Dr. Charles J. Foley, Pontiac, has been appointed surgeon for the Michigan Workmen's Compensation Mutua

Insurance Company, Detroit. He has also been appointed a member of the visiting staff of the Harper Hospital.—Dr. D. Emmett Welsh has been appointed a member of the Grand Rapids Board of Health.—Dr. Henry R. Carstens, Detroit, first lieutenant, M. R. C., U. S. Army, has been ordered to duty at Columbus Barracks.

MINNESOTA

Appropriation Against Poliomyelitis.—An emergency fund of \$5,000 for use in the prevention of the spread of infantile paralysis in Minnesota, was voted by the governor, state treasurer and state auditor, under the statute relating to public calamities. There have been 102 cases of infantile paralysis reported in the state since July 19, and twenty-five cases are under surveillance at present.

Hospital News.—It has become necessary to enlarge the accommodations of the Northwestern Hospital, Moorhead. A large nurses' home will be built on the ground just west of the hospital. This building will also contain an obstetric ward, a Roentgen-ray laboratory and pathologic laboratory.—A new hospital will be erected on College and Summit avenues, St. Paul, between St. Peter and Rice streets. The site is 240 by 216 feet. Mrs. Martha A. Miller, who died last year, left property worth about \$1,000,000 and \$400,000 in cash for a hospital for the poor of St. Paul, to be known as the Charles T. Miller Hospital in memory of the husband of the testatrix.—Dr. Bertram S. Adams, Hibbing, is building a two-story hospital building which will contain two wards and ten private rooms.—Dr. Merton Field opened a hospital in the Bennett Block, St. Peter, July 11.

State Health Association.—At the annual meeting of the Minnesota Public Health Association held in St. Paul, recently, the following officers were elected: Dr. Warren L. Beebe, St. Paul, president; Dr. John W. Andrews, Mankato, and Mrs. A. L. Robinson, Warren, vice presidents; Governor J. A. A. Burnquist and President George E. Vincent of the University of Minnesota, honorary vice presidents, and Dr. Edward L. Tuohy, Duluth, secretary. Dr. Ignatius J. Murphy, St. Paul, was continued as executive secretary, and Dr. Paul B. Cook, St. Paul, as treasurer. The association is in need of a permanent field secretary and also of two field nurses who will devote their time to the organization of dispensaries in counties already equipped with tuberculosis sanatoriums, and to the demonstration of methods in which a nurse can assist in the control of tuberculosis in infant welfare work, and in school supervision. The association has commenced the publication of a monthly journal, the first issue of which appeared in July and contained the annual report. Future issues will feature the topics of personal health, tuberculosis, teeth, tonsils and adenoids, hygiene of the home and community nursing.

NEW JERSEY

Infantile Paralysis.—On July 31, thirty-five new cases of infantile paralysis were reported for the state at large, and fifty-one new cases in Newark with four deaths.

State Board Election.—At the annual meeting of the State Board of Medical Examiners in Newark, July 15, the following officers were reelected: president, Dr. William Perry Matson, Jersey City; secretary, Dr. Alexander MacAlister, Camden, and treasurer, Dr. F. Wilbur Cornwell, Plainfield.

Personal.—Dr. Samuel D. Bennett of Millville has been elected medical inspector of schools.—Dr. J. Lewis Lane, Luckerton, has been appointed physician to the eight life-saving stations between Barnegat City and Little Beach.—At the annual meeting of the state department of health, July 11, William H. Chew, Salem, was reelected president, and Dr. Edward A. Ayers, Branchville, was elected vice president, succeeding Moses M. Baker, Montclair, term expired.

Hospital Items.—The commission named by Governor Fielder to relieve the overcrowded condition of the Morris Plains Hospital, has recommended the establishment of another institution for the insane instead of enlarging the Trenton State Hospital.—Essex County has decided to erect isolation shacks to care for patients suffering from infantile paralysis, and has also decided on the erection of a large, modern tuberculosis sanatorium. The Newark Tuberculosis Sanatorium, Verona, has offered to lease its property to Essex County with an option of purchase. A shack 18 by 100 feet, with accommodations for fifty patients, to be erected at a cost of \$2,500 and a temporary building for a nurses' home will also be put up at a cost of about \$1,500.

NEW YORK

Personal.—Dr. Bernard Glueck of Washington, D. C., is cooperating in the establishment of the psychiatric clinic in Sing Sing Prison.—Dr. Joseph Roby, Rochester, has returned after visits to military hospitals in France, Switzerland and Italy.

Poliomyelitis Increases Throughout State.—On August 4, a total of thirty cases of infantile paralysis were reported to the State Health Department, making a total of 575 cases in the state outside of New York City. The total number of deaths in the state is fifty-three.—The military training camp to have been held at Peekskill for boys has been abandoned because of the epidemic. A report came from Troy on the evening of August 4, stating that another death from infantile paralysis had occurred at Saratoga Springs.—The health supervisor of the Northern New York District states that investigation has proved, beyond a doubt, that the disease was being carried by milk. Of six cases and three deaths all were on the same milk route.—Owing to the prevalence of infantile paralysis, strict quarantine regulations have been established on the Military Academy Reservation, West Point, beginning August 1.—The new cases of anterior poliomyelitis reported in greater New York, August 8, numbered 183, an increase of thirty-eight cases over the previous day and the highest number of cases recorded in any day since the beginning of the epidemic. On August 8, there were fifty-two deaths and the total cases now number 5,366 with 1,194 deaths, a percentage of 22.25.

New York City

Dental Lectures for Medical Students.—In addition to the proposed dental school in connection with Columbia University a course of lectures on dentistry is planned for medical students. These lectures aim to furnish the medical student with a knowledge of the fundamental principles in the proper care of the teeth, and will emphasize the close relationship between the diseases of the body and defective teeth. The dental specialists who will deliver these lectures are Drs. Leuman M. Waugh, Arthur H. Merritt, William B. Dunning, Harold S. Vaughan and Henry S. Dunning.

Health Exhibit at Coney Island.—A health exhibit for men only, designed to teach the important facts regarding venereal diseases, is now being successfully operated at Coney Island. The exhibit represents the cooperation of the New York Social Hygiene Society, the Brooklyn Hospital Dispensary, and the Department of Health, and is financed mainly by the first named organization. Judging by the number of visitors, their demeanor, the interest taken in the exhibit, and the questions asked, the enterprise is bound to exercise a wholesome educational effect. After the close of the Coney Island season it is planned to show this exhibit in various parts of the city.

Faculty Changes.—The following appointments to the faculty of the University and Bellevue Hospital Medical College have been announced: Dr. Joseph B. Bissell, Dr. Thomas A. Smith, and Dr. Arthur M. Wright, clinical professors of surgery; Dr. William C. Lusk, professor of surgery; Dr. W. Howard Barber, chief of clinic, department of surgery; Dr. George Francis Cahill, instructor in surgery; Dr. Theodore J. Abbott, clinical professor of medicine; Dr. Benjamin M. Levine, clinical professor of cancer research; Dr. Charles Krumwiede, Jr., assistant professor of bacteriology and hygiene; Miss Mary Smeeton instructor in bacteriology.

Personal.—Dr. Donald B. Armstrong has resigned as director of the Department of Social Welfare of the New York Association for Improving the Condition of the Poor, to become assistant secretary and director of the community tuberculosis experiment of the National Association for the Study and Prevention of Tuberculosis.—Dr. Timothy D. Lehane, coroner's physician, is seriously ill with septicemia due to a necropsy wound.—Dr. Albert H. Brundage, Brooklyn, is under treatment in Johns Hopkins Hospital for pyloric stenosis following ulcer of the stomach.

Conference on Poliomyelitis.—The conference of pathologists which was suggested by Dr. Haven Emerson took place at the College of Physicians and Surgeons on August 3. Dr. Simon Flexner was chosen as chairman. A committee was appointed to consider all the phases of laboratory investigation, to suggest subjects and in some instances lines of study in connection with the disease. This committee consists of Dr. Flexner, Prof. Ludvig Hektoen, University of Chicago, Prof. Hans Zinsser, College of Physicians and

Surgeons, New York; Prof. Richard M. Pearce, Jr., University of Pennsylvania; Prof. James W. Jobling, Vanderbilt University, Nashville, Tenn.; Surg. George W. McCoy, U. S. P. H. S., director of the hygienic laboratory at Washington, and Dr. Theobald Smith, Princeton, N. J., of the Rockefeller Institute. Another committee was appointed to consider practical measures that might apply in the suppression of the epidemic. This committee consists of Dr. Victor C. Vaughan, University of Michigan, chairman; Prof. Milton J. Rosenau, Harvard, Boston; Dr. William H. Park, Department of Health, New York City; Dr. Francis W. Peabody, Boston; Dr. John Howland, Johns Hopkins; Dr. Augustus B. Wadsworth, director of the State Laboratories, Albany; and Prof. Charles C. Bass, Tulane University, New Orleans. The members of the conference were conducted through the infantile paralysis wards of the Willard Parker Hospital and were present at a clinic held there. The research workers will carry with them cultures of the disease and will work out various lines of investigation in their own laboratories. The report of the Conference was presented to Dr. Haven Emerson on August 4 and lays stress on:

1. The early recognition and notification of the disease, and
 2. The immediate isolation of patients and cases of suspicious illness.
- Furthermore, on account of incomplete knowledge concerning the disease, measures known to be effective in checking the spread of other infections should be applied and these are, particularly, personal hygiene, cleanliness of person and surroundings, and care of food, which should be thoroughly cooked.

In order to secure the earliest possible recognition and notification of cases and their prompt isolation, we wish to direct particular attention to the appeals that have been made by the department to the physicians of the city and to the public generally that they cooperate with the department in all these measures.

We strongly recommend that you inaugurate a house-to-house inspection of as large a part of the city as is practicable, twice a week, for the purpose of education and of securing the early recognition, notification, and isolation of the disease.

We are of the opinion that satisfactory isolation is secured only in hospitals. Moreover, not only is more thorough protection secured for the public by the hospitalization of patients, but it is also better for the individual patient.

The special problems suggested for study are the following:

1. Methods of culture of the virus of poliomyelitis, with especial reference to corroboration of previous work, to simplification of methods, and to the distribution of the virus in the body of patients.
2. The immunologic reactions of patients, supposed carriers of the virus, and others.
3. The virulence for animals, of the crude virus, in order to determine if possible whether there are any differences in the virus causing outbreaks in different parts of the country as well as to discover, perchance, more susceptible animals for experimental purposes than are now available.
4. The microscopic study of the secretions of the nose and throat and of the intestinal contents of patients suffering from poliomyelitis, persons who have come in close contact with such patients, and others.
5. The transmission of the disease by insects and domestic animals and other possible modes of transmission.
6. The study of practical methods of disinfection.

The Board of Estimate has appropriated \$2,000 to defray the expenses of the conference.—The records of the Department of Health on August 4 show that there have been in all 4,674 cases of infantile paralysis in this city, with a total of 1,025 deaths. Hospitals have cared for 2,399 cases. The Health Department has issued, up to August 4, 53,691 health certificates to children under fifteen years of age leaving the city and has refused certificates to 256.—The New York *American*, on August 5, started a fund for saving infants from anterior poliomyelitis. Mr. Hearst made the first subscription of \$5,000. Thirty-five thousand dollars is needed for the work and the money will be used to establish a free dispensary which will provide treatment for about 1,000 children. The medical work will be in the hands of a board of physicians and orthopedic surgeons.

PENNSYLVANIA

Hospital Notes.—The homestead of Daniel Boone in Exeter Township has been offered to Reading as the location for the proposed municipal hospital. The tract contains 160 acres and is offered to the city for \$10,000.—Plans have been submitted and approved for the erection of a pavilion for consumptive children at the Leech farm near the Pittsburgh Municipal Tuberculosis Hospital. The pavilion will accommodate twenty-four patients.

Quarantine Against Infantile Paralysis.—The following message was sent to the New York and New Jersey health commissioners, August 4, by Dr. Samuel G. Dixon, commissioner of health of Pennsylvania:

The Commonwealth of Pennsylvania this day placed quarantine against all children under 16 years of age coming from outside this Commonwealth who have had or have been in contact with infantile paralysis or who have been living in premises in which there is or has been a case of infantile paralysis during the present epidemic. Other children less than 16 years of age from any stricken district will be held under observation.

SAMUEL G. DIXON,
Commissioner of Health.

Four new cases of the disease have been reported to the state department. All boroughs and third class cities have been warned to make an immediate sanitary inspection of every property in the community, to have all human and animal waste and all garbage handled in such a way that will prevent the breeding of flies and other insects. On July 29 medical officers of the state department of health served notice to parents of children on excursion trains to New York that children under 16 years of age would not be taken to that city.

Philadelphia

Insane Patients Transferred.—The transfer of twenty-four patients, of whom twenty-one were men from the insane department of the Philadelphia General Hospital to the state institution at Wernersville has slightly relieved the congested conditions at Blockley. The patient's expenses will be paid equally by the city and state and they will remain until the new buildings for the city's insane at Byberry are finished.

Meeting on Infantile Paralysis.—A conference of physicians of the Philadelphia County Medical Society, the Pediatric Society, the Baby's Hospital, the Children's Hospital and the Babies' Welfare Association was held at the request of Dr. Wilmer Krusen, director of Public Health and Charities, at city hall on August 4. Because of the many cases of the disease in the forty-third ward, which includes the Hunting Park Avenue district, Dr. Krusen made an inspection of the entire ward and directed the chemist of the Bureau of Health to at once make laboratory tests (both chemical and bacteriologic) of the water in the three wells or springs of the Hunting Park. Dr. Samuel G. Dixon, state health commissioner, will ask the railroad companies operating between this city and New York and New Jersey not to sell tickets to any place in this state to children under 16 years of age without certificates of their health. A request will also be made to railroad companies of this city not to sell excursion tickets to points in New Jersey and New York to children under 16 years old. The number of new cases in Philadelphia, according to report of August 5, was eight with one death. A rigid inspection of every playground in the city has been started by the board of recreation to insure children against contagion. Visiting nurses will daily attend those in the crowded sections, examining the children and separating those that need medical attention. Sand piles will be closed for the present and wading pools will be strictly watched.

TEXAS

Health Survey.—An intensive campaign is being conducted in Wood County for the eradication of malaria and hookworm. A similar health survey is soon to be commenced in Harris County, which has raised \$2,400 for the purpose. The work will be undertaken by the International Health Commission.

Health Certificates Required.—As the result of a conference held at Austin recently between State Health Officer William B. Collins, quarantine officers along the border and railway surgeons, a ruling has been adopted requiring all persons applying for transportation from public carriers of the border, to present a state certificate from a quarantine officer as evidence that they are free from disease and can be transported from the railroad without jeopardizing the health of the people of Texas. This has especial reference to the prevention of the introduction of typhus fever into the state from Mexico.

County Society Entertains Medical Officers.—An entertainment was given by the El Paso County Medical Society in the Elks Club, July 15, in honor of all officers of the Medical Corps of the army and organized militia on duty in El Paso. The officers have already been given the freedom of the headquarters of the society, including the library. Bexar County Medical Society entertained the medical officers on duty at San Antonio. Addresses were made by Dr. Jackson of San Antonio; Maj. Henry D. Thomason, M. C. U. S. Army, and Maj. Gustavus M. Blech, commanding Second Illinois Field Hospital.

WEST VIRGINIA

State Association Semicentennial.—The West Virginia State Medical Association will celebrate its semicentennial in October, 1917, at Fairmont, where the organization had its beginning fifty years ago. Dr. James R. Bloss, Huntington, was reelected editor of the state medical journal.

Health Officers Meet.—A conference of health officers of the state was held at Charleston, July 25, on call of Dr. Samuel L. Jepson, health commissioner. Two sessions were held, at each of which four papers on public health problems were presented. The conference was attended by health officers from thirty-eight counties. One of the most interesting papers was an illustrated talk by Surg. John McMullen, U. S. P. H. S., on "Trachoma as a Public Health Problem." Dr. Jepson delivered an address on "The Value of Morbidity and Vital Statistics."

WISCONSIN

Personal.—Dr. Joseph A. Rene, formerly of Superior, but for the last four years in charge of a hospital at Mazatlan, Mexico, has returned to the United States.—Dr. Sarah I. Morris, Madison, was the guest of honor at a luncheon given in Scranton, Pa., July 5.

Hospital Notes.—Representative men of Ladysmith met July 26 to discuss the plans to provide a modern hospital for the city. It was decided to conduct a campaign to raise \$50,000 for the erection and equipment of the hospital which is to be known as St. Mary's Hospital, and will be conducted by the Sisters of the Servite Order.

GENERAL

Hay-Fever Campaign.—The United States Public Health Service, on July 24, inaugurated a campaign for the relief of sufferers from hay-fever. The service will endeavor to have state legislatures enact laws to provide means for fighting weeds which are known to provoke the disease. It is said that 2 per cent. of the people of the United States are sufferers from hay-fever.

Appropriation for Consumptives.—The Senate Public Health Committee, on July 28, voted to report favorably a proposed appropriation of \$2,000,000 to be spent in the care of indigent sufferers from tuberculosis. The object of the appropriation is to relieve the states of the care of invalids who leave their homes in search of health and then become charges on other communities.

Bequests and Donations.—The following bequests and donations have recently been announced:

Children's Homeopathic Hospital and St. Luke's Homeopathic Hospital, Philadelphia, each \$2,000, by the will of Rachael L. Jones.
Presbyterian Hospital, New York City, \$19,285; New York Society for the Relief of the Ruptured and Crippled, \$5,000, by the will of Mrs. Nellie M. Noe.
Columbia (S. C.) Hospital, and Anna Jacques Hospital, Newburyport, Mass., each \$500, by the will of Miss Sarah E. Stickney.
May Fletcher Hospital, Burlington, Vt., a donation of \$20,000, by a C. Calef, Washington, Vt.
Healin Hospital, Montpelier, Vt., a donation of \$20,000, by Mrs. a C. Calef.
Lowell (Mass.) General Hospital, a donation of \$200,000, \$130,000 of which is to be used to build and equip a new ward and the remainder, \$70,000, for an endowment fund, by Frederick Fanning Ayer.

Aid for Belgian Physicians.—The report of the treasurer of the committee of American physicians for the aid of the Belgian profession, lists one contribution for the month of July, 1916:

Miles F. Porter, Ft. Wayne, Ind. (second contribution)...\$ 5.00
Receipts for the month of July.....\$ 5.00
Previously reported receipts.....7,941.86

Total receipts.....\$7,946.86

Previously reported disbursements:
1,625 standard boxes of food at \$2.20.....\$3,575.00
1,274 standard boxes of food at 2.30.....2,930.20
353 standard boxes of food at 2.28.....804.84

Total disbursements.....7,310.04

Balance.....\$ 636.82

F. F. SIMPSON, M.D., Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh, Pa.

Oleo Interests not Responsible for Proposed Investigation of the Butter Industry.—Representative Linthicum of Maryland in a recent speech denied that the oleomargarin interests were behind and actively supporting his charges against the sanitary character of the dairy products of the United States and his efforts to have the dairy industry investigated by a congressional committee. He quoted Dr. A. D. Elvin, chief of the Bureau of Animal Industry, Department of Agriculture, as expressing the belief that a large percentage of the dairy products consumed by the American people are unfit for food. Dr. E. C. Schroeder of the same bureau is quoted as saying that 2 million, or somewhat over 1 per cent., of our dairy cows had tuberculosis and are capable of transmitting the disease to children and as estimating,

on the basis of New York City's experience, that 6,000 children die every year in the United States from bovine tuberculosis.

Nurses' Association Seeks Congressional Charter.—The Senate Committee on the District of Columbia has reported favorably a bill to incorporate the American Nurses' Association, as a body corporate in the District of Columbia (S. 6667). The purpose of the organization is to promote the professional and educational advancement of nurses; to establish and maintain a code of ethics among nurses; to elevate the standard of nursing education; to distribute relief to such nurses as may become ill, disabled or destitute; to disseminate information on the subject of nursing; to bring into communication with one another various nurses, and associations and federations of nurses, throughout the United States; and to succeed to all the rights and property held by the American Nurses' Association, now incorporated under the laws of the state of New York. The principal office of the organization is to be in the city of Washington, but offices may be maintained and meetings may be held at such times and places as the association may designate. The incorporators are: Annie W. Goodrich, Adda Eldredge, Elsie M. Lawler, Katherine De Wit, M. Louise Rwiss, Helen B. Criswell, S. Lillian Clayton, Jane A. Delano, Mary M. Riddle, Ella Phillips Crandall and Mathild Krueger.

Study and Prevention of Infant Mortality.—The seventh annual meeting of the American Association for the Study and Prevention of Infant Mortality will be held in Milwaukee, October 19 to 21, under the presidency of Dr. Samuel McC. Hamill, Philadelphia. Dr. William C. Woodward, Washington, D. C., is president-elect, and Dr. George C. Ruhland, health commissioner of Milwaukee, is chairman of the local committee on arrangements. The work of the association will be conducted under the following sections: obstetrics, Dr. Arthur B. Emmons, II, Boston, chairman; propaganda, Mr. George R. Bedinger, Detroit, chairman; pediatrics, Dr. Borden S. Veeder, St. Louis, chairman; governmental activities and vital and social statistics, Dr. William C. Woodward, Washington, chairman; public school education for the prevention of infant mortality, Prof. Abby L. Marlatt, Madison, Wis., chairman; and rural communities and nursing and social work, Dr. Dorothy Reed Mendenhall, Madison, Wis., chairman. The session on pediatrics will be held as a joint session with the Milwaukee County Medical Society; the session on governmental activities will be held jointly with the Committee on Vital and Social Statistics; the session on rural communities will be held jointly with the Committee on Nursing and Social Work. The subjects to be discussed include: governmental activities—federal, state and municipal—in relation to infant welfare; care available for mothers and babies in rural communities; standards for infant welfare nursing; morbidity and mortality in infancy from measles and pertussis; public school education for the prevention of infant mortality, and vital and social statistics.

United States Public Health Service Bill Favorably Reported.—The Senate Committee on Public Health and National Quarantine has reported favorably the bill to promote the efficiency of the United States Public Health Service (H. R. 204). The bill has already passed the House of Representatives. If enacted, this bill will limit the appointment of the surgeon-general of the Public Health Service to commissioned officers in the service, not lower in grade than surgeon, and require that the surgeon-general at the expiration of his four-year term of office be carried as an extra number in the grade of assistant surgeon-general, unless he be reappointed. As an inducement to physicians to enter the service, the bill provides for the promotion of assistant surgeons to the next higher grade after three years' service, instead of after four years as at present. The chiefs of the bureaus of zoology, pharmacology and chemistry in the Hygienic Laboratory, are to be commissioned by the president, by and with the advice and consent of the Senate, as professors of zoology, pharmacology and chemistry, respectively, and are to be entitled to leaves of absence as now provided by law for commissioned medical officers. Provision is made for the appointment of five additional professors, qualified for special work in sanitary engineering, epidemiology, pathology, anatomy, bacteriology, housing, or other matters that relate to the propagation and spread of disease. Men of this class, the committee's report says, often do not have medical degrees, and under the present system of commissioned service only doctors of medicine are provided for; and the bill will remove this defect and make places for men who are specially trained in these highly technical fields, but who are not graduates in medicine.

Federal Aid for Nonresident Indigent Consumptives.—A bill to provide federal aid in caring for indigent tuberculous persons (S. 5885) has been favorably reported by the Senate Committee on Public Health and National Quarantine. The bill authorizes the secretary of the treasury to pay a subvention not exceeding 75 cents a day to hospitals and sanatoriums, whether public or private, throughout the United States, for the care and treatment of indigent tuberculous persons, not legal residents of the states in which they are at the time located. Such payments can be made, however, only when the state or subdivision thereof where the hospital or sanatorium is located, or that in which the patient has a legal residence, pays a subvention not less than that contributed by the United States government. Indigent tuberculous persons may be provided by the secretary of the treasury with transportation to the respective states of their legal residences, but only for the purpose of obtaining hospital or sanatorium treatment there, and no federal aid is to be contributed toward the care of such patients after their return home. A patient accepting such transportation is to be forever thereafter barred from benefit of any kind under the proposed law, whether in the way of hospital or sanatorium benefits or of transportation. According to the committee's report, 10,000 to 15,000 consumptives go to the Southwest annually, about half of whom become objects of charity later. Tuberculosis is increasing among the native population, due, it is said, to infection spread by careless consumptive strangers, the lack of adequate hospital facilities in the Western states having made it necessary to care for most of such patients in private homes. The passage of the bill is expected to stimulate hospital construction, not only in the West but throughout all states.

It is not practicable, the committee says, to return non-resident consumptives to their home states compulsorily nor to require the home states of such patients to bear the expense of caring for them. Nor, the committee says, would it be practicable, even if considered humane, for the Western states to quarantine against tuberculous patients.

FOREIGN

Cultivation of Medicinal Herbs.—In Austria the minister of agriculture has appointed a commission to promote the cultivation of medicinal herbs. They are needed now and will prove useful even after the war and a source of income. Special efforts are to be made to cultivate the cortex *Rhamni frangulae*. In the Netherlands also a similar movement has been inaugurated. An exposition of medicinal plants was organized at Utrecht on the occasion of the annual meeting there last month of the National Medical Association and two weeks later of the National Pharmaceutical Association. The *Pharmaceutisch Weekblad* developed one entire issue to the subject, the *Geneeskruidnummer*, with valuable articles and abstracts on the cultivation and preparation of medicinal herbs.

Deaths in the Profession Abroad.—Prof. P. Latteux, *chef de laboratoire* at the gynecologic clinic in charge of Pozzi at the Broca hospital, aged 76. He kept up his active service to the last, having served thus for over forty years. His "Manual of Microscopic Technic," published in 1884 has passed through several editions.—Dr. F. von Ilberg, personal physician to the kaiser, at Berlin. His medical degree dates from 1882.—Dr. R. C. Delgado of Havana, Cuba, librarian of the Academia de Ciencias and secretary of several scientific societies, member of the National Board of Health, etc.—G. de Achaval, formerly instructor in the history of medicine in the University of Buenos Aires, chief of the Public Health Service of Rosario, Brazil, president of the Rosario bank, and at one time member of parliament from his province, aged 60.

PARIS LETTER

PARIS, July 20, 1916.

Statistics of Stillbirths in France

Dr. Chambrelent, agrégé professor of midwifery at the Faculté de médecine de Bordeaux, has published in the *Revue scientifique* a statistical study of stillbirths. From an examination of the last statistics published by the minister of labor and social welfare, Chambrelent concludes that the number of stillbirths constitutes an important loss in the total annual mortality of France. The coefficient of stillbirths appears to be approximately forty-seven stillborn children for 1,000 born alive, but this coefficient is seen to undergo important modifications owing to different factors. Thus, if the population of France is divided into three cate-

gories, first, Paris and the department of the Seine; second, the urban population, and third, the rural population, we arrive, for the year 1910, at the following results:

Stillbirths per 1,000 Live Births:	
Paris and the department of the Seine.....	62
Urban population	55
Rural population	39

Moreover, not only is the proportion of stillbirths much higher in the towns than in the country, but also in the former communities it is found to be higher the larger the population of the town. This coefficient comes out as 69 per thousand in the towns having more than 100,000 inhabitants; 61 per thousand in those having from 30,000 to 100,000, and 53 per thousand in the small towns, that is those with between 5,000 and 30,000 inhabitants. The difference may be explained by the inferior hygienic conditions in which mothers find themselves during their pregnancy in the great towns where they are most exposed to alcoholism, syphilis and tuberculosis, factors which exercise so great an unfavorable influence on the course of pregnancy and the development of the fetus. The figure for stillbirths varies in different regions of France from the minimum of twenty-five per thousand in the department of the Creuse to a maximum of seventy-three per thousand in the department of the Alpes-Maritimes. The aspect of a map of France on which the different departments have been colored in a depth of tint proportional to the stillbirth rate shows that the variations in this figure are not irregular. The departments with the lowest figures are those of the center and the southwest, while it is in the north and in the southeast that the greatest proportional number of stillbirths occurs. The causes of these differences are certainly multiple, but there is one whose influence is manifest: this is the consumption of alcohol, and especially of the liquors having high alcohol content, absinthe, vermouth and bitter aperitif. This fact is sharply brought out by a comparison between the stillbirth statistics and those published by J. Jacquemont concerning the localization of the consumption of highly alcoholized liquor. The departments of the southeast where the stillbirth rate is the highest are also those where these liquors are consumed on the largest scale. Among other factors whose influence on stillbirth has been most clearly shown the sex of the fetus should be placed, the number of stillborn males being very considerably greater than that of stillborn females, and this is true for all the years and for all regions of France. Chambrelent would explain this fact by the greater physical development in the male fetus which aggravates the difficulties of parturition (THE JOURNAL, March 29, 1913, p. 1010; Aug. 2, 1913, p. 355). This cause of stillbirth can, in part at least, be avoided by prompt and more careful assistance to the mothers in labor. It is also important to bear in mind that the stillbirth rate among illegitimate children is almost double that among the legitimate. Undoubtedly this condition is attributable to the inferior social and, consequently, material conditions in which the girl mothers live as compared with the majority of married women. The day must come when the authorities will put forth a greater effort to protect and assist the unfortunate mothers. There will result a very considerable diminution in the excessive number of stillbirths which constitutes by no means a negligible factor of population.

Death of Dr. Henri Laussedat

Dr. Henri Laussedat, physician of the Royat water-cure place and president of the Société d'hydrologie de Paris, has just died at the age of 64.

The War

A PRIZE FOR THE BEST ARTIFICIAL HAND

An anonymous donor has placed at the disposition of the Société de chirurgie de Paris the sum of 50,000 francs (\$10,000) to constitute a prize for the best artificial hand for the use of those who have lost that member in the war. Those constructors only may compete who are of French or allied nationality. Apparatus entered in competition must be worn by the cripple for not less than six months. Afterward they shall be tested by the society on patients chosen by it and for the period which it considers necessary. The competition will close two years after the end of hostilities. The Société de chirurgie has appointed a commission to settle the question composed of Drs. Faure, Kirmisser, Quénu, Rieffel and Rochard.

TREATMENT OF SHORTENING FROM FRACTURE OF THE FEMUR

At the Réunion médicale de la I-ère Armée, Dr. Le Fort announced that he has treated eight cases of shortening

from old fracture of the femur by suspending the patient by the feet on a reversible table (Darcissac table). The inversion is made gradually while the surgeon watches the reduction. The latter must be very slowly obtained, and the greatest precautions are indispensable to avoid brusque elongation of the vessels or nerves. In the eight cases mentioned, the shortening amounted to 4, 5, 6, 7, 7.5, 9 and 10 in. (from 1 1/2 to 4 inches), the age of the fracture 60, 67, 71, 81, 84, 85 and 100 days, respectively. In each of the eight cases continuous extension had failed, and in several of them the fracture seemed completely united. The reduction was complete in six, and partial in two others, by their own choice. The inversion was generally well tolerated. The maintained reduction was obtained by a plaster cast applied during the inversion as soon as reduction is obtained. In every case the immediate history was perfectly simple. The subsequent results were excellent in six cases fully treated. The method is, of course, not applicable in every case.

EMPHYSEMA DUE TO WAR WOUNDS

At the Réunion médicale de la IV^e Armée, Dr. Protherat, surgeon of the Paris hospitals, discussed the formation of emphysema in the pleural cavity as the result of chest wounds without the lodgment of foreign bodies. He stated that this was not a rare complication. The condition can be diagnosed by the usual signs, and if auscultation or exploratory puncture does not suffice to clear up the diagnosis, roentgenoscopy can be called in. The treatment is pleurotomy with rib resection at the lowest point. This permits of drainage and, when possible, the extraction of foreign bodies. The pus contains a great quantity of anaerobes and is therefore often fetid, even gangrenous in odor. Usually it is possible to operate under local anesthesia, and this should generally be preferred. Two drains left in a wound permit the evacuation of pus as it forms, and allow of abundant and repeated washings, of which Protherat is a warm partisan.

It is notable that the postoperative course of these cases is very variable. At first there is a marked amelioration of the general condition which may continue to complete recovery, but not infrequently this improvement is suddenly arrested. The general condition instead of improving commences to go back, becoming worse and worse. Suppuration remains abundant and fistulas are formed. Finally the situation may suddenly become worse and the generally local conditions return to what they were at the commencement of the illness. The drains no longer yield any pus. Appropriate examination shows that a new collection of pus has formed in the thorax, which the drains are unable to reach. This course is quite different from that pursued by ordinary suppurative pleurisy, and the difference is explained in this way: In traumatic pleurisy the infected pleura reacts rapidly and attempts, by adhesive inflammation, to limit the focus of infection. When this limitation is successful, the case will quickly to recovery; but if the inflammatory barrier is continuous, irregular pouches are formed of varying size communicating with the principal focus by gaps in the barrier wall. The evacuation of the pus is imperfect, therefore, and continuous suppuration leads to the condition already described. The formation of secondary isolated collections of pus is a particularly common accident in traumatic pleurisy. The surgeon, in interpreting his patient's symptoms, should bear this tendency in mind and be prepared for appropriate intervention. A second result of this form of pleurisy is that it may cause the obliteration of the pleural spaces and particularly of the lower culdesac. This may result in penetration into the abdominal cavity in the course of an inferior pleurotomy.

LONDON LETTER

LONDON, July 24, 1916.

The Health of Munition Workers

The number of munition workers in this country has now reached the prodigious figure of 3,500,000, of whom 600,000 are women. The health of this large fraction of our industrial population has engaged the attention of the government. Housing, transit and individual welfare have been investigated exhaustively by the health committee, and frequent memoranda have been issued on such subjects as Sunday work, welfare supervision, industrial canteens, employment of women, hours of work, canteen construction and equipment, industrial fatigue and its causes, special industrial diseases, ventilation and lighting of munition factories, sickness and injury. The memorandum on the last is particularly

valuable in its suggestions, and it indicates a new policy in governmental supervision. The munition worker's sickness takes various forms. Lungs, heart, digestive organs, and the nervous and muscular systems may be affected, resulting in harm to efficiency, health and expectation of life. Sir James Paget is quoted as saying that fatigue has a larger share in the promotion of disease than any other causal condition. The disabling conditions are cramped attitudes during work, prolonged strain, such as lifting weights, machinery accidents, working in unventilated shops, which predispose to disease, or in shops imperfectly lighted, which means eyestrain, or in gases and vapors, which may mean poisoning. Dust may affect the lungs, and high explosives obviously expose the workers to risk. Equally important is the absence of personal hygiene; in the intensive labor of the war factories the rules of health cannot be disregarded with impunity. Indications of something wrong are found in broken and irregular time and diminished output. The committee recommends that each case of absence be recorded. Such a record is certain to disclose the existence of adverse influences. Secondly, lassitude and lessened output are the signs of the jaded worker. What are the causes? A sickness register inspected by authorized persons will probably show. The management also should study the movements of the sickness chart, for they are of great importance. Finally, there are the death certificates of workers which, though rare, may supply valuable data on the health of the factory as a whole. In a special case the sickness and accident rate in large munition works, employing 36,000 workers, rose to an unusual rate. In one department, employing a thousand men working overtime, the sick proportion was 8 per cent. Investigation proved that the workmen were rather elderly, were working fifteen hours a day, and often on Sundays, and were under constant pressure. In the prompt treatment of accidents and for the proper supervision of health of the workers, trained factory nurses have given excellent results. Besides looking after the health of the workers, they superintend the rest room, and follow up cases of sickness at home.

The Government Scheme for the Treatment of Venereal Diseases

Regulations have been issued by the Local Government Board under the public health acts requiring county councils and county borough councils to organize and carry into effect a scheme for the provision of facilities for the diagnosis and treatment of venereal diseases. The scheme follows closely the recommendations made by the Royal Commission on Venereal Diseases (*THE JOURNAL*, April 1, 1916, p. 1038). The commissioners found that the effects of venereal disease on the individual and the race are grave and far reaching, involving a heavy loss to the community in actual and potential population, as well as in money; and that medical evidence established the fact that by early and efficient treatment venereal disease could be brought under control.

But at present treatment is in most cases unduly deferred, and the best modern methods of diagnosis and treatment are not within the reach of the population generally. They recommended, therefore, that arrangements should be made for providing free for the whole community adequate laboratory facilities for diagnosis, combined with the provision of adequate and skilled free treatment for all persons affected, and that the organization of these arrangements should be entrusted to the councils of counties and county boroughs. The regulations made by the Local Government Board accordingly impose on the county and county borough councils the duty of providing free facilities for diagnosis and treatment. The board states that, in view of the findings of the royal commission, it has arrived at the conclusion that the conditions of the present war constitute a "case of emergency" which justifies it in calling on the councils to carry out a work which is so vitally important, especially at this moment, when the services of every man are required. Every council is required to make arrangements for enabling any physician who practices in the area of the council to obtain, at the cost of the council, a scientific report on any material which he may submit from a person suspected to be suffering from venereal disease. The arrangements are to be made in general with the authorities of the universities and large hospitals to which pathologic laboratories are attached. Any physician will be able to obtain, free of cost to himself and his patients, examinations of pathologic material, including the microscopic examination of discharges for the detection of gonococci, spirochetes or other organisms; and Wassermann tests on the blood serum of patients (a) for the

diagnosis of syphilis, and (b) as a control of the effect of treatment. The cost incurred by the councils will be repaid to the extent of 75 per cent. by the Local Government Board, in accordance with the recommendation of the royal commission. Every council is required to prepare and submit to the Local Government Board a scheme (a) for the treatment at and in hospitals or other institutions of persons suffering from venereal disease, and (b) for supplying physicians with salvarsan or its substitute for the treatment and prevention of venereal disease. The scheme would comprise arrangements for the establishment of special clinics for the treatment of venereal diseases at one or more hospitals which will conveniently serve the area of the council, and the provision of inpatient treatment for those cases which require it. These arrangements will be made by agreement between each council and the hospital authorities, but it is considered essential that the treatment at a particular institution should not be confined to those living within a certain area. The treatment must be available for all comers, irrespective of the place of residence or the means of the patient. A further consideration is that patients should be fully assured of the secrecy of the arrangements. The regulations require that all information obtained in regard to any person treated under the scheme shall be regarded as confidential. Under no circumstances may the names and addresses of patients be divulged by the medical officers of institutions. Similarly, the clinics provided should not be specially designated as for venereal diseases, and nothing should be done to distinguish the patients who attend for treatment of these diseases. Special stress is laid by the government on the necessity of securing the cooperation of physicians in the working of the schemes of treatment, and of framing these schemes so as to develop the ability of physicians in treating venereal diseases. But if a patient who attends at an institution is not willing to be referred to his own physician for treatment, in association with the treatment provided at the institution, there should be no refusal to treat him at the institution. Salvarsan, or its substitutes, is to be supplied gratuitously by councils to physicians who are qualified to administer it, the supply being limited to those physicians who are known to have had experience in the administration of these drugs, or who have attended for a sufficient time the practice of an institution at which the drugs are regularly administered. Physicians should be encouraged to avail themselves of the facilities provided at institutions for treatment, to attend the clinics held at these institutions, and to arrange for consultations with the medical officers of the institutions.

A separate circular has been addressed by the Local Government Board to the governing bodies of general and special hospitals, drawing attention to the importance of immediate action being taken to extend the existing facilities for the diagnosis and treatment of venereal disease, and pointing out that the measures recommended by the royal commission cannot be successful without the active cooperation of the general hospitals of the country. An assurance is given that the army council will, wherever possible, make arrangements whereby those officers of the army medical corps whose services would be of special value for this work will be enabled to devote part of their time to it, and it is made clear that no interference with the administration of the hospitals is contemplated, and that no charge need fall on the funds of the hospital which provides the required facilities. The royal commission drew special attention to the need for fuller public knowledge of the grave evils which lead to the spread of venereal disease, and the importance of wisely conceived educational measures. The Local Government Board in its regulations has conferred on the councils the power to provide instructional lectures and to publish information on questions relating to venereal disease. The councils are also recommended to form committees containing representative social workers, including a sufficient number of suitable women and representatives of the local medical committees, for the purpose of disseminating information as to the scheme of treatment and for the making of suggestions to the council.

The War

THE TREATMENT OF NERVOUS AND MENTAL SHOCK IN SOLDIERS

The terrific and unprecedented bombardments of the present war, combined with fatigue and exposure, have naturally given rise to numerous cases of nervous and mental shock. These fall into three main groups. In the first the symptoms are due to the bursting of high explosive shells near the patient or to the secondary effects of the explosion, such as burial under earth and débris or the inhalation of noxious

gases. The second group includes cases of a general neurasthenic character, attributable to exhaustion of the nervous system resulting from physical and nervous strain, sleeplessness, fear, anxiety, and harassing sights and experiences. The third group includes cases of mental breakdown, mental confusion, mania, melancholia and delusional psychoses. At the commencement of the war the patients with nervous shock and neurasthenia were transferred from overseas with medical and surgical patients, and were treated in the general wards of the hospitals at which they arrived, while the patients with mental disorder were transferred to the established institutions at Netley for the treatment of mental patients in the service of the army.

As the number of cases increased, a more elaborate organization became necessary. The following is the present plan: On arrival at one of the British base hospitals abroad, the soldier's condition is investigated by a special medical officer. The patient then is sent to a section of a hospital according as his symptoms are of a neurologic or a mental character. Should he be suffering from transitory mental symptoms which subside rapidly, he is transferred from the mental to the neurologic section as soon as it is advisable to do so. For such cases special accommodation is provided so that the patient may be placed under the most suitable circumstances for rapid recovery. The patients are then labeled for transference to one of the clearing hospitals at home—if neurologic to one, if mental to another. On arriving at the clearing hospitals, or at a neurologic section in any general hospital, the patient is given treatment. If his symptoms are slight or transitory and disappear rapidly, he is sent on furlough, and later is returned to light duty. On the other hand, should the course of the disorder be less favorable or should symptoms develop which require special supervision, or if the case is likely to be protracted, or to require special treatment not available in the section, the patient may be transferred to one of the special hospitals for nervous diseases or to a special institution. If for various reasons it has not been possible to send patients home through the clearing hospitals so that they arrive directly from overseas at central or auxiliary military hospitals in which there is no neurologic section, or to which no medical officer with special experience is attached, a short period of treatment is given; but should recovery not take place within two or three weeks, the patient is transferred for treatment to the neurologic section of the nearest territorial general hospital. Neurologic cases include most forms of functional paralysis, especially paraplegia, disturbances of speech and articulation, amnesia or loss of memory, the effects of terrifying dreams, mutism, deafness, deaf-mutism, amblyopia, "bent back," tremblings and motor agitations, ticlike movements, sleeplessness, nervous debility, indecision, loss of self-confidence and the milder forms of neurasthenia, simple mental confusion, the anxiety psychoses and simple mental depression. The treatment consists chiefly of rest and feeding; massage, and electrical applications in suitable cases; baths, when these seem indicated, and psychotherapy in the form of simple suggestion and occasional hypnosis. The results of treatment show 4 per cent. of patients returned to light duty, 20 per cent. invalided, and 20 per cent. transferred for further treatment to special institutions.

In mental cases the patients are examined by the special medical officers attached to the hospital. All patients suffering from the severer psychoses of a certifiable type are given two or three weeks' probationary treatment. If recovery has taken place during this time, they are transferred to a special hospital. The number of patients who recover during their stay and are returned to light duty is negligible. The patients transferred to the mental hospitals are of a certifiable type and include most of the severe forms of acute mental disorder—the confusional psychoses, mania, the graver melancholias, acute delusional and hallucinatory psychoses, dementia praecox, mental deficiency with confusion, general paralysis of the insane, and epilepsy with mental symptoms. In accordance with accepted policy, none of the patients in these hospitals is certified as a person of unsound mind. Each patient is given a reasonable period of treatment with a view to recovery. In consequence, however, of the accumulation of chronic and incurable cases which was observed a few months ago, all cases of general paralysis of the insane, of epilepsy with insanity, and all patients who had been in asylums prior to enlistment are sent to asylums. A certain number of chronic cases are also sent if no improvement is recorded after a reasonable period of observation and treatment.

Marriages

WILLIAM WILLIAMSON, M.D., to Mrs. Emily Chartres-Martin, both of San Diego, Calif., at Los Angeles, July 15.

SAMUEL WHEELS McKELVEY, M.D., Kankakee, Ill., to Miss Anna McCumisky of Anna, Ill., at East St. Louis, July 19.

ERNEST PERCY CHARTRES-MARTIN, M.D., to Miss Margaret King Ascher, both of San Diego, Calif., July 18.

CECIL HENDRY WILSON, M.D., Bartow, Fla., to Miss Sarah Esther Ashton of Laird, Colo., recently.

JOHN ROGERS PARRY, M.D., Lima, Ohio, to Miss Dorothy Moitz of Philadelphia, June 26.

FRANK B. CROSS, M.D., to Mrs. Josephine Thrall Stoll, both of Cincinnati, July 14.

JOSEPH D. SULLIVAN, to Miss Mabelle Marie Smith, both of Kenosha, Wis., July 20.

ROSCOE WALKER, M.D., Pawhuska, Okla., to Miss Artie Lee Gorsuch, Denver, June 28.

COLE F. SMITH, M.D., to Miss Ada B. Cecil, both of San Antonio, Texas, July 21.

Deaths

Jacob H. Hartman, M.D., Baltimore; University of Maryland, Baltimore, 1869; aged 69; a Fellow of the American Medical Association and vice president of the American Laryngological Association in 1883 and 1890; a specialist in diseases of the ear, nose and throat; surgeon to the Baltimore Eye, Ear and Throat Charity Hospital; lecturer on diseases of the throat and chest in Washington University from 1874 to 1877; consulting surgeon to the Baltimore Hospital for Consumptives; died in Mercy Hospital, Baltimore, July 28.

James Franklin Heady, M.D., Glendale, Ohio; Miami Medical College, Cincinnati, 1878; aged 64; treasurer, clinical lecturer on medicine and professor of medical economics in his alma mater; a member of the Cincinnati Obstetrical Society and Cincinnati Academy of Medicine; vice president of the First National Bank of Lockland, Ohio, and medical director of the Cincinnati Life Insurance Company; treasurer of the village of Glendale; died at his home, July 24, from arteriosclerosis.

Frederick Rankin Charlton, M.D., Indianapolis; Medical College of Indiana, Indianapolis, 1894; University of Pennsylvania, Philadelphia, 1896; aged 43; a Fellow of the American Medical Association; a fellow of the American College of Surgeons; a member of the American Urological Association and the Association of Military Surgeons of the United States; professor of genito-urinary diseases and surgery in Indiana University, Indianapolis; a member of the consulting staff of the Indianapolis City Hospital and Dispensary; a medical officer of the Indiana National Guard for several years with service in the Spanish-American War; died at his home, July 29.

Gilbert LaFayette Pritchett, M.D., Fairbury, Neb.; Rush Medical College, 1878; aged 67; formerly a Fellow of the American Medical Association; a member of the Association of Military Surgeons of the United States, and International Association of Railway Surgeons; major and surgeon, Nebraska National Guard, retired, with active service as brigade surgeon in the Sioux Indian War in 1890-1891; local surgeon for the Rock Island System; mayor of Fairbury in 1890; died at his home, July 28.

Michael Kelly, M.D., Fall River, Mass.; Bellevue Hospital Medical College, 1885; aged 61; a member of the Massachusetts Medical Society; a member of the attending staff of Union Hospital, Fall River, and St. Vincent's Orphan Home and the Seaside Home for Sick Children; consulting physician to the Fall River City Hospital; for nine years chairman of the Municipal Board of Health; died at his summer home in Tiverton, R. I., July 28.

Otho C. Wright, M.D., Jarratt, Va.; College of Physicians and Surgeons, Baltimore, 1893; aged 48; a Fellow of the American Medical Association; a member of the State Board of Medical Examiners and State Board of Health and once president of the Medical Society of Virginia; while driving his automobile over a grade crossing at Owen's Store, July 8, was struck by an Atlantic Coast Line freight train and instantly killed.

Dennis W. Sturdevant, M.D., Laceyville, Pa.; University of Vermont, Burlington, 1884; aged 57; a Fellow of the American Medical Association; local surgeon for the Lehigh Valley Railroad and a member of the Lehigh Valley Association of Railway Surgeons; one of the best known practitioners of northeastern Pennsylvania; a director of the Grange Bank, Laceyville; died at his home, June 23, from dilatation of the heart.

Francis Joseph Woodman, M.D., Washington, D. C.; George Washington University, Washington, D. C., 1885; aged 64; a Fellow of the American Medical Association; chief medical examiner in the pension office; a medical officer of the National Guard of the District of Columbia from 1899 to 1909 when he was retired as major, Medical Corps; died at his home, July 28.

William Orsmer Majilton, M.D., New York; New York University, New York, 1881; a member of the Medical Society of the State of New York and for twenty-five years a practitioner of the Tremont section; at one time in charge of the medical department of the construction work on the Croton aqueduct; died at his home, July 26.

Russell Henry Roof, M.D., New York; Bellevue Hospital Medical College, 1878; aged 65; medical inspector of the Department of Charities and Correction of New York from 1878 to 1883; and visiting physician to the House of Refuge, Randell's Island, from 1884 to 1896; died in a sanatorium in Stamford, Conn., July 27.

Frank Hammett Holt, M.D., Chicago; Harvard Medical School, 1899; aged 47; a Fellow of the American Medical Association; superintendent of the Michael Reese Hospital, Chicago; formerly assistant superintendent of the Boston City Hospital; died in Michael Reese Hospital, August 3, from nephritis.

James H. Lackey, M.D., Nashville, Tenn.; Cincinnati College of Medicine and Surgery, 1874; aged 68; formerly a Fellow of the American Medical Association; representative from Trigg County, Ky., in the legislature in 1898; died at his home in West Nashville, July 26, from angina pectoris.

Samuel William Hammond, M.D., Lambert's Point, Norfolk, Va.; University of Maryland, Baltimore, 1905; aged 43; while answering a professional call, July 23, sustained a skull fracture in a collision between his motorcycle and a trolley car, and died in the Norfolk Protestant Hospital, July 24.

Lyman Beecher Shehan, M.D., Superior, Wis.; Medical School of Maine, Brunswick, 1884; aged 61; formerly a Fellow of the American Medical Association; acting assistant surgeon, U. S. P. H. S.; formerly health commissioner of Superior; died at his home, July 27, from diabetes.

Charles Kelly Briddon, M.D., New York; College of Physicians and Surgeons in the City of New York, 1857; aged 90; for twenty-four years consulting surgeon to the Presbyterian Hospital, New York; surgeon of volunteers throughout the Civil War; died at his home, July 31.

Erastus Edwin Eads, M.D., Los Angeles, Calif.; American Medical College, St. Louis, 1879; aged 75; died at his home, July 24, from the effects of cyanid of potassium, self-administered, it is believed, with suicidal intent, while despondent over business troubles.

Asa Harvey, M.D., Canon City, Colo.; Eclectic Medical Institute, Cincinnati, 1875; American Medical College, St. Louis, 1878; Colorado School of Medicine, Boulder, 1894; aged 63; formerly a Fellow of the American Medical Association; died at his home, July 26.

L. Frank Ellison, M.D., Wilmington, Del.; Jefferson Medical College, 1866; aged 75; for one term a state senator from New Castle County and also a member of the New Castle County Levy Court; died at the home of his brother-in-law in Kirkwood, Del., July 26.

Dorran Benjamin Coxe, M.D., Chino, Calif.; Dartmouth Medical School, Hanover, N. H., 1888; aged 70; a member of the Rhode Island Medical Society; for many years a practitioner of Riverside, R. I.; died in Chino, April 2, from sarcoma of the left femur.

Andrew P. Wilson, M.D., Los Angeles; University of Southern California, Los Angeles, 1902; aged 39; a Fellow of the American Medical Association; was accidentally shot and killed at Helm Meadows while on a hunting trip in the Sierras, July 20.

William M. Hall, M.D., Conshohocken, Pa.; Jefferson Medical College, 1883; aged 55; formerly a member of the Medical Society of the State of Pennsylvania; died at his home, July 25, after an operation for disease of the intestines.

Edward F. Buecking, M.D., Chicago; Bennett Medical College, Chicago, 1876; Louisville (Ky.) Medical College, 1877; aged 59; formerly a Fellow of the American Medical Association; died in his apartment in Chicago, July 29, from heart disease.

Ammon Andrew Apple, M.D., Philadelphia; Jefferson Medical College, 1890; aged 63; for forty years a druggist of northeast Philadelphia; died in the Episcopal Hospital in Philadelphia, July 27, from pulmonary embolism.

George Arthur Stone, M.D., Pigeon Cove, Mass.; Harvard Medical School, 1889; aged 52; a member of the Massachusetts Medical Society; and a member of the local school board for seven years; died at his home, July 21.

Edward James Gable, M.D., New Albin, Iowa; College of Physicians and Surgeons, Keokuk, Iowa, 1897; was caught under his overturned automobile, July 23, sustaining injuries which caused his death a few hours later.

Bruno H. Schacht, M.D., West Point, Calif.; California Medical College, San Francisco, 1886; aged 64; formerly an apothecary in the United States Navy; died at his home, May 21, from tumor of the esophagus.

Benjamin Wolff, M.D., New York; Baltimore University, 1901; aged 42; assistant surgeon for the eye and ear departments of Sydenham Hospital and the German Polyclinic; died at his home, July 23.

George S. Crawford, M.D., Clifty, Ind.; Medical College of Indiana, Indianapolis, 1874; aged 63; a member of the Indiana State Medical Association; died at his home, July 23, from cerebral hemorrhage.

Ulysses Grant Grigsby, M.D., Perry, Iowa; Eclectic Medical Institute, Cincinnati, 1896; aged 48; died at his home, July 26, as the result of injuries received in an automobile accident five days before.

Joseph Getzwiller, M.D., Goliad, Texas; New York University, New York, 1880; aged 74; was instantly killed, July 22, when his automobile plunged off a bridge into a ravine.

George W. Richter, M.D., Cynthiana, Ky.; Homeopathic Hospital College, Cleveland, 1872; aged 72; a Confederate veteran; died at his home, July 25, from arteriosclerosis.

Joseph P. Ewing, M.D., Manchester, N. C.; Baltimore University, School of Medicine, 1892; formerly of Dillon, S. C.; died at a hospital in Fayetteville, N. C., July 21.

Peter Joseph Rowan, M.D., Chicago; University of Toronto, Ont., 1870; aged 69; a Fellow of the American Medical Association; died at his home, July 29, from pneumonia.

William F. Fairbanks, M.D., Kansas City, Kan.; Western Reserve University, Cleveland, 1886; aged 56; a member of the Kansas Medical Society; died at his home, July 21.

Spencer Joseph Way, M.D., Kankakee, Ill.; Rush Medical College, 1872; aged 65; a member of the Illinois State Medical Society; died at his home, July 30.

William Lee Lovett, M.D., Norman Park, Ga.; Atlanta College of Physicians and Surgeons, 1913; aged 36; died at his home, July 21, from pneumonia.

Herman G. Griebel, M.D., Fort Wayne, Ind.; Fort Wayne College of Medicine, 1902; aged 34; died in a hotel in Indianapolis, July 28, from acute nephritis.

William Langley, M.D., Angelica, N. Y.; University of Wooster, Cleveland, 1891; aged 40; died in Buffalo, July 22, from cerebral hemorrhage.

William S. G. Dillahun, M.D., Springfield, Ohio; Eclectic Medical Institute, Cincinnati, 1878; aged 64; died at his home, July 28.

Harry Z. Landis, M.D., Memphis, Tenn.; University of Pennsylvania, Philadelphia, 1877; aged 64; died at his home, July 28.

Herbert J. James, M.D., Bathgate, N. D.; Queens University, Kingston, Ont., 1893; aged 47; a Fellow of the American Medical Association; died at his former home, Almonte, Ont., July 9.

Oliver McLahlan, M.D., Oolitic, Ind.; (license, Indiana, 1897); aged 61; a practitioner for twenty years; died at his home, about July 9.

Bert M. Torbett, M.D., Marlin, Texas; Vanderbilt University, Nashville, Tenn., 1916; aged 32; died in Nashville, July 13.

Jacob David Patterson, M.D., Stamford, Conn.; New York University, New York City, 1885; aged 57; died at his home, July 28.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

WINE OF CARDUI SUIT

(Concluded from page 460)

June 8, 1916, Morning

It was stated by attorneys for both sides that the witnesses produced by the plaintiff were the witnesses whose names were given in evidence by witnesses for the defendant.

TESTIMONY OF MRS. JOHN A. PATTEN

Mrs. John A. Patten was called as a witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. HOUGH

Mrs. John A. Patten testified that she resides in Chattanooga, Tenn. Her husband is dead and she has two daughters.

Objection was made to the witness on the ground that she was the wife of Mr. John A. Patten. Argument was made by attorneys on both sides and statutes and cases cited. The Court stated that in his opinion it was competent to produce this witness, but to avoid possibility of error the witness was withdrawn by the plaintiff's attorneys.

TESTIMONY OF MR. ZEDION C. PATTEN, JR.

Mr. Z. C. Patten was called as witness for the plaintiff in rebuttal.

DIRECT EXAMINATION BY MR. HOUGH

Mr. Patten testified that he resides in Chattanooga, Tenn. He is one of the plaintiffs in this case, being a member of the partnership composed of John A. Patten and Z. C. Patten, Jr. He is 41 years of age. He became connected with the Chattanooga Medicine Co. in 1893. He has been clerk in the addressing department, worked in the bookkeeping department, in the order and shipping department, the credit department, and later, as associate partner, had charge of the financial end of the business, and general charge of the office.

The witness stated that he believes and always has believed that Wine of Cardui was a valuable remedy for the purpose for which the company sold and recommended it. He was asked on what he based his belief, the Court ruling that the question was incompetent.

Mr. Patten stated that from 50,000 to 60,000 druggists and merchants handle Wine of Cardui. He stated that he knew from his uncle, his father and from his brother that they regarded Wine of Cardui as a valuable remedy. He saw thousands of letters that come to the company and statements brought in by salesmen from druggists, indicating the benefit that their customers have received from the medicine. All this strengthened his belief that this medicine was useful and a valuable remedy. He knew of its use in his family and in the family of friends. He never knew of the medicine being used as a beverage. Frequently women wrote that they had difficulty in taking the medicine because it nauseated them.

The witness stated that he had personally not read all of the letters that appear in bound volumes—the letters which were offered in evidence. He read a large number at different times, but he could not say exactly how many.

Mr. Patten testified that Dr. John W. Mallett, a chemist, during 1906 endeavored to reduce the content of alcohol contained in the preparation. The percentage was reduced to 17 per cent., and owing to the fact that letters were received concerning the spoiling of the medicine the per cent. was raised to 20 per cent.

CROSS-EXAMINATION BY MR. T. J. SCOFIELD

Mr. Patten testified that his particular duties were the financial part of the business and charge of the general

office work. The receiving and filing of testimonials was conducted in the Ladies' Advisory Department. The mail that is received is sorted by mail clerks and sent to different departments. For many years Mr. John A. Patten opened the mail, later the witness took charge of that work, and finally it was turned over to confidential clerks. The witness himself opened the mail for four or five years after the partnership was formed in 1906.

The witness stated that the testimonial letters eventually go to the Advertising Department, which is near the Advisory Department. Mr. Wheatly has general charge of the Advertising Department, probably since 1903. He stated that he would frequently see testimonials in both the Advisory and Advertising Departments and sometimes those that were published. He could not distinguish which testimonials he had seen. He could not say definitely that he had read the testimonials which appeared in the Home Treatment Book for 1912 or for 1913. He does not know that testimonials have been changed from one edition to a different form in another. There was then read to the witness several testimonials from the 1912 book and the same testimonials from the 1913 book, with the exception that certain words were changed. He stated that he did not know how this occurred. He does not know if they received two letters in the same language with a single exception, but he believes they must have received two letters. The witness promised to ask his Advertising Council and produce the testimonials in Court if possible.

An adjournment was taken until 2 o'clock the same day.

June 8, 1916, Afternoon

TESTIMONY OF MR. Z. C. PATTEN, JR. (continued)

The Court met pursuant to adjournment. Mr. Patten resumed the stand and testified in his own behalf.

FURTHER CROSS-EXAMINATION BY MR. T. J. SCOFIELD

Mr. Patten stated that he had found the testimonials. Mr. Hough stated that he would produce them. Mr. Scofield then read to the witness several testimonials which appeared word for word in the 1912 and 1913 Home Treatment Books for Women with the exception of the addition of the words "and cardoseptic," or the substitution of the word "cardoseptic" for Wine of Cardui in the later edition. The witness could not say that he took these testimonials into account as a basis for his belief in Wine of Cardui, nor does he know how the changes occurred.¹

The witness promised to produce the testimonial of Mrs. Loula Walden, taken from the Ladies' Birthday Almanac for 1915. Mr. Patten testified that he is one of the directors of the Proprietary Medicine Association.

REDIRECT EXAMINATION BY MR. HOUGH

Mr. Patten testified that Cardoseptic is a tablet to be dissolved in water and used as a douche. It was originally called "Cardui Wash" and later called "Cardoseptic." It was manufactured for the Chattanooga Medicine Co. by Parke, Davis & Co. The witness stated that the testimonials appearing in the Home Treatment Book for 1912 and 1913 were based on the parts of several letters received from the various witnesses.

1. Some of those testimonials which, while practically verbatim in the 1912 and 1913 editions, respectively, of the "Home Treatment for Women" had been modified to introduce "Cardoseptic" are here reproduced in miniature:

1912 Edition

CONSTIPATION AND WHITES
"I suffered with constipation for ten (10) years," writes Mrs. Sarah J. O'Connell, of Siler City, N. C. "I took Theodor's Black-Draught and it cured me. I also had the whites. Cardui did me more good than anything I ever tried for them. May God bless the Cardui Home Treatment."

"MY WOMB CAME DOWN
Almost as large as a fist," writes Mrs. John B. Justice, of R. F. D. No. 1, Paducah, Ky. "I had dreadful pains in my back and was so weak that I could scarcely stand on my feet. Finally I became so bad that my son, who is a physician, wanted to perform an operation, but I fought him off and tried the Cardui Home Treatment. It has done me more good than anything else I have taken, during the 25 years in which I suffered. Only a few days after I commenced with the Cardui, I became stronger, the womb went back and I have been free of the inflammation and pain. The Cardui Home Treatment has been great things for me."

SUFFERED EIGHTEEN YEARS
Mrs. Amelia Carroll, R. F. D. No. 1, Hartford, Mich., writes: "For over eighteen years I suffered with all the aches and pains which female trouble can cause. I had to lay down three or four times a day and could not do any hard work. Different doctors treated me and tried a great many kinds of medicine, but nothing I ever took did me so much good as Cardui. I sincerely believe that every woman who is in all this trouble."

1913 Edition

CONSTIPATION AND WHITES
"I suffered with constipation for ten (10) years," writes Mrs. Sarah J. O'Connell, of Siler City, N. C. "I took Theodor's Black-Draught and it cured me. I also had the whites. Cardoseptic did me more good than anything I ever tried for them. May God bless the Cardui Home Treatment."

"MY WOMB CAME DOWN
Almost as large as a fist," writes Mrs. John B. Justice, of R. F. D. No. 1, Paducah, Ohio. "I had dreadful pains in my back and was so weak that I could scarcely stand on my feet. Finally I became so bad that my son, who is a physician, wanted to perform an operation, but I fought him off and tried the Cardui Home Treatment. It has done me more good than anything else I have taken, during the 25 years in which I suffered. Only a few days after I commenced with the Cardui, I became stronger, the womb went back and Cardoseptic took away the inflammation and pain. The Cardui Home Treatment has been great things for me."

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Mr. Hough then read in evidence the various letters received from the women whose names appear as testimonials in the Home Treatment Books which were originally read by Mr. Scofield.

Mr. Patten stated that the Association of Proprietary Medicine Manufacturers have no financial interest in the present case and have not assisted in paying the expenses.

RECROSS-EXAMINATION BY MR. T. J. SCOFIELD

The witness testified that he could not say whether or not cardoseptic deteriorates.

REDIRECT EXAMINATION BY MR. HOUGH

The witness stated that cardoseptic is a tablet to be dissolved in water and used as a douche.

DEPOSITIONS

After argument Mr. Hough read to the jury the names of the various persons who gave depositions not yet in evidence.

The attorneys for the plaintiff thereupon rested their case in rebuttal.

Defendant's Testimony

The defendants thereupon offered the following evidence in surrebuttal:

TESTIMONY OF DR. W. D. HAGGARD

Dr. W. D. Haggard was called as a witness for the defendants.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Dr. W. D. Haggard testified that he is located in Nashville, Tenn. He is 44 years old. He graduated from the University of Tennessee in 1893. He served a year as an intern in the National City Hospital, and two years in the Woman's Hospital of the State of New York, as House Surgeon, and then began the practice of medicine. He was Professor of Gynecology and Diseases of Women in the University of Tennessee for about twelve years, and Surgeon to the City Hospital, as well as Gynecologist at St. Thomas' Hospital. For about seven years he conducted a private infirmary in Washington. He has had considerable experience in the diseases of women.

The witness testified that he knows Mrs. J. M. Willis, who lives near Nashville, and has known her for thirteen or fourteen years. He operated on her thirteen or fourteen years ago for abscess of the fallopian tube—one on either side. Several years ago he operated on her for gallstones, and also proposed to operate on her for falling of the womb. He considered the operation for gallstones all he could safely do at that time; at that time the uterus was just beginning to hang out into the world. He has advised operation for this condition. At present the condition of the womb is such that it hangs into the world every time the patient stands on her feet. He examined her three weeks ago; he found that the condition of prolapse has steadily increased since he examined the patient several years ago. The patient has had congestion of the uterus sufficiently severe to confine her to bed. The general health of the patient has not been good in the last two or three years. The patient has been unable to do her work and has been confined to her bed for days at a time during the last few years.

CROSS-EXAMINATION BY MR. WALKER

The witness stated that at the time he performed the operation for gallstones he replaced the womb, but it came down the moment he got through replacing it.

Q.—How long did you make the examination after you saw Dr. Heizer, since this case was on trial, or you received a letter from him—
A.—I never saw Dr. Heizer before today in my life, and I never received a letter from him on earth.

Q.—Who asked you to make the examination of this woman? A.—Dr. McCormack.

Q.—The Dr. McCormack that is here? A.—Yes, sir.

Q.—And that has been here through the trial. Did you go to this woman and tell her that you came there representing the Board of Health of your state—
A.—No, sir.

Q.—and demanding that the woman permit the examination? A.—No, sir; I went in no such false capacity.

Q.—Did she call on you to have the examination made? A.—I called—

Q.—Did she call on you? A.—I called on her.

Q.—You called on her to have the examination made? A.—I called on her.

Q.—You called on her at the request of Dr. McCormack? A.—I did.

Q.—Yes. Because she was a patient of yours? A.—Yes, sir; exactly.

Q.—To make an examination for the purposes of this case? A.—To see what her true condition is.

Q.—No, to make an examination for the purposes of this case?

THE COURT:—Mr. Walker, you are not testifying, the witness is. He says one thing, and you another.

Mr. Walker:—I will change the form.

THE COURT:—I mean, we must understand who is giving the evidence.

Mr. Walker:—Yes, I will change the form. I think we will understand it. I will change the form.

Q.—Didn't you make the examination for the purpose of testifying in this case? A.—I made the examination for the purpose of disclosing her true condition at the present time.

Dr. Haggard stated his conversation leading up to his examination of Mrs. Willis.

TESTIMONY OF DR. HUGH M'GUIGAN

Dr. Hugh McGuigan was called as a witness for the defendants.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Dr. McGuigan testified that he is a physician residing in Chicago, specializing in pharmacology. He graduated from the Rush Medical College in 1908; the North Dakota Agricultural College in 1898, in the chemistry course. He received the degree of Ph.D. from the University of Chicago in 1906. He has studied at the University of Michigan and a year at the University of Heidelberg, specializing in food, chemistry and pharmacology. He is a Professor of Pharmacology at the present time in the Northwestern University Medical School and has been for six years.

Q.—In connection with your work in pharmacology, have you done any special research work of any kind? A.—Yes. I have done work on a number of lines. I worked first perhaps on the oxidization of sugars in dead bodies. When I was in Heidelberg I worked with Professor Gottlieb on the action of drugs on the uterus. I have worked also on morphin, strychnin, formaldehyd, adrenalin, ammonia, atropin, pilocarpin, and a number of others. I have published in all, I think, 30 or 40 papers. I cannot recall all of them.

Q.—Did you do this work on animals, Doctor, or how? A.—On animals, yes, sir.

The witness stated that he had performed experiments the same as those of Dr. Mason, which were performed for the plaintiff in an endeavor to discover the potency of drugs contained in Wine of Cardui.

Objection was made by the plaintiff to the introduction of such testimony as incompetent. Argument was made extensively by attorneys for both sides. The Court ruled that the witness might be asked questions as to Dr. Mason's methods to find out if the methods were proper, but the fact remains that Dr. Mason said the guinea-pig died, because of something he did to it.

Dr. McGuigan testified that he had read Dr. Mason's testimony; he has examined the chart which Dr. Mason introduced in the case. From an examination of this evidence he is of the opinion that the experiments show nothing as to whether Wine of Cardui contains a potent principle. The examination made by Dr. Mason was not complete in any detail. The only thing that he could conclude is that the guinea-pigs died. The cause of their death he could not tell in any way or form. He might have determined the cause of death by a postmortem examination or by making some more experiments, but there is no evidence that in his experiments the drug killed the animals. The witness has made postmortem examinations in similar cases to determine the cause of death of animals. It is usually customary for a pharmacologist to make an examination to determine the cause of death.

The jury was excused at this point.

Mr. Scofield made an offer to the Court to show that Dr. McGuigan repeated Dr. Mason's work. Dr. Mason's work was entirely on ten guinea-pigs; three died and seven lived. Of the three which died, postmortem showed that death was caused in one by perforation of the bowels with a needle and the other two died by infection. He also offered to introduce similar evidence by other witnesses who had

repeated the experiments of Dr. Mason. Objection to this offer was made, and the objection was sustained.

An adjournment was taken until Friday, June 9, 1916, at 10:30 o'clock a. m.

June 9, 1916, Morning

TESTIMONY OF DRS. ARTHUR S. LOEVENHART

The Court met pursuant to adjournment. Dr. Arthur S. Loevenhart was called as witness for the defendants in rebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Dr. Loevenhart stated that he testified in this case before. He is familiar with the experiment performed by Dr. Mason, the chart exhibit and the methods by which Dr. Mason conducted these experiments. Dr. Loevenhart considered that the conclusions which Dr. Mason drew were not justified from the experiments because the experiments were so faulty in some respects that it was impossible to draw such conclusions. The witness was asked in what respects the experiments were faulty. Objection was made to the question and overruled. The witness answered:

The Witness: A.—In the first place, the handling of the guinea-pigs was faulty. Dr. Mason describes having held the guinea-pigs by placing the head and front paws in a wide mouthed bottle. This is not a justifiable manner of holding the guinea-pig, because if the bottle fits tightly enough around the head and front paws, there is danger of suffocation of the animal.

In the second place, if it does not fit tightly enough around the head and front paws, it will admit of struggling on the part of the animal, in the course of which struggling, due to the pricking of the skin by the needle, they are likely to hit their heads against the neck of the bottle, and with these delicate little animals, it is very easy for them to produce by such struggling a hemorrhage at the base of the brain, which might result fatally in from five minutes to an hour.

In the second place, the experiments were faulty because there was no effort to remove the hair from the abdomen either by shaving or plucking the hair from the site of the injection.

In the third place, the swabbing of the abdomen with alcohol, as described by Dr. Mason, is insufficient to sterilize the surface of the abdomen with the hair not removed in that way.

In the fourth place, no precaution was taken to prevent the needle from being inserted so deeply as to do serious injury to a vital organ of the chest or abdomen, in the course of the injection and the struggling.

In the first place, I believe that Dr. Mason testified that he did not know what had been previously in the syringe before making the injection, which is essential of course for the pharmacologist to know, he should know what had been previously in the syringe and that it had been thoroughly cleansed, and the whole experiments were very faulty in this regard, that in case of death of the animal within such a short period as he described, in two of his experiments (guinea-pigs No. 5 and No. 6) within 17 and 29 minutes respectively, the failure to do an autopsy would prevent—in such a rapid death to determine whether the animals had died as a result of the drug, or as the result of physical violence by the needle or by the holding and struggling—would prevent any competent pharmacologist from drawing any conclusion as to what was the cause of death in those cases.

Q.—Doctor, I will ask you whether or not an autopsy or an examination of the body of the dead animal, a postmortem examination, would have disclosed the cause of death.

Dr. Loevenhart stated that the postmortem examination would show the cause of death. In his opinion the death of the guinea-pigs used by Dr. Mason was not produced by the medicine because if the experiment had been done correctly and with proper precautions the guinea-pigs would not have died, as Dr. Loevenhart himself has shown in ten guinea-pigs. The Court ruled that the last phrase might be stricken out.

The witness was asked whether or not alcohol which is taken through the mouth in such quantities that it is almost completely oxidized in the body may still produce consequences which are harmful to the individual who takes it. The witness stated that the alcohol may still produce harmful effects. It will still produce its toxic effect before it undergoes oxidation.

Mr. T. J. Scofield:—Now, will you explain how that may happen, how the oxidation occurs and how the toxic effect of alcohol is disseminated in the system? A.—It is true that alcohol will oxidize in the body to carbon dioxide and water, both of which have no action in the body, and, after it has been so oxidized it is inert. On the other hand, alcohol taken into the body is absorbed into the blood circulation throughout the body, and the tissues take up the alcohol from the blood in proportion to its concentration in the blood. The more concentrated it is in the blood, the more concentrated it will be in the tissues, the brain, the liver and the kidneys and all the organs.

As it is gradually oxidized—there is no evidence that the alcohol is quickly or suddenly oxidized, as soon as it is absorbed. It remains in the body a certain time after it is ingested, and as the alcohol is gradually oxidized, it passes back from the tissues into the blood again, or is oxidized in the tissues and before it is oxidized it exerts all of its deleterious and harmful effects in the tissues, as shown by the fact that even small amounts of alcohol, such as a single glass of beer or a single drink of a stronger beverage, such small quantities as are almost completely oxidized in the body, produce flushing of the face, and talkativeness and other evidences of incipient intoxication, in spite of the fact it will be ultimately oxidized to carbon dioxide and water. It is before it is oxidized that it exerts its pharmacological and toxicological action.

CROSS-EXAMINATION BY MR. HOUGH

The witness stated that postmortem examination will distinguish between death by chemical means and death by violence. An autopsy supplemented by chemical analysis, if the latter is successful, will in all cases disclose the cause of death.

TESTIMONY OF DR. EDWARD E. REISMAN

Dr. Edward E. Reisman was called as a witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Dr. Reisman testified that he is a surgeon residing in Chattanooga, and a member of the staff of the Erlanger Hospital. He is acquainted with Mrs. Louise Gokey. Objection was made to the testimony as not proper. The Court overruled the objection. The witness stated that he operated on Mrs. Gokey for removal of both fallopian tubes, two broad ligament cysts and an appendectomy. There were very dense adhesions. Objection was again made to the testimony on the ground that it was not proper.

Mrs. Gokey had stated in her deposition in reply to the question "What is your condition of health now?" Answer: "Fine, good health."

The witness stated that from the history of the case of Mrs. Gokey she must have suffered from this condition at the very shortest from eight to twelve months. He stated that such a condition would cause a woman to have irregular menstruation and flooding. In his opinion this condition might have produced pain.

Dr. Reisman testified that Mrs. Gokey gave him her history at the time of examination—namely, that this trouble had been going on for several months, and that she was suffering with pain in her lower abdomen, intermittent and irregular flow. She thought at first that she was probably pregnant and she sought medical advice primarily for this condition. She stated that she had been suffering for several months. Mrs. Gokey came to Dr. Reisman through Dr. Roberts, her family physician. At the time she came to him he knew nothing whatever concerning the fact that she testified in this case.

Mrs. Gokey told Dr. Reisman after the operation, when he had explained to her its nature, that she had given a deposition relative to the curative effects of Wine of Cardui. The Court ruled on objection that the part of the testimony referring to the woman having pain might be stricken out; the balance might stand.

CROSS-EXAMINATION BY MR. WALKER

The witness testified that Mr. Z. C. Patten, Jr., is trustee of the hospital in which he is surgeon. The attorneys for the plaintiff moved that the entire testimony be stricken out. The Court stated his ruling the same as before, and exception was taken.

TESTIMONY OF DR. G. M. ROBERTS

Dr. G. M. Roberts was called as a witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Dr. Roberts testified that he is a physician practicing in Chattanooga. He is acquainted with Mrs. Gokey. Mrs. Gokey came to him Feb. 25, 1916, complaining of enlargement and stating that she was possibly pregnant. She stated that she had pain in both sides and that she had suffered in this way since she was married, which was about 14 months. He examined the patient and found a mass on each side of the uterus, inflammation and tenderness. Objection was made to the testi-

mony and overruled. He recommended that the patient consult Dr. Reisman, the previous witness.

The witness agrees with everything Dr. Reisman said.

Dr. Roberts stated that he knows Mrs. W. M. Irwin. Mrs. Irwin came to see him. He was at her house about the 15th of March, 1916. Mrs. Irwin told him that she was still suffering with her female trouble, leukorrhea, etc.

The Court ruled that the evidence in regard to Mrs. Irwin might be stricken out as not proper surrebuttal.

The witness stated that Dr. Reisman is surgeon of the Baroness Erlanger Hospital, where Mr. Z. C. Patten is Trustee, and there is a record of the operation in the hospital.

CROSS-EXAMINATION BY MR. WALKER

The witness stated that he is not a member of his local medical organization. He was recently suspended for neglecting to pay his dues. He has not received any letter regarding this suit. His expenses are being paid by Dr. Reisman. Dr. Reisman brought him to Chicago.

TESTIMONY OF MR. JOHN P. LISTER

Mr. John P. Lister was called as a witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Mr. Lister testified that he resides in Gadsden, Ala. He was sheriff one term and deputy sheriff twelve years. He has an extensive acquaintance in the city and county. He has known Dr. Appleton for twelve years. He believes Dr. Appleton's general reputation for truth and veracity is good. He would believe him on oath.

CROSS-EXAMINATION BY MR. WALKER

Dr. Appleton is not the witness' family physician, although he has treated him at times. He has not treated any members of the witness' family. The witness is now special agent for the Queen & Crescent Railroad, looking after lost freight claims. Dr. Appleton saw the witness about coming to Chicago. He has never heard Dr. Appleton's character discussed.

TESTIMONY OF DR. M. B. HUGHES

Dr. M. B. Hughes was called as witness for the defendant in surrebuttal.

Dr. M. B. Hughes testified that he resides in Gadsden, Ala., and has practiced in that city for ten years. He is acquainted with Dr. Appleton. They have consulted together at times. He considers Dr. H. L. Appleton's reputation for truth and veracity as good and he would believe him under oath.

CROSS-EXAMINATION BY MR. WALKER

The witness stated that he had never heard anyone say anything derogatory to the character of Dr. Appleton. Dr. Hughes is a member of his local and state society. He subscribes for THE JOURNAL.

TESTIMONY OF DR. JOHN P. STEWART

Dr. John P. Stewart was called as witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Dr. John P. Stewart testified that he resides in Attala, Ala., of which he is mayor. It is about five miles from Gadsden. Attala is a town of about 3,000 to 5,000. He has been practicing 31 years. He has known Dr. Appleton since 1903. The witness at first thought it was 1908 when Dr. Appleton was elected president of the Tri-State Medical Association. He then remembered that he met him when Dr. Appleton was made a member of the Knights of Pythias. The witness stated that he is a politician and knows everybody. He has never heard the reputation of Dr. Appleton questioned, and he would certainly believe him under oath.

CROSS-EXAMINATION BY MR. WALKER

The witness stated that he does not know Mr. Wharton or Mr. Cobb. He does know Drs. Johnson and Murphy. He has never heard Dr. Appleton's character questioned. So far as he knows, Dr. Appleton has never held any political office.

TESTIMONY OF MR. FRANK M. COTTLE

Mr. Frank M. Cottle was called as witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Mr. Cottle testified that he is in the drug business in Gadsden, Ala., where he has been for thirty-six years. He knows Dr. H. L. Appleton and considers the general reputation of Dr. Appleton for truth and veracity as good and would believe him under oath.

CROSS-EXAMINATION BY MR. WALKER

The witness stated that he arrived in Chicago the day before testifying, with him was Drs. Stewart and Hughes and Mr. Lister.

Dr. Appleton's office is across the street from the witness' drug store. Dr. Appleton showed him his testimony. The witness has never spoken to anyone concerning Dr. Appleton's character. There is no commission arrangement between the witness and Dr. Appleton concerning prescriptions.

An adjournment was taken until 2 o'clock the same day.

June 9, 1916, Afternoon

TESTIMONY OF MR. J. C. HUNTLEY

The Court met pursuant to adjournment. Mr. J. C. Huntley was called as a witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Mr. J. C. Huntley stated that he has resided in Ruby, S. C., for eighteen years, where he is agent of the Chesterfield & Lancaster Railroad Company, which position he has held for twelve years. He knows practically everybody in the community. He knows Dr. R. M. Newsom, who has boarded with him for five years. He considers Dr. Newsom's reputation for truth and veracity as good and would believe him on oath.

CROSS-EXAMINATION BY MR. HOUGH

The witness identified the signature of Dr. Newsom. He stated that he has never heard Dr. Newsom's reputation for truth and veracity discussed. Dr. Newsom did not talk with the witness about the testimony he has given in this case. Dr. Newsom is the family doctor of the witness. He has seen Miss Erwin, but never met her. He stated that he does not know C. J. Huntley of Ruby, S. C.

TESTIMONY OF MR. J. F. CRAWLEY

Mr. J. F. Crawley was called as a witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Mr. Crawley testified that he lives in Ruby, S. C., where he is engaged in farming. He knows everybody in that section of the country. He has known Dr. Newsom for five years, and considers his general reputation for truth and veracity as good, and would believe him under oath.

CROSS-EXAMINATION BY MR. HOUGH

Dr. Newsom is the witness' family physician. He knew that Dr. Newsom came to Chicago a month and a half ago to testify. He has never heard Dr. Newsom's reputation questioned. Dr. Heizer asked the witness to come to Chicago.

TESTIMONY OF REV. A. B. SMITH

Rev. A. B. Smith was called as a witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Rev. A. B. Smith testified that he resides in Ruby, S. C. He was a farmer until he was twenty-six years old, and since then has been a Baptist minister. He is pretty well acquainted all over the county. He has known Dr. Newsom for five years. The witness stated that he has never made any statement to Dr. Perry concerning the character of Dr. Newsom. He heard Dr. Perry make a statement about Dr. Newsom perhaps about the beginning of the year. He considers the reputation of Dr. Newsom for truth and veracity as good. The witness stated that Dr. Perry is a relative of the witness by marriage.

CROSS-EXAMINATION BY MR. HOUGH

The witness stated that he had heard Dr. Newsom come to Chicago to testify. The only time he has heard Dr. Newsom's reputation discussed was the time he mentioned. He stated that he had a chum who was bitten by a cat and he took the chum to Columbia to be treated. He did not make a statement to Dr. Perry about Dr. Newsom at that time. He does not remember that he has ever had any conversation with Dr. Trotty about Dr. Newsom or with Dr. Teale. Dr. Heizer saw the witness about coming to Chicago.

The witness stated that he retired from the ministry about two years ago. He was not forced to retire. He did not state to either Mr. Reibers or to Mr. Rivers that he would not believe Dr. Newsom.

TESTIMONY OF MR. T. G. GRIGGS

Mr. T. G. Griggs was called as a witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Mr. Griggs testified that he lives in Ruby, S. C., where he is engaged in the manufacturing of lumber. He knows practically everyone in Ruby. Dr. Newsom is his family physician and he considers Dr. Newsom's reputation for truth and veracity as good and he would believe him under oath. He once heard Dr. Fundenberg make some statement about Dr. Newsom. Dr. Fundenberg was there before Dr. Newsom came.

CROSS-EXAMINATION BY MR. HOUGH

The witness stated that he thought everyone believed Dr. Newsom. Dr. Fundenberg stated he would not believe Dr. Newsom. The witness stated that he knows of the witnesses who testified for the plaintiff concerning Dr. Newsom but has not talked with them about Dr. Newsom's reputation.

REDIRECT EXAMINATION BY MR. T. J. SCOFIELD

The witness stated the circumstances under which Dr. Fundenberg had made statements concerning Dr. Newsom's character; namely, Dr. Fundenberg was called in to take care of a confinement during Dr. Newsom's absence, and at the time of his payment Dr. Fundenberg stated that Dr. Newsom was more apt to tell a lie than anything else.

RE-CROSS-EXAMINATION BY MR. HOUGH

The witness stated that Dr. Fundenberg was the only one he had heard discuss Dr. Newsom's character since the beginning of the trial.

DEPOSITIONS

Mr. Loesch offered to read some depositions relative to Lydia Powell.

TESTIMONY OF REV. A. B. SMITH

Rev. A. B. Smith resumed the stand in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Rev. A. B. Smith stated that he retired from the ministry to rest, and has at present offers from four churches.

COURT RULING ON DR. HAGGARD'S TESTIMONY

The Court ruled that so much of Dr. Haggard's testimony as related to the condition of the woman's womb might be stricken out. After two more depositions were read the jury retired.

Arguments were then made before the Court regarding the introduction of depositions as to the death of Lydia Powell. These depositions were to show that the Lydia Powell mentioned in the article of THE JOURNAL of the American Medical Association was not the Lydia Powell mentioned in the testimonials of the Chattanooga Medicine Co., but that the American Medical Association published in good faith the statement that the Lydia Powell of the Chattanooga Medicine Co. testimonial was dead. The attorneys for the plaintiff admitted that the mistake was an honest mistake.

June 12, 1916, Morning

TESTIMONY OF REV. R. R. BRASHER

The Court met pursuant to adjournment. Rev. R. R. Brasher was called as a witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Rev. Brasher testified that he is a minister, residing in Plantersville, Ala., ten miles from Maplesville. He preaches in both places. He has been pastor for more than two and a half years. He has known Dr. W. E. Kay, of Maplesville, over two years and a half. He considers the reputation of Dr. Kay as good and would believe him under oath.

CROSS-EXAMINATION BY MR. WALKER

Dr. Kay is not the witness' family physician. The witness has not talked with anyone about Dr. Kay's reputation for truth and veracity before this case. Dr. Kay was formerly Mayor. The witness has never had any dealings with Dr. Kay.

TESTIMONY OF DR. J. J. DUBOIS

Dr. J. J. DuBois was called as a witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Dr. J. J. DuBois testified that he has been practicing medicine for twenty years. He resides in Stanton, Ala., which is four miles from Maplesville. He knows most of the people in Maplesville. He is acquainted with Dr. W. E. Kay, whose reputation for truth and veracity he considers good and he would believe him under oath.

CROSS-EXAMINATION BY MR. WALKER

The witness stated that he has known Dr. Kay for five years. He knew that Dr. Kay was Mayor and had resigned. He had not heard the grounds for resignation. The witness stated that he has never been convicted for failing to report the births of children or for practicing medicine without a license. The witness is not now under indictment for assault and attempt to murder.

Objection to these questions was made and sustained.

TESTIMONY OF MR. GUY H. GERALD

Mr. Guy H. Gerald was called as a witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Mr. Gerald testified that he resides in Thorsby, Ala. He lived at Maplesville over four years, up to last July. He was engaged in the fire insurance business, and was cashier and president of a bank, which failed. No litigation is now pending as a result of this failure. The witness is well acquainted around Maplesville. He has known Dr. Kay about four years, and considers his general reputation for truth and veracity as good and would believe him under oath.

CROSS-EXAMINATION BY MR. WALKER

The witness stated that he had been employed in three other banks. Neither himself nor any of the other officers are being held for any litigation resulting from the failure of the bank. The witness knows Mr. Fred James, who is a negro. He has not talked with Mr. James about the character of Dr. Kay. Mr. Gerald knows Dr. Glover. He has not heard why Dr. Kay resigned as Mayor. He understood that Dr. Kay resigned because he had been bothered so much about litigation in connection with Dr. B. O. Glover. He has never heard Dr. Kay's reputation for truth challenged.

REDIRECT EXAMINATION BY MR. T. J. SCOFIELD

The witness testified that he knows Dr. B. O. Glover and considers his reputation for truth and veracity as bad, and would not believe him under oath.

TESTIMONY OF MR. RALPH CALLOWAY

Mr. Ralph Calloway was called as a witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Mr. Calloway testified that he is Mayor of Maplesville and has been Mayor since the first of last July. He has resided in Maplesville eighteen years. He succeeded Dr. W. E. Kay, who resigned from the Mayorship. The witness was appointed Mayor by the town council, which consists of five members. He was also postmaster and was sheriff. He is thoroughly acquainted with the people of Maplesville and

its vicinity. He considers the general reputation of Dr. Kay as good and he would believe him under oath.

The witness stated that Dr. Kay resigned because his practice required all of his time and he could not put the time in the Mayor's office that he thought it required. The books were audited and found correct. He knows Dr. B. O. Glover, whose reputation for truth and veracity he considers as bad and would not believe him under oath.

CROSS-EXAMINATION BY MR. WALKER

The witness stated that there is more than one political faction in Maplesville. Dr. Glover is on the opposite side. Dr. Kay was elected Mayor.

Mr. Calloway stated that he was appointed postmaster in 1906 and resigned in 1914, following a change in administration. He stated that he resigned the deputy sheriff's office because he was elected Mayor. He could not hold two offices at the same time.

REDIRECT EXAMINATION BY MR. T. J. SCOFIELD

Q.—You say that you know B. O. Glover's reputation for truth and veracity? A.—Yes, sir, I think I do.

Q.—Have you ever heard anybody speak of his reputation?

Mr. Walker:—That is objected to.

THE COURT:—Objection sustained.

To which ruling of the Court the defendants, etc., excepted.

Mr. Walker: Q.—Mr. Mayor, don't you know that—a question that has just come to me—that the balance in Kay's bank of the city's funds, was \$6.30 and that the shortage was \$46.78? A.—No, sir, I don't.

TESTIMONY OF J. W. RILEY

Mr. J. W. Riley was called as witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Mr. Riley testified that he resides in Cottonwood, Ala., where he owns the Riley Telephone Co. He is well acquainted in the neighborhood of Cottonwood, Ala., and is a member of the County Board of Education which selects the teachers.

The witness is acquainted with Mr. Frank B. Sellers, a teacher whom he has known for nearly six years. He considers the general reputation of Mr. Frank B. Sellers as good and would believe him under oath. He also knows Josh Granger, whose general reputation for truth and veracity he considers good and would believe him under oath.

CROSS-EXAMINATION BY MR. WALKER

The witness testified that he cannot identify the writing of Mr. Jim Sellers. He has never talked with anyone about the reputation of Mr. Frank B. Sellers. He cannot call to mind the number of people whom he heard say that Mr. Frank B. Sellers would tell the truth.

TESTIMONY OF MR. J. S. WILLIAMS

Mr. J. S. Williams was called as a witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Mr. Williams testified that he resides about eleven miles from Cottonwood, Ala. He is a farmer. He knows Mr. F. B. Sellers and considers his general reputation for truth and veracity as good. He would believe him under oath. He also knows Josh Granger. He considers Josh Granger's reputation for truth and veracity as good and would believe him under oath. He knows Mr. William Rucker—a farm hand—he considers his general reputation for truth and veracity as bad and he would not believe him under oath.

CROSS-EXAMINATION BY MR. WALKER

Mr. Walker asked the witness if there was any man in the community whom everybody would believe under oath.

Objection was made to this question and sustained.

The witness stated that he has never been indicted for conspiracy in reference to bankruptcy cases. He was once bankrupt. He was never accused of arson. He has never had trouble in collecting insurance. He has had fires on his property. He never has had any personal difficulty with Mr. Rucker or with Mr. Granger. Mr. Rucker owed him several hundred dollars when he left. Mr. Granger used to pay

what he owed. He testified that he had never heard any of the witnesses for the plaintiff speak of the character of Mr. Granger.

REDIRECT EXAMINATION BY MR. T. J. SCOFIELD

Mr. Williams stated that he has a daughter named Eunice. Dr. C. A. Glover never attended his daughter, but did fix up some medicine for her on one occasion. The witness testified that his daughter never took any Wine of Cardui that he knows of. He considers the general reputation of Dr. Glover as bad, and would not believe him under oath.

RECROSS-EXAMINATION BY MR. WALKER

Dr. Glover is not in debt to the witness. The witness does not lend money at usurious interest. Dr. Glover did not see the witness' daughter. The witness knows about her case from what Dr. Glover told him. The witness is to receive money for coming to Chicago and his expenses. Dr. Moody spoke to Mr. Williams about coming to Chicago.

TESTIMONY OF MR. N. B. HUGHES

Mr. N. B. Hughes was called as a witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Mr. Hughes testified that he is a teacher residing in Cottonwood, Ala. He has been a teacher for twenty-five years. He considers the general reputation of Mr. Frank B. Sellers for truth and veracity as good and he would believe him under oath.

He knows Josh Granger, whose reputation he considers as good, and he would believe him under oath.

CROSS-EXAMINATION BY MR. WALKER

The witness stated that he never heard the reputation of Mr. Frank B. Sellers questioned before this trial. He knows the father, Mr. Jim Sellers. He does not know his handwriting. Dr. Moody saw the witness about coming to Chicago.

TESTIMONY OF DR. W. E. PAGE

Dr. W. E. Page was called as a witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Dr. Page testified that he resides in Ashford, Ala., which is about eleven miles from Cottonwood. He knows Mr. Frank B. Sellers, whose general reputation for truth and veracity he considers as good. He knows Mr. Josh Granger, whose general reputation for truth and veracity he also considers good and he would believe him under oath.

CROSS-EXAMINATION BY MR. WALKER

The witness testified that he treated a little girl in the Sellers' family about eighteen years ago. He also treated a farm hand more recently. He has never heard anything except favorable talk about Mr. Granger. The witness has not talked with any of the witnesses for the plaintiff about Mr. Sellers' reputation.

Dr. Page stated that he has never made any attack or interested himself in any attack against Dr. Glover since the latter testified in this trial.

An adjournment was taken until 2 o'clock the same day.

June 12, 1916, Afternoon

TESTIMONY OF MR. J. H. BLAKE

The Court met pursuant to adjournment. Mr. J. H. Blake was called as a witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Mr. J. H. Blake testified that he resides near Oakdale, Tenn., where he has lived practically all of his life—seventy years. He is a farmer. He is well acquainted in Oakdale. He knows Joe Cooper, whose general reputation for truth and veracity has always been considered good and he would believe him under oath.

CROSS-EXAMINATION BY MR. WALKER

The witness has not talked with any of the witnesses for the plaintiff concerning the character of Mr. Cooper. Dr. Cooper saw the witness about coming to Chicago.

TESTIMONY OF MR. W. A. LANGLEY

Mr. W. A. Langley was called as a witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Mr. Langley testified that he resides in Oakdale, Tenn., where he is County Tax Assessor. He knows practically everyone in the town. He has known Mr. Joe Cooper for twenty-two years, and he considers his general reputation for truth and veracity as good, and would believe him under oath.

CROSS-EXAMINATION BY MR. WALKER

The witness testified that his office as County Tax Assessor is an elective office. Mr. Cooper has always supported him for office. The witness was asked if he did not belong to a party which was called the "Cooper gang or bunch." The witness stated that he never heard of it.

Mr. Langley has not talked with any of the witnesses for the plaintiff about the reputation of Mr. Cooper. Mr. Cooper has not drunk anything for four years.

TESTIMONY OF MR. GRAM DAVIS

Mr. Gram Davis was called as a witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Mr. Davis testified that he resides in Wardburg, Tenn., which is near Oakdale, Tenn., and was deputy sheriff up to 1912. He knows Joe Cooper, whose general reputation for truth and veracity he considers as good, and he would believe him under oath.

CROSS-EXAMINATION BY MR. WALKER

The witness stated that Mr. Joe Cooper has supported him in election.

TESTIMONY OF MR. ALEXANDER ADAMS

Mr. Alexander Adams was called as a witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Mr. Adams testified that he has been engaged in the mercantile business in Oakdale for three years. He considers the general reputation of Joe Cooper for truth and veracity as good and would believe him under oath.

CROSS-EXAMINATION BY MR. WALKER

The witness stated that he told a friend that this was an opportunity for him to come to Chicago to see his mother at somebody else's expense.

DEPOSITIONS

Mr. Loesch then read the depositions of Mr. John W. Bishop, Mr. A. B. Menefee and Moses Elwood McClure, concerning Lydia Powell.

TESTIMONY OF DR. S. P. HOLLAND

Dr. S. P. Holland was called as a witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Dr. Holland testified that he resides in Columbia, Ala., where he has been practicing medicine. He knows where Cottonwood is, and has lived within seven miles of Cottonwood. He knows Mr. Frank B. Sellers, and considers his general reputation for truth and veracity as good. He would believe Mr. Sellers under oath. He knows Mr. Josh Granger, whose general reputation he considers as good and would believe him under oath.

The witness has not talked with any of the witnesses for the plaintiff concerning the reputation of Mr. Frank B. Sellers. Dr. Moody saw him about coming to Chicago. Dr. Moody asked him if he knew the general reputation of Mr. Granger and Mr. Sellers, and the witness replied that it was good. This was the first time the witness has been asked if he would believe them under oath.

TESTIMONY OF MR. ROBERT CHESHIRE

Mr. Robert Cheshire was called as a witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Mr. Cheshire testified that his business is running an automobile. He knows Josh Granger, whose general reputation he considers as good and would believe him under oath. He knows Dr. Glover, whose reputation he considers as bad, and he would not believe him under oath.

CROSS-EXAMINATION BY MR. WALKER

The witness stated that Dr. Glover's reputation was bad before the witness had impeached the character of Mr. Sellers and Mr. Granger, and it has become worse since. The witness and Dr. Glover belong to different political factions. Dr. Moody arranged with the witness to come to Chicago.

The further hearing of the case was adjourned until the following day, June 13, 1916, at 10:30 a. m.

June 13, 1916, Morning

TESTIMONY OF MR. C. A. GARDNER

Mr. C. A. Gardner was called as a witness for the defendants in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Mr. Gardner is the same witness who was sworn as a character witness for the plaintiff. He desired to change his testimony in the case to say that when he testified that the Goddards were a "bunch of crooks" he did not know that there was more than one Dr. Goddard, and that he had acquired concerning the matter when he came home and he now desired to withdraw his testimony. Dr. Goddard whom he understood was a man of bad character was not Dr. G. M. Goddard, a witness for the defendant.

CROSS-EXAMINATION BY MR. WALKER

The witness admitted what he said at the first time he testified, but stated that he did not know there was more than one Dr. Goddard.

TESTIMONY OF DR. A. B. SMALL

Dr. A. B. Small was called as a witness for the defendants in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Dr. Small testified that he has been practicing medicine in Dallas, Texas, for ten years. He knows Dr. G. M. Goddard and considers his general reputation for truth and veracity as good. He would believe Dr. Goddard under oath.

CROSS-EXAMINATION BY MR. WALKER

The witness stated that Dr. G. M. Goddard himself saw him about coming to Chicago. He knew the other Dr. Goddard. There were three of them. The witness has no connection with the sanitarium. Dr. G. M. Goddard has called the witness in consultation. The witness has not discussed the character of Dr. Goddard with any of the witnesses for the plaintiff.

REDIRECT EXAMINATION BY MR. T. J. SCOFIELD

The witness testified that he knew that one of the Goddards was a man of irregular habits.

RECROSS-EXAMINATION BY MR. WALKER

The witness stated that he knew that all three of the Goddards were together in Dallas, Texas.

TESTIMONY OF DR. C. W. SIMPSON

Dr. C. W. Simpson was called as a witness for the defendants in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Dr. Simpson testified that he has resided in Waxahachie, Texas, for twenty-four years. The witness and Dr. Small are on their way to Detroit to attend the Annual Session of the Association. He stated that he is well acquainted in the neighborhood of Waxahachie. He knows Dr. G. M. Goddard and has known him for twenty years. He considers Dr. Goddard's reputation for truth and veracity as good and he would believe him under oath.

CROSS-EXAMINATION BY MR. WALKER

The witness stated that it has reached him that a brother of Dr. G. M. Goddard was not straight. The witness stated that he had not made any arrangements as to expenses for the trip. The witness had not talked with any of the witnesses for the plaintiff concerning the character of Dr. Goddard.

REDIRECT EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that when he attends the Annual Session of the Association he pays his own expenses.

TESTIMONY OF DR. E. A. MEANS

Dr. E. A. Means was called as a witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Dr. Means testified that he practices in Dallas, Texas, and has resided in Oak Cliff for twenty-five years. He considers the general reputation of Dr. G. M. Goddard for truth and veracity as good, and he would believe him under oath. The witness knows that there were three Dr. Goddards.

CROSS-EXAMINATION BY MR. WALKER

The witness stated that he knows Mr. George Reynolds. He stated that he never told Mr. Reynolds that Dr. G. M. Goddard was a crook. He knows two of the Goddards were crooks. He knows that Dr. G. M. Goddard is honest.

TESTIMONY OF MR. GEORGE W. LEADWELL

Mr. George W. Leadwell was called as a witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Mr. Leadwell testified that he is a farmer residing in Boyce, Texas, and that he has known Dr. G. M. Goddard for ten or eleven years, and considers his general reputation for truth and veracity as good and would believe him under oath. He is acquainted with Mr. J. W. Pierson, a minister who was formerly in the drug business. He never had any conversation with Mr. Pierson about the reputation of Dr. G. M. Goddard.

CROSS-EXAMINATION BY MR. WALKER

The witness was asked whether he was on his way to the meeting of the American Medical Association; he said he was not. He came to Chicago with Mr. Marx. He expects to receive something for his time, in addition to his railroad expenses.

TESTIMONY OF MR. JOHN T. BOARDERS

Mr. John T. Boarders was called as a witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Mr. Boarders testified that he is a farmer residing in Boyce, Texas. He knows Dr. G. M. Goddard, whose general reputation he believes is good and he would believe him under oath. He knows Mr. Pierson who was formerly a druggist and is now a minister. He never had any conversation with Mr. Pierson about Dr. G. M. Goddard's character. He never heard Dr. G. M. Goddard's character questioned until last week. He came to Chicago with Mr. Marx. He is receiving his expenses.

TESTIMONY OF MR. L. T. BUFORD

Mr. L. T. Buford was called as a witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Mr. Buford testified that he is a farmer residing in Boyce, Texas. He is acquainted with the general reputation of Dr. G. M. Goddard for truth and veracity, which he considers good, and he would believe him under oath. He knows Mr. J. W. Pierson, but never had any conversation with him regarding Dr. G. M. Goddard.

CROSS-EXAMINATION BY MR. WALKER

The witness stated that he never had any conversation with anyone regarding Dr. G. M. Goddard. The witness came to Chicago with Mr. Marx.

REDIRECT EXAMINATION BY MR. T. J. SCOFIELD

The witness stated that he knew Mr. Marcus G. Noel who runs a drug store at Boyce, Texas. Mr. Noel was working for Mr. McIntosh. The witness himself owned the building.

TESTIMONY OF MR. HARRIS M'INTOSH

Mr. Harris McIntosh was called as a witness for the defendant in surrebuttal.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Mr. McIntosh testified that he has resided in Waxahachie, Texas, for twenty-one years. He knows Dr. G. M. Goddard. He knows Marcus Noel, who was in his employ managing a drug store at Boyce. He considers the general reputation of Dr. G. M. Goddard for truth and veracity as good, and he would believe him under oath.

CROSS-EXAMINATION BY MR. WALKER

The witness testified that he has not talked with any of the witnesses for the plaintiff concerning the character of Dr. G. M. Goddard. Mr. Marx made arrangements with the witness to come to Chicago.

Closing

Following this testimony the attorneys for the defendant rested their case. The attorneys for the plaintiff also rested their case. Arrangements were made for the purchase of bottles of Wine of Cardui, so that the jury might drink them.

The Court ruled that attorneys for each side could talk six hours for the presentation of argument.

An adjournment was taken until 2 o'clock the same day.

Following addresses to the jury, the Court read his instructions. The latter were published in *THE JOURNAL* July 1, 1916, p. 51.

Correspondence

Aromatic Spirits of Ammonia

To the Editor:—In *Queries and Minor Notes* (*THE JOURNAL*, July 15, 1916, p. 231) Dr. Horatio C. Wood, Jr., in reference to the administration of aromatic spirits of ammonia, speaks of what was to him a very amusing incident, and belittles the "country doctor" who administered the drug as a stimulant in shock. Dr. Wood's article insinuates that the "country doctor" was ignorant of the action or rather the inactivity of the drug in question. Perhaps so; but I am at a loss to see how and where he was at fault, for the literature, "authentic literature," is teeming with references to, and recommendations of, aromatic spirits of ammonia as a diffusible stimulant.

In Forchheimer's "Therapeutics of Internal Diseases" (Billings), recommended and commended by many leaders of the profession, the following recommendations of aromatic spirits of ammonia are made:

In combination with other drugs as a diffusible stimulant to sustain "heart force" during short periods in lobar pneumonia.

As a cardiac stimulant in strophanthus poisoning, and as a cardiac stimulant in edema of the glottis.

Dr. De Lee recommends it as a stimulant in fainting following postpartum hemorrhage.

Bethea refers to it as a stimulant, useful in syncope, asphyxia, collapse, and poisoning from narcotics and depressant agents.

Musser and Kelly's "Practical Treatment" recommends it in acute fatigue, claiming that it is as effective as strychnin or atropin.

Dr. Edward Otis, the same work, recommends it as a stimulant in dyspnea of advanced tuberculosis, and again in threatened collapse from excessive loss of blood in hemoptysis of pulmonary tuberculosis.

Dr. Alfred Stengel recommends it as a stimulant in influenza.

Dr. Hare recommends it as a rapidly acting diffusible stimulant, surpassing all others.

Dr. James Anders, in his article on pancreatic hemorrhage refers to it as a stimulant.

Dr. James Tally refers to it as a diffusible stimulant in congestion of the lungs, and recommends it as such.

These references are picked at random, and no doubt scores of other authors recommend aromatic spirits of ammonia as a stimulant.

I myself have never administered a dose of aromatic spirits of ammonia, so that I take no offense at Dr. Wood's reference to the physician who administered it in a case of shock. But if aromatic spirits of ammonia is useless as a stimulant then who is to blame for its administration by the members of the profession? Is it the country doctor or the "men higher up," those who are supposed to be peers of the profession, who write and edit works which the medical journals recommend to the profession? I refer here to aromatic spirits of ammonia; but it is only one of a hundred drugs and remedies that are recommended by the leading physicians of the country as being something which they are not and are not possessing therapeutic virtues which they do not possess.

Is it the country doctor to whom Dr. Wood refers who is to blame? No, it is not. It is the authors, first, of the leading medical works, and secondly of the medical journals recommending these works to the profession without taking the trouble to point out their fallacies.

Whom, then, is the busy practitioner to believe? He has no time for scientific experiments. He wants facts, and for these he depends on the medical journals and literature to which he subscribes. If the statements of these are fallacious he is not to blame. Is he to accept the findings of the laboratory workers who claim that a drug possesses no therapeutic virtues, or is he to accept the word of the clinicians who assert that practically the drug possesses therapeutic virtue that the laboratory technician says it cannot and does not possess? ROLAND F. HOTARD, M.D., Winter Park, Fla.

[Dr. Hotard's letter was referred to Dr. Wood, who says:

To the Editor:—I had no intention of casting any slur at the "country doctor," for I know from personal experience something of the problems he has to meet and how conscientious he is in meeting them. The array of authorities which Dr. Hotard quotes, I am sorry to say, does not surprise me. If Dr. Hotard will read my paper on "Pharmacologic Superstitions" (*THE JOURNAL*, April 8, 1916, p. 1067) he will see that I comment on the fact that men of authority in medical circles lend their commendation to therapeutic measures which cannot be defended on either scientific or clinical grounds.

The medical profession as a whole—including both the city doctor and the country doctor—are not to be blamed for the leaders they have chosen to follow, but for the unreasonable blindness with which they follow those leaders. I do not believe that we should accept the dictum of any one, however eminent, as final proof of the efficacy of a therapeutic measure, but that each should prove the truth for himself. In the paper referred to above I have laid down at some length the criteria by which, in my opinion, the value of a remedial agent can be judged.

HORATIO C. WOOD, JR., M.D., Philadelphia.

Observations on the Coagulation Test for Syphilis as Devised by Hirschfeld and Klinger

To the Editor:—Cole and Chiu (*Arch. Int. Med.*, November, 1915, p. 880) made a report on some 600 serums and spinal fluids successfully examined in this laboratory by the coagulation test. These tests were all made in the laboratory during the spring of 1915. At irregular intervals during the summer of 1915 and up to autumn of that year the coagulation test was successfully used in conjunction with the Wassermann reaction. Then it was noted that twice the amount of calcium chlorid was required for preparation of serozyme that had been used previously. The reaction then began to be very questionable in its results and remained so until late in the spring. Since then, it has once more become quite trustworthy.

worthy, and late in June sixty serums were examined consecutively and with uniform success.

We were at first at a loss to explain this discrepancy, as well as the marked failure of many other American workers with the test. In addition to the work of Hirschfeld and Slinger (*Ztschr. f. Immunitätsforsch.*, 1915, xxiv, 199), Brandt, in Munich (*Deutsch. med. Wchnschr.*, 1915, xli, 1905), as lately reported 500 successful tests, and it has been suggested by Prof. G. N. Stewart that the variable success with the test might be explained by the difference in diet of the sheep during the different seasons of the year and consequent changes in the calcium content of their blood or perhaps changes in some other constituents or properties of the blood. The spring of 1915, during which good results were obtained by Chiu and Cole, was an early spring so that sheep were eating green grass in April and May, whereas this year the season has been later and results were found to be trustworthy until June.

Further investigations are planned in an effort to explain this presumably seasonal variation in the success of the test as well as to elucidate certain other related problems.

P. G. ALBRECHT, A.M.,
STANLEY P. REIMAN, M.D.,
Cleveland.

The Departments of Dermatology and Syphilis and of Pathology of the Western Reserve University and of the Lakeside Hospital.

Book Plates of Physicians

To the Editor:—For several years I have collected book plates, more particularly plates owned by physicians, also the book plates of medical libraries, medical schools, hospitals, etc., and it has been suggested to me that a check list of these ex libris would be of interest. I cannot flatter myself that I possess specimens of all book plates owned by physicians, by medical libraries, etc., in the United States, and therefore take the liberty of asking, through the columns of THE JOURNAL, that physicians who own such marks of ownership for their books favor me with specimens, also informing me of the names of artists (designers, etchers and engravers).

H. J. ACHARD, M.D., 4513 Dover Street,
Chicago.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, and these will be omitted, on request.

HYDROMETRA

To the Editor:—1. Can you furnish me with any data relative to hydrometra?

How many cases have been reported in THE JOURNAL?

H. H. WILSON, M.D., Salina, Kan.

ANSWER.—1. Hydrometra (a collection of watery fluid in the uterus) is an uncommon condition, probably caused by some form of atresia of the cervical canal. It occurs most frequently after the climacteric period. The symptoms depend largely on the age of the patient. There may be a sense of weight and fulness in the pelvis accompanied by more or less backache. Phillips, in the *Journal of Obstetrics and Gynecology of the British Empire*, October-December, 1914, describes a case in a woman, aged 54, who had been married forty years and never had been pregnant. Menstruation was painful and consisted of a thin, slimy discharge lasting ten days every two or three weeks. The patient had noticed abdominal swelling for two years. She was operated on and a tumor about the size and shape of a seven-months pregnant uterus was removed measuring 20 cm. (8 inches) by 18 cm. (7½ inches) by 16 cm. (6½ inches) after hardening. It contained several pints of thin, yellowish fluid. The condition was caused, the author believes, by atresia of the cervical canal which was most probably congenital.

There have been no cases reported in THE JOURNAL during the last five years.

AMBRINE

To the Editor:—Can you obtain the formula for the wax, paraffin and resin mixture referred to in an article entitled "War Letters of an American Woman," which occurs in the current issue of the *Outlook* (Aug. 2, 1916)? This mixture is used in the treatment of burns by Dr. Barthe de Sandfort, Hôpital St. Nicholas, Issy-les-Moulineaux, près Paris. Please do not print my name in THE JOURNAL.

H. V. H., Las Animas, Colo.

To the Editor:—Please give the formula of the preparation of wax, paraffin and resin which Dr. Barthe de Sandfort (Hôpital, St. Nicholas, Issy-les-Moulineaux, près Paris), is said to be using so successfully in cases of burns and frost-bite.

INQUIRER, Cleveland.

ANSWER.—The preparation referred to in the letter to the *Outlook*—Ambrine—is a proprietary preparation which has been on the French market for many years. It is a secret nostrum, the proportions of the several ingredients—"wax, paraffin and resin"—not being given. As a matter of fact, there is nothing original in an application of melted resin, beeswax and paraffin, although the correspondent of the *Outlook* seems to have been carried away with the idea that it is one of the great miracles of the day. There are, and have been for many years, a number of similar combinations on the market. Ceratum Resinae—Rosin Cerate (Basilicon Ointment) of the United States Pharmacopeia is a mixture of 50 parts of lard, 15 parts of yellow wax and 35 parts of rosin. This is a very old combination. The resin ointment of the British Pharmacopeia is composed of 26 parts each of resin, beeswax and olive oil and 22 parts of lard. Another British paraffin cerate is composed of 2 parts of beeswax and 15 parts of paraffin. It is quite probable that the preparation is not being used in the way indicated in the letter in the *Outlook*. If it is used in any hospital, it is probably in some isolated instance. The application of such an air-tight dressing in the treatment of wounds that are extremely likely to be more or less infected is a rather questionable procedure. See also Current Comment, Miracles in the War Zone, THE JOURNAL, this issue, p. 516.

SODIUM SULPHATE AS AN ANTIDOTE FOR PHENOL (CARBOLIC ACID) POISONING

To the Editor:—What is the best antidote for carbolic acid poisoning? I noticed THE JOURNAL states that alcohol and glycerin are of no value. Is sodium phosphate or sodium sulphate useful, and if so, what dose should be given?

J. W., M.D., Jewell, Kan.

ANSWER.—Sodium sulphate in strong solution is one of the best known antidotes for phenol poisoning. Lavage of the stomach should be practiced with large quantities of a solution of sodium sulphate, 4 drams to a pint. Alcohol, when used internally after phenol, probably increases the toxicity of the latter, as the alcohol renders the phenol more soluble and increases its absorption. The same is true of glycerin.

At one time it was believed that the action of sodium sulphate was a chemical one. For instance, Holland (Medical Chemistry and Toxicology, 1915, p. 460) states that sodium sulphate forms (with phenol) a relatively harmless sodium phenol-sulphonate, while Cushny (Pharmacology and Therapeutics, 1914, p. 136), commenting on sodium sulphate as an antidote to phenol, states that this is of little value because the phenol does not combine with sulphates as such in the body but with organic sulphur compounds which are only in the process of being oxidized to sulphuric acid. It has been suggested that whatever action sodium sulphate may have as an antidote to phenol may be due to some hindrance to absorption and possibly also to an added purgation.

SOLUTIONS OF THORIUM SALTS FOR PYELOGRAPHY

To the Editor:—1. Please give the salt of thorium which is used in pyelography.

2. In what percentage is the solution used?

Please omit name.

A. B. C.

ANSWER.—1. A neutral solution of thorium nitrate and sodium citrate is recommended by J. E. Burns (Thorium—A New Agent for Pyelography, THE JOURNAL, June 26, 1915, p. 2126). It is claimed to be nontoxic, nonirritating and quite fluid, and it presents the greatest possible degree of obscurity to the Roentgen ray.

2. Burns' formula is as follows:

To make 100 c.c. of a 10 per cent. solution, 10 gm. of thorium nitrate are dissolved in as little distilled water as possible; to this solution, kept hot on a water or steam bath, are added 30 c.c. of a 50 per cent. solution of sodium citrate, the additions being made in small quantities and care being taken to shake the solution thoroughly after each addition. At first after the addition of the citrate solution, a white gummy precipitate is formed which later becomes granular,

and finally dissolves on the addition of all the citrate solution. This solution is then made neutral to litmus by the careful addition of a normal solution of sodium hydroxid, and made up to the required volume of 100 c.c. with distilled water. On filtration, a clear, limpid solution is obtained, which, when sterilized, either by boiling or steam under pressure, is ready for use. The stability of the solution is not affected in the least by sterilization.

S. R. Woodruff (*The Technique of Pyelography, Surg., Gynec. and Obst.*, 1916, xxii, 241) colors this solution with methylene blue. This makes it more easily seen through the cystoscope. He states that without color it is impossible to tell when the thorium citrate solution has filled the pelvis of the kidney and is being discharged down the ureter alongside the catheter.

Miscellany

The County Health Officers—How Walker County, Ala., Solves the Public Health Problem

No standard plan of public health administration has yet been developed. It is interesting to see how one Southern county has solved its problems. A few years ago the medical profession of Walker County, Ala., decided to work for the establishment of an adequate public health service (Grote, Carl A.: *A Two Years' Public Health Campaign in a Rural County, South. Med. Jour.*, April, 1916, p. 320). The result was the appropriation by the county commissioners of \$3,000 for the purpose in 1914, and the employment of a whole-time county health officer. A physician from outside the county, free from political, professional and personal entanglements, was chosen for the position. The county health officer was made medical inspector of the 125 schools, and city health officer also of the seven incorporated towns within the county. In each town a local physician agreed to act as assistant city health officer, a plan which is said to work well, though Dr. Grote, who describes it, believes that better results would be secured if the assistant city health officers received small salaries. It was recognized from the first that the activities of the department must be largely educational, directed toward securing the cooperation of the community. Every effort was made to secure complete vital, mortality and morbidity statistics. It was regarded as essential that complete statistics be secured during the first year, in order that preventive work done thereafter might receive the credit belonging to it. A birth rate of 32.3 per thousand of population and a death rate of 11 per thousand have been established, and cases of the more serious diseases are said to have been reported promptly and accurately. As medical inspector of schools, the county health officer examines and grades the sanitary condition of the school buildings, and makes a physical examination of the children attending. The decreasing rate of physical defects found at later examinations encourages the belief that this inspection has had a salutary effect. Clean-up campaigns have been inaugurated in the towns; the U. S. Public Health Service reports that "the towns in Walker County are advanced examples of town sanitation." The corporations operating mining and industrial camps within the county have been induced to make large outlays in the sanitation of these camps. A health exhibit, which has many visitors, has been installed in the county court house. Whenever a birth certificate is sent in the mother of the baby receives a bulletin on its care. Lectures, newspaper articles, health bulletins and personal home visits have spread the gospel of disease prevention. The U. S. Public Health Service and the Alabama State Health Department have cooperated in making a sanitary survey of Walker County. While much remains to be done, the permanence of the work is said to be assured, and this in itself is gratifying testimony as to what can be accomplished by and for a rural county that contains earnest and enlightened public health workers. Dr. Grote credits the medical profession of Walker County with being "the backbone of all our activities."

Medical Education and State Boards of Registration

COMING EXAMINATIONS

MISSOURI: Kansas City, Sept. 18-20. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept., 19-22. Mr. Harlan H. Horner, Chief Examinations Division, The University of the State of New York, State Department of Education, Albany.

California April Report

Dr. Charles B. Pinkham, secretary of the Board of Medical Examiners of the State of California, reports the written examination held at Los Angeles, April 3-7, 1916. The total number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 30, of whom 26 passed, including 9 osteopaths, and 5 failed, including 3 osteopaths. Thirty-six candidates were licensed through reciprocity. Seven candidates were granted osteopathic reciprocity licenses. Twenty-eight candidates, including 19 chiropractors, were granted drugless practitioner's license. Fifteen chiropractors were licensed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
California Eclectic Medical College.....	(1915)		79.9
College of Phys. and Surgs., Los Angeles..	(1914) 75; (1915)	81,	93.2
Leland Stanford Junior University.....	(1914)		92.7
University of California.....	(1915)		88.4
Howard University.....	(1914)		85.7
Bennett Medical College.....	(1915)		75
Hahnemann Med. Coll. and Hosp., Chicago.....	(1914)		84.4
Rush Medical College.....	(1914) 92.5; (1915)		89.5
University of Illinois.....	(1913)		85.1
Harvard University.....	(1915)		85.9
University of Michigan Homco. Med. School.....	(1915)		87.5
St. Louis University.....	(1915)		89
McGill University.....	(1915)		97.7
University of Toronto.....	(1870)		82.8
College	FAILED		
California Eclectic Medical College.....	(1915)		65.2
Imperial University, Kyoto.....	(1910)		67.4
College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Denver and Gross College of Medicine.....	(1906)		Wyoming
American Medical Missionary College, Chicago.....	(1907)		Illinois
College of Physicians and Surgeons, Chicago.....	(1897)		Michigan
Hering Medical College.....	(1899)		Illinois
Northwestern University Woman's Medical School..	(1895)		Illinois
Quincy College of Medicine.....	(1887)		Illinois
Rush Medical College.....	(1906)		Illinois
Drake University.....	(1907)		Iowa
State University of Iowa, College of Medicine.....	(1898)		Iowa
Medical College of Indiana.....	(1901)		Indiana
Indiana University.....	(1909)		Indiana
Kansas Medical College.....	(1905)		Kansas
University of Louisville.....	(1911)		Kentucky
Baltimore Medical College.....	(1897)		R. Island
.....	(1899)		W. Virginia
Tufts College Medical School.....	(1908)		Mass.
Kansas City Medical College.....	(1904)		Kansas
Missouri Medical College.....	(1872) Missouri; (1891)		Illinois
St. Louis University.....	(1905) Washington; (1913)		Missouri
University Medical College.....	(1911)		Missouri
John A. Creighton Medical College.....	(1914)		Nebraska
Dartmouth Medical School.....	(1885)		New Hamp.
New York Homeopathic Medical College.....	(1880)		New Jersey
Cleveland Coll. of Phys. and Surgs....	(1898) (1909) (1910)		Ohio
Starling-Ohio Medical College.....	(1913)		Ohio
University of Oregon.....	(1905)		Washington
Hahnemann Med. Coll. and Hosp., Philadelphia....	(1895)		Mass.
Jefferson Medical College.....	(1886) Pennsylvania; (1894)		Missouri
Medico-Chirurgical College of Philadelphia.....	(1896)		Penna.
Western Pennsylvania Medical College.....	(1903)		Penna.
National University of Athens.....	(1900)		Illinois

The Bacterial Content of Sausages

Sausages are a popular article of diet, notwithstanding the more or less common idea that they may contain anything from good pork or beef to dog or cat meat, and the real danger that insanitary methods of preparation may affect their fitness for human food. Some investigation of sausage has been made in Germany, where the subject is rendered of special importance by the common practices of eating sausages raw and of making them of liver, spleen and other viscera which are particularly likely to contain pathogenic bacteria. In France and England also, some studies have been made on the subject. Yet, in this country at least, they seem to have received little attention from the student of foods. Three classes of dangers from sausage poisoning

have been recognized: (1) from the ordinary bacteria of decomposition (generally not severe); (2) from members of the *enteritidis* group (a real source of danger), and (3) from the toxins of *Bacillus botulinus* (seldom encountered except in Germany).

Recently, William E. Carey of the Department of Hygiene and Bacteriology, University of Chicago, has examined thirty-four samples of pork sausage bought in meat markets, some sanitary, others highly insanitary, in various parts of Chicago. The Bactericidal Examination of Sausages and Its Sanitary Significance, *Am. Jour. Pub. Health*, February, 1916, 124). The purpose was to determine: (1) the number of bacteria present per gram of meat; (2) the prevalence of local or pathogenic organisms; (3) the presence of adulterants; (4) the prevalence of the use of preservatives; (5) the influence of sanitary marketing on the bacterial content, and (6) the effect of cooking on the bacterial flora. An effort was made also to determine (7) the influence of the sausage casings on the bacterial count.

1. The number of bacteria found varied from 1,538,400 to 100 at 37 C. (98.6 F.) for twenty-four hours. In view of the number of factors which may influence it, Carey attaches little importance to the bacterial count.

2. The *Bacillus coli* was found in thirty of the thirty-four samples; other intestinal organisms were present in a number of cases, possibly indicating careless and insanitary methods of manufacture. *Proteus vulgaris* was present in one of the samples. This may indicate the use of old meats in which decomposition has begun, but, in Carey's opinion, should not be given too much importance in the absence of control tests on meats known to be fresh. Organisms biologically related to but not identical with the *enteritidis* group were found in 25 per cent. of the samples.

3. Starch was present as an adulterant in nineteen of the thirty-four samples, the percentage varying from 2 to 12 per cent. Of the twenty-one samples from shops in the better residence districts, nine, or 38 per cent., contained starch; the thirteen samples from poorer districts, starch was present in ten, or 77 per cent. The samples from the poorer districts also contained the larger percentages of starch.

4. Sulphites were found in seven out of the thirteen samples from the poorer shops, and in three out of a series of seven samples obtained from the better-grade shops.

5. Curiously enough, the bacterial counts ran no higher in samples from the insanitary shops on the west side than in those from shops above the average in respect to sanitation; in fact, the average bacterial count for the latter group was lower. This, of course, does not indicate that insanitary shop conditions are of no importance, but merely that a great many other factors enter into the hygiene of sausages. The higher bacterial count in the poorer shops may have been due to the use of sulphites, yet an increase in the number of bacteria does not seem to be correlated with absence of sulphites.

6. Cooking was found to destroy a large percentage of the bacteria present. Thoroughly cooked sausage was sterile. While in five out of seven samples the bacterial count in scrapings from the casings was greater (at 37 C. and at twenty-four hours) than that from the interior of the sausage, Carey believes that the use of properly prepared skins can be considered to increase the bacterial count or the danger from pathogenic bacteria.

These results, even though they disclose no startling dangers in sausages, indicate that sanitary handling and careful cooking are of importance.

Ambard's Formula for Determination of Renal Function

An interesting study of Ambard's laws with instances of their application in the clinic is published by F. Leza in the *Revista de Medicina y Cirugia de la Havana* of recent date, 53. (Ambard's laws were described in *THE JOURNAL*, May 5, 1916, p. 416.) He regards the Ambard formula as the most rational method for exploring the functional capacity of the kidneys, and expatiates on the fact that when the rate is causing trouble, the kidneys are usually pathologic. This is the explanation for many of the disasters after operat-

ing on the prostate, and hence prostatectomy is not advisable when the Ambard coefficient is above 0.150. He mentions that chloroform raises the coefficient, showing that it locks up the kidneys, while ether renders them more permeable at first. The original Ambard formula has been simplified by Balavoine and Onfray, who compare the output of urea during a given interval with the kilograms of body weight. Leza regards this modification as an improvement, representing better the actual functioning of the organism. In his tabulated fourteen cases, mostly patients with hypertrophied prostate, all recovered after operative treatment when the coefficient had been below 0.092, while none survived with coefficient of 0.105 or over, with one exception, in which the figure had been 0.127, but dropped to 0.092 after the operation.

Book Notices

THE ENDEMIC DISEASES OF THE SOUTHERN STATES. By William H. Deaderick, M.D., and Loyd Thompson, M.D. Cloth. Price, \$5. Pp. 546, with 117 illustrations. Philadelphia: W. B. Saunders Company, 1916.

As the title indicates, the authors consider those diseases which occur particularly in the southern United States: malaria, blackwater fever, pellagra, amebic dysentery, hookworm disease, and diseases due to other intestinal parasites. The discussion of each disease includes a historical introduction and sections devoted to etiology, pathology, clinical history, diagnosis, prognosis, prophylaxis and treatment. The authors have not limited themselves wholly to the question as it concerns the Southern States, but discuss the occurrence of the diseases elsewhere and their effects on other races. The book is well illustrated, and the technic involved in various laboratory examinations associated with these diseases is given in detail. The article on the treatment of malaria is exceptionally sane, the authors pointing out that the chief reliance should be placed on quinin, and mentioning the use of salvarsan in certain quinin-fast cases. In the discussion of pellagra the authors take up the various causative theories and state the arguments for and against each of the theories without taking a definite stand in behalf of any one. As the treatments of pellagra are as varied as the theories of etiology, a general treatment based on all of them is outlined, but suggested special treatments are also adequately desired. The authors append to the work a list of 547 references to the subjects discussed, covering modern articles in all languages. For the diseases included in it the book is a modern, rational, scientific reference work.

THE ART OF ANESTHESIA. By Paluel J. Flagg, M.D., Lecturer in Anesthesia, Fordham University Medical School. Cloth. Price, \$3.50 net. Pp. 341, with 136 illustrations. Philadelphia: J. B. Lippincott Company, 1916.

This strikes one at once as having been written by one who knows the subject from a practical standpoint. The chapters on methods of administration of the various anesthetic agents are full of hints to beginners; they are valuable because practical. The chapter on signs of anesthesia will afford students of the subject much of value in the physiology of anesthesia. The illustrations, especially those of posture favoring respiration and those illustrating means of resuscitation, are excellent. Chapter IV covers the various methods of ether administration, thoroughly giving the special advantages of each method as well as its disadvantages. Short chapters on ethyl chlorid and chloroform are given space, apparently rather apologetically, for both are gradually passing into the background of disuse. Under the subject of nitrous oxid gas and oxygen too much space is given to illustrating various forms of apparatus to the exclusion of methods of administration, signs and symptoms, dangers, etc., which the author covers so well in his chapter on ether. The book is a valuable contribution to the art of anesthesia, and in its originality of thought is quite distinct from those works which appear to be a collection of monographs which the reader has read previously.

Medicolegal

No Injunction Against Commenting on Medicine, Testimonials and Business

(*Willis vs. O'Connell* (U. S.), 231 Fed. R. 1004)

The United States District Court, at Mobile, Ala., holds that it must deny the injunction the plaintiff asked for to restrain the defendant from publishing in his newspaper (the *Mobile Tribune*) comments and criticisms reflecting on the plaintiff, on a proprietary medicine ("Tan-lac") and the business of the plaintiff in selling the same, on the testimonials commending the efficacy of the medicine, and on the authors of such testimonials. The court says that the plaintiff had the exclusive distributing agency in Alabama and five other Southern states of the company engaged in the manufacture of Tan-lac, the sale of which in these states had aggregated 500,000 bottles during the preceding twelve months. Reference was made in one of the published articles made exhibits to the bill to excerpts from *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* which had been previously published, exposing Tan-lac. However, a court of chancery will not grant an injunction to restrain a libel, but for the protection or vindication of his good name leaves the citizen to his remedy at law—to a civil action, or criminal prosecution, or both. Nor was the plaintiff's case helped by the averment that the articles published and to be published were and would be libelous, defamatory and scurrilous articles regarding Tan-lac and those who have given testimonials regarding its curative powers, and that the purpose and intent of the defendant in the publication of such articles was, and would be, to hold Tan-lac and the plaintiff and those who have endorsed Tan-lac and testified to its beneficial effects up to ridicule, contempt and public scorn and derision for the sole purpose of injuring the sale of said medicine, and that it would make it difficult if not impossible to secure further testimonials, to the great injury of the property rights of the plaintiff. Neither did the averment that the defendant was financially unable to respond in damages add any force to the plaintiff's case. The court thinks that perhaps it may be justified in taking a further view of this case, that is to say, among other things: Has not the defendant the right to question the efficacy of the plaintiff's remedy—to expose it as a nostrum, if it be a nostrum? May not a newspaper publisher expose, if he can, the plaintiff's medicine—if it be a quack medicine? May he not in good faith tell the public of the dishonesty and fraud practiced on the public? Is there anything so sacred about proprietary medicines, or those who cooperate in a plan to further their sales and increase the profits of the vendor, that a newspaper man shall be required to cease publishing what he believes to be the truth, or cease to attack the business methods of medicine vendors, when and where he believes the cooperating testimonials, in furtherance of the scheme to sell such medicine, are sinister and not founded in truth? The court thinks he may do so, but within the limits of the law which prescribes penalties, civil and criminal, for libelous publications. Again, why may not any man publish his warning to his fellow sufferers not to use what he honestly believes to be a nostrum, but rather, on the other hand, to take the advice of a competent physician and his medicine also, if any be prescribed? The allegation of the plaintiff that some medicinal compounds are sometimes prescribed by physicians cannot aid the plaintiff in his application for an injunction. It may be conceded that such practice is sometimes followed, but it must not be forgotten that in such cases it is followed, not without the benefit of the learning and discriminating judgment of the man specially taught and skilled in diagnostics and well informed as to the therapeutic value of drugs, and their use or harm when rightly or wrongly compounded or administered in proper or improper cases. Every wise layman ought to know that the physician uses his learning, experience and judgment in prescribing any medicine, simple or compounded. Why may not the newspaper man advise people to consult a physician rather

than take a widely advertised remedy, or why may he not suggest that a man afflicted with an exceeding great thirst ought to confine himself, preferably, to the use of water, mill and grape juice, or take a "high-ball," or a "whisky straight," or a compound made by himself of "corn," "bourbon" or "rye" and water and sugar, rather than drink a mixture of aloes, glycerin, licorice and gentian, advertised and sold for whatsoever purpose under whatsoever name? The court has reached the conclusion that the motion to dismiss the plaintiff's bill for a want of equity must be granted.

Evidence Sufficient to Support Verdict for Physician

(*Bolar vs. Browning* (Ky.), 181 S. W. R. 1109)

The Court of Appeals of Kentucky, in affirming a judgment in favor of the defendant, who was sued for alleged malpractice, says that counsel for the plaintiff devoted most of his brief to an attempt to show that the verdict for the defendant was flagrantly against, and not supported by, the evidence. But the court thinks he overlooked the fact that the real issue was not the extent or permanency of his client's injury, but was whether or not the alleged dislocation was present when the defendant treated the case, and whether or not the defendant exercised skill and care in making his diagnosis. The plaintiff's testimony tended to prove that his shoulder was dislocated at the time the defendant gave him treatment, but the defendant testified positively that such was not the case. The defendant's testimony was that he saw the plaintiff but twice, the first time on the day his shoulder was injured, and again the next morning; that he was called to the plaintiff's house to see his children, who had the measles, and that he saw the plaintiff only incidentally, but that he made a thorough examination and applied a proper test to ascertain whether or not the shoulder was dislocated; that he felt sure it was not, but told the plaintiff that if his arm did not get along all right to let him know. The plaintiff admitted that the defendant saw him only twice, but claimed that the first occasion was the day he was hurt, and that the next occasion was about three weeks thereafter. He said that the defendant was called especially to see him, and that his treatment of the children for measles was merely incident to the visit to him. He did not deny that the defendant told him to let him know if he did not get along all right, but said that, if he did tell him, that he did not remember it; but he admitted that, although living within a few miles of the defendant's residence, he never again had the defendant to see his arm, and that on the few occasions when he did see the defendant he did not mention to him that there was any trouble with his arm. One occasion when he did see the defendant and did not mention any trouble with his arm was about six months after he claimed the injury occurred, an occasion when the defendant was attending his wife in childbirth. The verdict of the jury in favor of the defendant in the light of this testimony could not be said to be unsupported by the evidence, or so flagrantly and palpably against the evidence as to appear to have been given under the influence of passion and prejudice. A physician who made a Roentgen-ray examination of the condition of the arm about a year and a half after treatment was rendered by the defendant, but who stated that he had not made, and did not have, a picture from the plate made by him in the examination, could describe the condition of the arm at that time as revealed to him by the examination, because there was no Roentgen-ray picture in existence, and the evidence was therefore not objectionable on the ground that the roentgenogram would have been the best evidence of the condition of the arm at that time. Moreover, under Section 315 of the Civil Code, requiring for a continuance an account of the absence of evidence an affidavit showing the materiality and due diligence to obtain it, etc., in the absence of such an affidavit it was no error to refuse a continuance because the physician did not make or produce the Roentgen-ray picture as the plaintiff alleged he expected him to. The provisions of Section 315 are also applicable to such evidence as this, and, not having complied with, the plaintiff was not entitled to a continuance.

Society Proceedings

COMING MEETINGS

Colorado State Medical Society, Glenwood Springs, Sept. 5-7.
Michigan State Medical Society, Houghton, Aug. 15-17.
Oregon State Medical Association, Portland, Sept. 9-10.
Utah State Medical Association, Salt Lake City, Sept. 12-13.

AMERICAN ASSOCIATION OF ANESTHETISTS

Fourth Annual Meeting, held in Detroit, June 12, 1916

(Concluded from page 467)

Team Work

DR. CHARLES W. MOOTS, Toledo, Ohio: Dr. E. J. McKesson and I have been trying to devise some method that would make the results of anesthesia less serious. With this end in view, we have been studying the use of gas, and have arrived at the following conclusions: Nitrous oxid-oxygen is an anesthetic that is extremely dangerous in unskilled hands, but one that is by far the safest of any in skilled hands. It produces anesthesia without injuring the body. It may be used in all abdominal operations, especially those requiring great length of time. Preliminary treatment is of the utmost importance, and should not consist of morphine. This method favors the production of the best psychologic condition of the patient, and predisposes to a higher percentage of cures. It favors the gradual production of anesthesia which is to be desired. While the degree of M.D. denies with it the legal right to administer anesthetics, there is certain special training that is needed to give the moral support. The surgeon should feel that he is dealing with a living organism, and not with a mechanical device, and should remember that rough treatment may kill the patient.

DISCUSSION

DR. WALTER M. BOOTHBY, Boston: At our hospital, the recovery room was at one time quite cold and drafty, and there was a series of four or five pneumonias following operation. We had had some cases of this kind before that, but I had not had any in the cases in which I administered anesthetic. The staff attributed this to the kind of anesthetic I was using, but it was not. The pneumonia was due to the exposure of the patient after the operation. Since then, by keeping the recovery room warm and being sure that the patient was well covered up before being taken back to the ward, we have succeeded in improving matters so much that we have had but one case of ether pneumonia this year.

DR. C. C. McLEAN, Dayton, Ohio: If this paper had been presented to the surgeons, instead of the anesthetists, we probably should have reaped a greater reward. In giving nitrous oxid as an anesthetic, it is difficult if the operator is continually disturbing the intestines and yet that is what we must see; thus the surgeons will condemn the best method of anesthesia known. I should like to know what percentage of vomiting there was in the cases of Dr. Moots.

DR. G. W. KENNEDY, Sharon, Pa.: The time is not so far since the anesthetist bore the same relative importance as the surgeon that the printer's devil bears to the editor of a paper. We find now, however, that people are beginning to ask, "Who is going to anesthetize me?" as well as, "Who is going to operate on me?"

DR. CHARLES W. MOOTS, Toledo, Ohio: The question is not so much to reach the surgeon. I believe that the men who have a broad training are going to get into the spirit of not using a method which they feel bound to defend, but that they will be open to suggestions coming from meetings like this. With regard to vomiting, our cases during the last year ran less than 4 per cent.; and of that percentage, the majority had only slight vomiting on the table, and none afterward.

Alcoholism and Drug Addiction as Complicating Factors in Anesthesia

DR. F. H. McMECHAN, Cincinnati: The alcoholic patient and the drug addict coming to operation must be accepted as

such. The greatest peril lies in not knowing whether either complication exists. In either condition, it is pernicious to attempt a so-called cure just preceding operation or during convalescence. The dangers of alcoholism as a complicating factor of anesthesia are dosage; imperiling or low-grade, continuous cyanosis; exaggerated blood pressure, due to asphyxia, and resulting in abrupt cardiac arrest. To avoid these, I use a chloroform-ether mixture administered by the open drop method, with concomitant administration of oxygen. Anesthesia is induced with ethyl chlorid. The drug addict presents almost the same difficulties as the alcoholic, so far as the administrative technic is concerned, especially when a proper amount of morphine has not been given. With the drug addict in his usual state of saturation, however, the dangers of anesthesia are overdosage, due to delayed elimination, and deoxygenation, resulting in acidosis. The elimination of the anesthetic by the rebreathing method of Gatch is essential.

DISCUSSION

DR. E. J. McKESSON, Toledo, Ohio: The trouble is that we do not know when we have an alcoholic. Therefore, it has been my practice, in the last two or three years, to divide the preliminary dose into two parts, giving one part two hours before the operation. By starting the preliminary medication long enough beforehand to show the effect of the first dose, you will discover a great many patients who are addicted to the use of morphine or opium in any of its forms.

DR. CHARLES K. TETER, Cleveland: The patients should have the usual dose of the drug they are addicted to on the day of the operation.

DR. C. C. McLEAN, Dayton, Ohio: I wonder whether any of you have had any experience with a person who has been in the habit of using ether and chloroform. I had, a few weeks ago, when I was asked to give the anesthetic in a case in which they had failed to etherize the patient the day before. I did this, and the only result was an exaggerated excitement stage. I got the patient anesthetized, but not enough to show, on the removal of the mask, that we could insert the gag and go ahead with the operation. We had to stop. The patient was a drug clerk, who had been in the habit of inhaling chloroform and ether.

DR. F. W. NAGEL, Montreal: I was going to ask whether Dr. McMechan had had any experience with a man who had been a drug fiend, but had given it up several years before the operation. I have had a number of cases of that kind, and in each case I had considerable trouble in the induction of anesthesia.

DR. F. H. McMECHAN, Cincinnati: Concealment of alcoholism or drug habituation is the thing to be feared. It is surprising how well a morphine addict will stand the most grueling operative procedure, if he has managed to conceal about his person or the bed a sufficient amount of morphine to carry him through his stay in the hospital. This serves to emphasize Dr. Teter's remark that the usual dose of alcohol or opium should be administered before the operation. Reports have come in from several of the base hospitals in France stating that certain surgeons and anesthetists are having considerable difficulty in anesthetizing ether drinkers. Regarding the length of time that the alcoholic taint, so far as it pertains to anesthesia, persists, I would say that I have had Dr. Nagel's experience in men who had reformed and, according to their statement, had not touched liquor for ten years. When you have an alcoholic who is in delirium tremens or coma and requires an operation, try reducing the intracranial pressure by spinal puncture and the use of bromid intraspinally. After the operation is finished and the patient develops delirium tremens, use the same technic, and it will spare you hours of struggling. The effects are frequently visible in an hour after the use of the remedial measure.

Ether-Oil Colonic Anesthesia

DR. WALTER LATHROP, Hazelton, Pa.: The method is valuable in cases in which fear is a prominent element, as in hyperthyroidism, and in asthmatic and bronchial troubles, especially in that condition known as miners' asthma. It is

contraindicated in rectal diseases or when pain is caused by the injection. The postoperative effects are excellent, with nausea and vomiting less than by inhalation. In abdominal operations, there is usually freedom from pain for some time after the patient is returned to bed, although consciousness has been fairly regained. The method is especially valuable in head and neck work. It taxes the lungs and kidneys less than other methods of anesthesia. The operation can be performed without the patient's realizing it, so that there is little fear on the patient's part as compared with that shown in other methods. Crile's technic can be used, if desired. We have employed this method in 165 cases of thyroidectomy and in sixty-nine cases of abdominal operations.

DISCUSSION

DR. J. J. KING, New York: I wish to report a case I had last summer, in a boy 7 years old, who had very large, septic, toxic adenoids. He had been born a "blue baby" with a patent foramen ovale. The normal color of the patient was a purple cherry. Dr. Gwathmey thought that he could give the anesthetic safely, using oil and ether by rectum. The operation was performed safely. His color was not very different from what it was ordinarily, especially when excited. He was still under the influence of the anesthetic when taken back to his room, and when he waked up he did not know that an operation had been performed.

DR. C. J. PECK, New York: My last operation under this method of anesthesia was a long and tedious one on the breast of a patient who was very nervous and dreaded the anesthetic more than anything else. It was given in bed, and she went off to sleep. She had no vomiting. For a long time we were unable to convince her that the operation had been performed. In breast cases and operations on the neck and face, it is an ideal method of anesthesia.

Relative Value of So-Called Warmed and Unwarmed Ether Vapor

DRS. B. F. DAVIS and F. B. McCARTY, Chicago: Even if warmed anesthetic vapors are as effective as has been claimed in preventing or compensating for heat loss, they are, with two deaths from hyperthermia to their credit in a relatively short series of cases, too dangerous for general use. We maintain that there is no evidence that warmed air-ether vapor gives a greater margin of safety in anesthesia than unwarmed, that the preliminary warming of the vapor does not decrease pulmonary irritation, and that the warmed vapors may be distinctly uncomfortable for the patient during the inhalation of the anesthetic. We refuse to accept the conclusions of Gwathmey regarding the lower toxicity of warmed vapor, on account of certain experimental errors that we believe his work to contain. On the basis of our own experimental work and of theoretical considerations, we contend that, gram for gram of ether, there is no difference in the efficiency or toxicity of warmed and unwarmed vapor. The heat lost by a patient during a general anesthesia is no greater in amount than that lost during natural sleep. Unlike the case in natural sleep, however, if the patient is not sufficiently covered, the temperature may fall excessively, because the patient cannot be wakened by the cold, and so caused to care for himself. The amount of heat necessary to warm the average anesthetic vapor to body temperature is far too small to account for the heat lost by the average patient. Finally, from the standpoint of simplicity and general adaptability, the unwarmed vapor is superior.

DISCUSSION

DR. FRANK W. PINNEO, Newark, N. J.: I think the authors have reached a wrong conclusion in attempting to show that unwarmed air is just as good as warmed vapor, because there are no chest complications, for there are other complications that enter into the question. In regard to toxicity, Gwathmey's experiments have shown that animals are less easily killed by warmed vapor.

DR. JAMES T. GWATHMEY, New York: In our experiments the anesthetics fell into about the same relation that the European and American statistics place them as regards the

safety line. We also found that if we heated ether and chloroform, we had an anesthetic almost as safe as nitrous oxid and oxygen. When chloroform was given by an apparatus in which we had constant rebreathing and warmth, the subjects went under it as they do under nitrous oxid and oxygen, and came out the same way when the mask was removed.

DR. WALTER M. BOOTHBY, Boston: The reason that the animals studied by Dr. Gwathmey took longer to kill with the warmed vapor was that warmth caused increased volume and less tension. The animals were not getting the ether to the same volume; and, naturally, they took longer to be killed.

DR. B. F. DAVIS, Chicago: Practically all ether vapor administered is administered at body temperature, whether in the open mask or in a rebreathing bag. The latter would be at room temperature, about 70 F. Therefore, it is very little work for the body to heat the vapor the rest of the way. As none of the vapor used is really cold, it is hard to see why it should be irritating on account of its temperature.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

August, XII, No. 2

- 1 *Subcutaneous Injections of Magnesium Sulphate in Chorea. Heiman, New York.—p. 109.
- 2 *Study of Normal and Pathologic Cerebrospinal Fluids in Children. M. R. Johnston, St. Louis.—p. 112.
- 3 Some Early Symptoms Suggesting Protein Sensitization in Infancy. B. R. Hoobler, Detroit.—p. 129.
- 4 Creatinin and Creatin Content of Blood of Children. B. Veeder and M. R. Johnston, St. Louis.—p. 136.
- 5 Energy Metabolism of Cretin. F. B. Talbot, Boston.—p. 145.
- 6 Tendency of Diphtheria Bacillus to Localize in Upper Respiratory Tract. D. O. Walthall, Ann Arbor, Mich.—p. 149.
- 7 *Infantile Scurvy. Its Influence on Growth. A. F. Hess, New York.—p. 152.
- 8 Résumé on Infectious Diseases. A. H. Beifeld, Iowa City, Iowa.—p. 166.

1. **Injections of Magnesium Sulphate in Chorea.**—Five successive patients with chorea were treated by Heiman with repeated subcutaneous injections of magnesium sulphate. In every case a 25 per cent. sterile solution was used. The dose ranged from 0.01 gm. magnesium sulphate per kilogram of body weight (that is, 0.04 c.c. of the 25 per cent. solution) at the beginning of treatment, with a daily increase to 0.2 gm. magnesium sulphate per kilogram of body weight (that is, 0.8 c.c. of the 25 per cent. solution) at the termination of treatment. The actual amounts of solution used daily were from 3 to 30 c.c. The injections were given three times daily for from ten to fifteen days, with the ordinary record syringe, into the back loins and buttocks of the patients. In only one of the five patients treated by this method was there a marked improvement after the series of injections, and in this case the choreic movements gradually diminished, the child became less irritable and general improvement was noted. In the four other cases there was no improvement, the magnesium sulphate having had apparently no effect whatever on the psychomotor system. The results of the treatment in this series of cases was not sufficiently promising in Heiman's opinion to justify a continuation of the treatment.

2. **Cerebrospinal Fluids in Children.**—As an index of pathologic change in the cerebrospinal fluid Johnston found that the colloidal gold reaction is more delicate than any other employed. He believes that a positive Lange reaction may be considered sufficient evidence of a pathologic process affecting the cerebrospinal nervous system, though the result in question is negative to all other tests. A normal reaction causes no reduction of the colloidal gold. The presence of globulin in the cerebrospinal fluid, as determined by

tests of Noguchi and Nonne, is indicative of an inflammatory process, but is of no specific import. A negative globulin test may occur in a pathologic fluid. The quantitative estimation of organic substances by the reduction of tenth-normal potassium permanganate shows such wide variations in normal fluids and those with slight pathologic change that it has no value as a diagnostic measure. The qualitative presence of dextrose in the cerebrospinal fluid as determined by the reduction of Fehling's solution is of little value in the diagnosis of lesions of the central nervous system. The specific diagnostic import of a given test is dependent on the character of the process causing the change in the fluid examined. Thus the cell content and bacteriologic findings are final in purulent and tuberculous meningitis. In the colloidal gold test the characteristic syphilitic zone reaction in hereditary syphilis is sufficient to establish the actual or potential existence of a syphilitic involvement of the central nervous system.

7. Infantile Scurvy.—Although pasteurized milk is to be recommended on account of the security which it affords against infection, Hess directs attention to the fact that we should realize that it is an incomplete food. Unless an antiscorbutic, such as orange juice, the juice of orange peel, or potato water is added, infants will develop scurvy on this diet. This form of scurvy takes some months to develop and may be termed subacute. In order to guard against it, infants fed exclusively on a diet of pasteurized milk should be given antiscorbutics far earlier than is at present the custom, even as early as at the end of the first month of life.

Archives of Pediatrics, New York

July, XXXIII, No. 7

- 9 *Meningitis in Newborn and in Infants Under Three Months of Age. H. Koplik, New York.—p. 481.
- 10 *Further Experience With Homogenized Olive Oil Mixtures. M. Ladd, Boston.—p. 501.
- 11 Group of Pertussis Cases Occurring Simultaneously in One Family. P. J. Eaton and E. B. Woods, Pittsburgh.—p. 513.
- 12 Treatment of Paralysis Following Acute Anterior Poliomyelitis. W. F. Schaller, San Francisco.—p. 516.
- 13 Creolin in Scabies in Infant. D. W. Montgomery, San Francisco.—p. 525.
- 14 Use of Albumin Milk. L. L. Meininger, San Francisco.—p. 529.
- 15 Problem of Dental Hygiene in Children. G. S. Millberry, San Francisco.—p. 533.

9. Meningitis in Newborn and Infants.—Meningitis in the newborn, Koplik claims, is not only badly described in the literature, but a careful perusal of the cases thus far published leads to the impression that the condition is overlooked, or, at first, scarcely suspected. The reason for this is at first glance evident. The newborn does not react to infection in a way to draw the attention. Many cases escape recognition because the onset is insidious, and it is only after the symptoms have developed to the extent of giving the picture of cerebral pressure that the case is suspected to be one of meningitis. The newborn reacts very slowly to cerebral irritation, and the picture of meningitis is at first masked by rational symptoms which are apt to mislead. The objective symptoms which would lead to suspect a meningitis in the newborn are first, convulsions, repeated with convulsive movements of the eyes and muscles of the extremities in the intervals, fever, constant restlessness, with vomiting; with this a suppressed groaning respiration and a temperature curve, at first very high, then gradually remitting or intermitting, and, finally, falling to or near the normal. Most of the cases after a week's duration develop a rigidity of the neck and a drawing back of the head, which indicates clearly the nature of the affection. In other words, opisthotonos is slow in developing. The most frequent diagnosis apt to be ventured in meningitis is tetany.

Of 12 cases, in which the spinal fluid was examined bacteriologically, 4 contained streptococcus in pure culture, 3 pneumococcus, 4 meningococcus and 1 coli bacillus, the last as a result of systemic infection from a coli pyelitis. The prognosis is very grave. All the streptococcus patients died, as well as the pneumococcus patient. The coli case developed hydrocephalus and died later in infancy, whereas all but one

of the meningococcus patients died. The only one which recovered did so with hydrocephalus.

10. Experience with Homogenized Olive Oil Mixtures.—As Ladd's experience had convinced him that olive oil homogenized in milk mixtures was well tolerated in the diarrheas due to indigestion and fermentation, he was interested to see if it could not be used safely in the early days of convalescence from infectious diarrheas to supply additional calories and prevent or lessen the loss of weight which occurs in such cases. The general scheme of treatment was as follows: After the initial period of catharsis and starvation, a fat free lactic acid milk, diluted two thirds or one half, was given. If the infecting organism proved to be of the Flexner or Shiga type, dextrimaltose was added up to 4 or 5 per cent. and sometimes barley water. If the gas bacillus was present, no carbohydrates were added. After a period of several days, when the acute febrile disturbance showed distinct signs of subsiding, olive oil was homogenized with the lactic acid milk, in percentages of 1.00, 1.50 and if well tolerated 2.00, thus adding considerably to the caloric value of the food. The results briefly summarized were as follows: There were 19 cases of infectious diarrhea on the service, 15 of Flexner bacillus type, 1 of the gas bacillus and 3 undetermined. Four patients died, giving a mortality of 22 per cent., about the same, Ladd was informed, as in the other services. Of the 15 patients that lived 8 were in the hospital on an average of twenty-one days each and lost over their entrance weight an average of 15 ounces. Seven were in the hospital on an average of fourteen days each, and gained an average of 10.7 ounces over their entrance weight. The average net loss of all 15 surviving cases was therefore only 3 ounces over their entrance weight.

Boston Medical and Surgical Journal

July 27, CLXXV, No. 4

- 16 *Hemoptysis as Symptom. F. T. Lord, Boston.—p. 113.
- 17 Common Sense and Consumption. J. B. Hawes, 2d, Boston.—p. 115.
- 18 Sprains and Sprain Fracture of Wrist Joint. A. C. Burnham, New York.—p. 118.
- 19 Study of Peptic Ulcer From Diagnostic Point of View. R. H. Philbrick, Northfield.—p. 121.
- 20 *First Case in Which Abdominal Surgery was Suggested for Relief of Epilepsy. H. Powers, Brookline and F. H. Lahey, Boston.—p. 124.
- 21 Prolapsus Ani in Adults. T. C. Hill, Boston.—p. 127.
- 22 Scientific Research in Chronic Medicine From Physiologic Point of View. F. H. McCrudden, Boston.—p. 129.
- 23 Epidural Intraspinal Tumor of Two Years' Duration; Operation; Recovery. W. E. Paul, Boston.—p. 133.
- 24 Pistol Shot Wound of Stomach. C. A. Atwood, Taunton.—p. 136.
- 25 *Pathology of Clavus (Soft Corn). H. M. Chase, Boston.—p. 134.

16. Hemoptysis as Symptom.—In the attempt to reach a more definite conclusion as to the meaning of this symptom, Lord reviewed 549 clinical cases of hemoptysis and 307 instances of hemoptysis with necropsy. Excluding from consideration all cases in which the diagnosis has not been established, there were thirty instances in which hemoptysis was an initial event, unprecedented or followed by pulmonary or other symptoms or accompanied only by cough with or without scanty expectoration. In this number are included twenty clinical cases with sputum positive for tubercle bacilli at the time of the bleeding or later in their course. The ten remaining were necropsy cases and nine showed obsolete, inactive or active pulmonary tuberculosis. The single exception to the tuberculous origin of hemoptysis in this group illustrates an uncommon cause. This was the case of a man of 37, who entered the hospital in 1904 with a history of winter cough without expectoration for three years. He had an abundant hemoptysis three days before entrance, and death occurred two days after admission from a recurrence of the hemorrhage. At necropsy syphilitic ulceration of the trachea and bronchi, with rupture of a large branch of the pulmonary artery into the right primary bronchus, was found.

Of the various causes of hemoptysis in the probable order of frequency, pulmonary tuberculosis doubtless occupies first place in consideration of the high incidence of this disease and the occurrence of hemoptysis in about 60 per cent. of all cases at some time in their course. It is represented

among the 307 necropsy cases at the Massachusetts General Hospital by only 27 cases, owing to the usual exclusion of patients in the active stage of the disease from the wards of the hospital. Chronic passive congestion occupies second place, but heads the list of the necropsy series with 105 cases. Then follow lobar (not bronchopneumonia) pneumonia, with 100 cases, pulmonary infarction with 48 cases, nontuberculous pulmonary suppuration with 14 cases, aortic aneurysm with 7 cases, new growths of the lung with 5 cases and ulceration of the trachea and bronchi due to syphilis in one case.

Copious bleeding is seldom seen apart from pulmonary tuberculosis, occasional instances of abscess and gangrene, ruptured aneurysm, and ulceration of the trachea and bronchi. Other causes than those enumerated are rare and were not found among the necropsied series. The records are of interest in a negative sense in their failure to confirm the still too prevalent belief that vicarious menstruation is an adequate cause of hemoptysis, no example of which was found in the necropsy series. This and other evidence indicate that it cannot properly be regarded as a cause apart from some pulmonary lesion which is tuberculous in the great majority of the cases.

20. Abdominal Surgery Suggested for Relief of Epilepsy.—In the case cited by Powers and Lahey intestinal stasis was believed to have some bearing on the existence of the epilepsy. The possibility of relief through surgery suggested itself. The patient was a typical epileptic as described in the textbooks. Eight years of treatment by the various bromids and by the salt free diet, the milk and vegetable diet, etc., was a complete failure. Finally, in September, 1914, a colectomy was performed. After his recovery from the operation, he was unwilling to be placed on a régime, ate everything that he cared for and, after his old habit, he bolted and gormandized. Notwithstanding this, he remained free from attacks until December, 1914. In March, 1915, he had another attack. He was then willing to submit to treatment and was placed on a diet. This diet is not vegetarian or salt free and in it the abuse of milk is avoided. Briefly, it excludes fried food, fresh white bread, pastry, beans, milk, except in moderate quantities only with meals, and uncooked fruit except oranges, figs and dates. He has remained more than a year without an attack and without vertigo or any so-called epileptic equivalent. During that time he has been in business and he is more keen and energetic than the average individual. No discomfort has resulted from the operation except that he has two unformed movements daily.

25. Pathology of Clavus (Soft Corn).—Clavus, or soft corn, presents, on the surface, an area of thickened epidermis, moistened and at times macerated by discharge of lymph through an opening in the thickened area. This opening according to Chase leads through a direct or indirect tortuous channel into the subcutaneous areolar tissue. This lymph channel may or may not connect with a tendon sheath. It varies in length, according to its tortuous direction, from one to one and one-fourth inches in depth. In none of his cases has Chase been able to probe the sinus until the thickened epidermal layer has been removed. The treatment advocated is dissection and excision of the lymph sac. If the wall tears and is too thin to excise, wipe with phenol and insert small wick for forty-eight hours. Transverse adhesive strapping the entire length of the metatarsals. Keep the toes still. Change gauze dressing as necessary, lymph secretion may be slight or excessive for several days. Healing by granulation and permanent cure.

Cleveland Medical Journal

June, XV, No. 6

- 26 Enzyme Theory of Life. L. T. Troland, Cleveland.—p. 377.
27 Hernias of Urinary Bladder. A. P. Heineck, Chicago.—p. 388.

Georgia Medical Association Journal, Augusta

July, VI, No. 3

- 28 Hydrotherapy. W. W. Blackman, Atlanta.—p. 41.
29 *Dangers of Painless Blind Abscess; Emetin Flash. R. Adair, Atlanta.—p. 45.

- 30 *Gastro-Enterostomies Performed During Two Extremes of Life. E. C. Davis, Atlanta.—p. 50.
31 Goiter Based on Study of Two Hundred and Six Cases. E. G. Jones, Atlanta.—p. 54.
32 Report of Unusual Case of Tubal Pregnancy Terminating in Rupture. E. M. Stokes, Jakin.—p. 61.

29 and 30. Abstracted in THE JOURNAL, May 6, pp. 1490 and 1491.

Illinois Medical Journal, Chicago

July, XXX, No. 1

- 33 Military Preparedness From Surgical Standpoint. G. N. Kreider, Springfield.—p. 1.
34 Importance of Postnasal Space as Focus of Infection in Infants and Young Children; Report of Cases. G. E. Baxter, Chicago.—p. 5.
35 After Effects in Nose and Throat of Usual Winter Cold. O. H. Maclay, Chicago.—p. 10.
36 Medical Inspection of Schools. R. D. Luster, Granite City.—p. 13.
37 Problem of Vaccine Therapy. G. H. Sherman, Detroit.—p. 14.
38 Pregnancy Complicated by Syphilis. H. A. Kraus, Chicago.—p. 18.
39 Physicians' Accounts. C. M. Kingery, Chadwick.—p. 20.
40 Blood Ferments in Pregnancy. F. H. Falls, Chicago.—p. 22.

Indiana State Medical Association Journal, Fort Wayne

July, IX, No. 7

- 41 Deviations of Nasal Septum and Submucous Operation. W. F. Clevenger, Indianapolis.—p. 277.
42 *Diseases of Gallbladder and Their Influence on Adjacent Organs. W. H. Williams, Lebanon.—p. 283.
43 *Chronic Suppurative Mastoiditis Accompanied by Intracranial Pressure; Report of Case. E. J. Lent, South Bend.—p. 290.
44 *Defenses of Upper Respiratory Tract and Their Preservation. W. N. Culmer, Bloomington.—p. 294.
45 Radium Treatment of Epithelioma. T. C. Kennedy, Indianapolis.—p. 298.

42. Abstracted in THE JOURNAL, Nov. 20, 1915, p. 1846.

43 and 44. Abstracted in THE JOURNAL, Oct. 30, 1915, pp. 1576 and 1577.

Journal of Laboratory and Clinical Medicine, St. Louis

July, I, No. 10

- 46 *Simple Interpretation of Polygraphic Tracings. E. P. Carter, Cleveland.—p. 719.
47 *Diazo and Urochromogen Reactions as Prognostic Aids in Pulmonary Tuberculosis. H. J. Corper and F. F. Callahan, Chicago.—p. 740.
48 Hospital Chemical Laboratory. N. W. Janney, New York.—p. 747.
49 Ninhydrin Color Reactions of Proteins and Their Split Products. H. W. Emerson and J. S. Chambers, Ann Arbor, Mich.—p. 752.
50 *Bulgarian Bacillus in Treatment of Vulvovaginitis. M. B. Cohen, Cincinnati.—p. 757.
51 Simple Colorimeter for Clinical Purposes. V. C. Myers, New York.—p. 760.
52 *Positive Test for Blood in Stomach. M. B. Leviton, Chicago.—p. 761.

46. Simple Interpretation of Polygraphic Tracings.—The fundamental principles of the polygraphic tracings and the method of procedure in their analysis are described by Carter; their value as an aid to the proper understanding of many heart conditions is emphasized, and their importance in the correct diagnosis of the heart arrhythmias insisted on.

47. Diazo and Urochromogen Reactions as Aids in Tuberculosis.—According to Corper and Callahan patients dying of pulmonary tuberculosis give a positive diazo and urochromogen test at some time during the last six months of their illness. Whenever both tests are negative during this period death was found to be due to some intervening condition, such as pulmonary hemorrhage, tuberculous meningitis, etc. Cases of chronic fibroid tuberculosis generally give both reactions negative except when same is explicable by some acute exacerbation, acute intercurrent infection or acute pleural effusion. In active cases of pulmonary tuberculosis when both reactions are positive and remain so for most of the succeeding examinations it is of grave prognostic import. When both reactions are negative in acute cases no stress can be laid on the findings. There seems to be no regularity between the presence of either reaction, its disappearance to be displaced by the other or by both. The presence of a urochromogen reaction in cases showing no clinical symptoms is of no prognostic value. No diazo reactions were obtained in clinically inactive cases, whereas a number of urochromogen reactions were obtained in such cases. The

presence of a diazo or of both reactions is a danger signal of grave import. Careful clinical observations will, from a prognostic standpoint, give more information than the diazo and urochromogen tests in pulmonary tuberculosis. The authors urge that wherever possible both tests should be performed, but of the two the diazo should be given the preference.

50. Bulgarian Bacillus in Treatment of Vulvovaginitis.—Cohen claims that the bacillus bulgaricus does not thrive in the human vagina and is therefore of little use in the treatment of vulvovaginitis. Three cases were treated by this method. Each one had a very profuse discharge in which gonococcus like organisms could be easily demonstrated in smears taken by the swab method. Smears from the vagina were examined twice weekly for the presence of Bulgarian bacilli and gonococcus like organisms. Not once was the Bulgarian bacillus demonstrated in direct smear even when it was taken within twelve hours after an injection. In two cases, after ten and thirteen days of treatment respectively, the discharge ceased and no gonococci could be found in the vaginal smears. The treatment was discontinued for two days during which time Bulgarian bacilli were demonstrated with some difficulty in cultures from the vagina using the glacial acetic acid method described by Heinemann and Jefferman. On the morning of the third day a discharge reappeared in which gonococcus like organisms could be shown. Treatment, using the culture which had been isolated from the vagina two days previously, was resumed and was continued for three weeks. During this time several negative smears were obtained, but almost always after sufficient search a few typical gonococci could be found. The third case developed measles on the eighth day of treatment and was transferred to the hospital for contagious diseases where the vaginitis was not treated. On the thirteenth day after developing measles, smears made from the vagina were positive for gonococcus like organisms and negative for Bulgarian bacilli. The bacillus was demonstrated in small numbers by cultural methods.

52. Positive Test for Blood in Stomach.—The test for blood described by Leviton is a modification of Loeper and Binet's test of gastric contents (washings of the empty stomach), except that there is no preliminary lavage and the contents are first neutralized to avoid laking of the blood cells. The technic is as follows: The patient is directed to omit anything for breakfast, including liquids, to rinse the mouth and then frequently and expectorate any saliva that might form, so that little or none of the cellular elements of the buccal cavity might be swallowed (epithelium, pus cells, blood, etc.). A half glass of water containing a dram of sodium carbonate is administered with a glass of saline solution a few minutes later. The abdomen is then thoroughly massaged and gently squeezed for a few minutes and the contents aspirated by means of a glass irrigating syringe attached to a narrow caliber colon tube (15 French), 4 mm. in diameter. It is usually necessary to assist the passage of the soft tube down the pharynx by pushing it down with one finger in the mouth to prevent kinking. Tests showed that even in concentrated soda solution the red cells remained comparatively unharmed for a long time.

Journal of Nervous and Mental Disease, Lancaster, Pa.

July, XLIX, No. 1

1. War and Nervous System. L. F. Barker, Baltimore.—p. 1.
2. Symptomatology and Diagnosis of Intracranial Tumors of Middle and Posterior Cranial Cavities, (Growing From Region of Gasserian Ganglion and Cerebellopontine Angle. W. B. Cadwalader, Philadelphia.—p. 11.
3. What Do Psychiatrists Mean? A. F. Bronner, Chicago.—p. 30.
4. Cooperation of Psychologist and Physician. C. Schmitt, Chicago.—p. 34.
5. Hoffman's Sign or Digital Reflex. T. S. Keyser, Cleveland.—p. 51.

54. Symptomatology of Intracranial Tumors.—The following is a brief summary of the cases reported by Cadwalader: 1. Cerebellopontine tumor. Symptoms.—Ataxia, weakness of the seventh nerve, left third nerve and motor branch of the fifth nerve; cerebellar attitude, optic atrophy and extreme hunger. Deafness was not recorded. 2. Right-sided cerebellopontine tumor. Symptoms.—Ataxia, failing vision,

nausea and vomiting, deafness on the right side, headache, seventh nerve weakness on the right side, early disturbances of the sensory branch of the fifth nerve on the right side, "numbness," and choked disk. 3. Cerebellopontine tumor. Symptoms.—Patellar reflex and Achilles tendon reflex were lost; gait ataxic; headache, dizziness, optic neuritis, nystagmus, and paresthesia of the left side of the face. 4. Cerebellopontine tumor. Symptoms.—Vertigo, failing vision, ataxia, left eighth nerve deafness, left motor fifth nerve weakness, left seventh nerve weakness, left external rectus and right internal rectus weakness; nystagmus with movement more marked to the right. 5. Cerebellopontine tumor. Symptoms.—Ataxia, headache, muscular spasticity, mental confusion, choked disk. 6. Cerebellopontine tumor. Symptoms.—Persistent and severe headache, choked disk greater on the left side; paresis of the left external rectus, slight paresis of the left side of face; lost patellar and Achilles tendon reflexes. Three attacks of unconsciousness, the first with convulsions, the character of which cannot be determined. A remarkable feature is the absence of the ataxic gait. 7. Cerebellopontine tumor. Symptoms.—Nausea, vertigo, headache, pain in the right side of the face, tinnitus and deafness in the right ear, ataxia when standing and failing vision. 8. Endothelioma removed from the posterior surface of the petrous portion of the temporal bone. Symptoms.—Twitching of the right facial muscles, followed by paralysis, auditory hallucinations, followed by deafness on the right side, ataxia, choked disk, headache, nausea and vomiting, impairment of taste. 9. Endothelioma removed from the posterior surface of the petrous portion of the temporal bone. Symptoms.—Nausea, vomiting, impairment of vision, choked disk, right-sided deafness, anesthesia of the right side of face.

57. Hoffman's Sign or Digital Reflex.—"Digital reflex" is the term proposed by Keyser for "Hoffman's sign." The reflex typically consists of a flexion of the terminal phalanx of the thumb and of the second and third phalanges of one or more of the fingers when the operator suddenly nips the nail of the index, middle, or ring finger. The reflex is found to be practically always present in organic lesions of the upper motor neurones except during the period of shock, and also in some functional cases associated with lively deep reflexes. The anatomy shows the afferent nerves stimulated have the same segmental origin as the motor fibers innervating the muscles participating in the reflex. Various facts are recorded to show that the reflex belongs to the group of defense movements in contradistinction to the tendon reflexes.

Medical Record, New York

July 29, XC, No. 5

58. Nitrous Oxid Oxygen, Most Dangerous Anesthetic. J. F. Baldwin, Columbus, Ohio.—p. 177.
59. Pellagra. J. Aulde, Philadelphia.—p. 181.
60. Drug Habit. F. A. McGuire and P. M. Lichtenstein, New York.—p. 185.
61. Physics of Percussion and Auscultation of Chest. F. H. Heise, Trudeau.—p. 191.
62. Poliomyelitis, With Its Preparalytic Symptom. L. Fischer, New York.—p. 194.
63. Hypochondria. C. King, Franklinville.—p. 195.
64. Consideration of Opsonic Technic as Possibility of Evidence of Leukocytic Inhibition. A. H. May, Buffalo.—p. 196.

Modern Hospital, St. Louis

July, VII, No. 1

65. Nature, Value and Necessity of Team Work in Hospital. C. H. Mayo, Rochester, Minn.—p. 1.
66. Robinson Memorial of Massachusetts Homeopathic Hospital. W. C. Hill, Boston.—p. 4.
67. Medical Profession's Obligation to Patient. H. A. Christian, Boston.—p. 9.
68. Safeguarding Hospital's Most Valuable Food—Milk. C. E. North, New York.—p. 13.
69. Small Community Hospital—Its Finances. J. A. Hornsby, Chicago.—p. 18.
70. Principles of Daylight and Artificial Lighting of Hospitals. E. R. Knowles, New York.—p. 22.
71. Should Hospital Buy Power or Install Plant? F. Sutton, New York.—p. 31.
72. Artificially Colored Foods. J. P. Street, New Haven, Conn.—p. 33.
73. What Physician Should Contribute to Team Work. E. Evans, La Crosse, Wis.—p. 46.

- 74 What Patient Should Contribute to Team Work. W. E. Fairfield, Green Bay, Wis.—p. 48.
75 Community's Obligation for Care of Its Indigent Sick and Injured. F. S. Bunn, Youngstown, Ohio.—p. 49.

New York State Journal of Medicine*July, XVI, No. 7*

- 76 *Recent Progress in Operative Treatment of Empyema of Thorax. H. Lilienthal and M. W. Ware, New York.—p. 331.
77 *Technic of Cesarean Section. W. M. Brown, Rochester.—p. 340.
78 *Review of Five Hundred Cases of Pelvic Infection with End Results. J. O. Polak, Brooklyn.—p. 344.
79 *Infection of Uterine Appendages; Its Sequelae; Its Nonsacrificial Treatment. E. E. Montgomery, Philadelphia.—p. 348.
80 *Resection of Pars Interstitialis in Diseases of Fallopian Tubes, with View of Preserving Uterus. L. K. P. Farrar, New York.—p. 351.
81 Intestinal Obstruction in Children with Special Reference to Intussusception. E. W. Peterson, New York.—p. 357.
82 Intestinal Obstruction. I. M. Snow, Buffalo.—p. 359.
83 Surgical Treatment of Intestinal Toxemia. J. M. Lynch and J. W. Draper, New York.—p. 362.
84 Self-Supporting Hospital. J. B. Clark, New York.—p. 369.
85 Medical Legislation. W. J. Cruikshank, Brooklyn.—p. 371.

76. Also published in the *Medical Record*, July 15, 1916.

77. Abstracted in THE JOURNAL, June 24, p. 2122.

78, 79 and 80. Abstracted in THE JOURNAL, June 24, p. 2124.

Ohio State Medical Journal, Columbus*July, XII, No. 7*

- 86 Constructive vs. Defensive Medical Organization. W. E. Lower, Cleveland.—p. 479.
87 Cholecystostomy vs. Cholecystectomy. H. S. Noble, St. Marys.—p. 483.
88 Uterine Fibromyomata and Cardiovascular Changes. B. R. McClellan and R. H. Grube, Xenia.—p. 487.
89 Conservation of Vision. G. C. Schaeffer, Columbus.—p. 488.
90 Supervision of Health of Schoolchildren in Cincinnati. W. H. Peters, Cincinnati.—p. 491.

Pennsylvania Medical Journal, Athens*July, XIX, No. 10*

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92 Pennsylvania Workmen's Compensation Act as it Affects Hospitals. W. H. Walsh, Philadelphia.—p. 731.
93 How Workmen's Compensation Act May Be Made Satisfactory to Profession. J. B. McAlister, Harrisburg.—p. 736.
94 Workmen's Compensation Law and Its Effect on Medical Profession. C. A. E. Codman, Philadelphia.—p. 739.
95 Workmen's Compensation vs. Medical Compensation. F. L. Van Sickle, Olyphant.—p. 747.
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98 Scopolamin-Morphin Anesthesia in Labor; Report of Seven Years' Experience. J. R. Freeland, Pittsburgh.—p. 768.
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101 England's Efficient Surgery and Nursing Questionable Mercy. E. O'N. Kane, Kane.—p. 782.

Public Health Journal, Toronto*July, VII, No. 7*

- 102 Alcohol from Public Health Standpoint. J. W. S. McCullough, Toronto.—p. 335.
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Southwest Journal of Medicine and Surgery, El Reno, Okla.*July, XXIV, No. 7*

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108 Choice of Operations on Frontal Sinus. R. H. T. Mann, Texarkana, Ark.—p. 203.

United States Naval Medical Bulletin, Washington*July, X, No. 3*

- 109 Study of Artificial Illumination. J. D. Gatewood, U. S. Navy.—p. 401.
110 Concussion of Brain. J. C. DaCosta, U. S. Navy.—p. 416.

- 111 Atmosphere and Its Relation to Human Mechanism, with Special Reference to Naval Service. R. C. Holcomb, U. S. Navy.—p. 430.
112 Experience at Red Cross Auxiliary Naval Hospital of Hamburg, Germany, During First Eight Months of Present War. H. G. Beyer, U. S. Navy.—p. 465.
113 Diagnosis of Abdominal Pain. W. A. Brams, U. S. Navy.—p. 476.
114 Dosage in Roentgenotherapy. A. Soiland, U. S. Navy.—p. 484.
115 Physical Examination of One Thousand, Eight Hundred and Eighty Applicants for Enlistment in Navy. C. H. Lowell, U. S. Navy.—p. 487.
116 Practicability or Desirability of Omitting from Supply Table Certain Drugs. J. A. Ortolan, U. S. Navy.—p. 490.
117 First Aid Dressings on Battleships. G. F. Freeman, U. S. Navy.—p. 495.
118 Lewisohn Citrate Method of Blood Transfusion; Report of Case of Traumatic Gluteal Aneurysm in Which This Method was Employed. R. B. Williams, U. S. Navy.—p. 503.
119 Report of Case of Ludwig's Angina. W. A. Brams, U. S. Navy.—p. 506.
120 Rupture of Liver; Report of Case. C. W. Depping, U. S. Navy.—p. 510.
121 Syphilis in a Chamorro. L. W. Johnson, U. S. Navy.—p. 511.
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123 Advantages Noted in Use of McDonald's Solution. P. R. Stalnaker, U. S. Navy.—p. 514.
124 Hematoma of Abdominal Parietes. J. S. Taylor, U. S. Navy.—p. 515.
125 Bayonet Wound of Abdomen. W. B. Hetfield, U. S. Navy.—p. 516.

Washington Medical Annals*July, XV, No. 4*

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127 What Modern Methods Can Do To Eliminate Oral Sepsis. A. B. Crane, Washington.—p. 227.
128 Relation of Mouth Infection to Goiter. E. H. Reede, Washington.—p. 230.
129 Focal Infection. N. P. Barnes, Washington.—p. 236.
130 Thrombosis of Cavernous Sinus. C. Henning, Washington.—p. 241.
131 History of Bodysnatching. F. Baker, Washington.—p. 247.
132 Case of Traumatic Flat Foot Cured by Operation. W. P. Carr, Washington.—p. 253.
133 Indicanuria; Study of One Hundred Consecutive Cases. J. R. Verbrycke, Jr., Washington.—p. 254.
134 Cases Illustrating Faulty Treatment of Superficial Malignancy. H. H. Hazen, Washington.—p. 255.
135 Infant Mortality with Reference to Postnatal Causes and Their Prevention. E. P. Copeland, Washington.—p. 258.
136 Institutional Mortality Among Infants. H. H. Donnally, Washington.—p. 261.
137 Influence of Infant Welfare Center in Prevention and Reduction of Infant Mortality. J. S. Wall, Washington.—p. 265.
138 Diagnosis of Renal and Ureteral Calculi. H. A. Fowler, Washington.—p. 273.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London*July 8, II, No. 2897*

- 1 *Care of Pregnant Woman. A. Donald.—p. 33.
2 Tuberculin and Vaccines. E. H. Coleman.—p. 36.
3 Transfusion of Whole Blood. L. B. Robertson.—p. 38.
4 Intravenous Injections in Infants Through Superior Longitudinal Sinus at Anterior Fontanelle. A. Martin.—p. 40.
5 Case of Acute General Hemorrhagic Peritonitis. A. J. Nyulasy.—p. 40.
6 Case of Pneumococcic Conjunctivitis. J. Cropper.—p. 41.

1. **Care of Pregnant Woman.**—The following are some of the points on which stress is laid by Donald. The medical students throughout the country should receive a more thorough training in practical midwifery than is at present the case. In Manchester the medical student is compelled to live in the maternity hospital for a period of four weeks while "taking out" his practical midwifery. More facilities should be given for medical practitioners to have post graduate instruction. A week or two spent in a modern maternity hospital would bring many of them up to date in methods of diagnosis, of aseptic precautions, and of treatment generally. The study of the pathologic problems connected with abortion and stillbirth should be stimulated by the provision of well equipped clinical laboratories in connection with maternity hospitals. The large cities are not provided with maternity hospitals, and this system should be extended to the smaller towns, and even to the country districts. Hospitals should be established in different areas.

and should be visited from time to time by an obstetric surgeon of experience, whose services should be available, if required, for consultation with the local medical men, or for the more serious emergencies. In this way the medical men in the district who would be attached to the hospital would have their interest increased not only in the care of the pregnant woman, but also in her confinement and in the care of the newborn child. The medical officers of health can do a great deal for the future generations if they will use their influence to try and persuade the health committees throughout the country to pursue this work through the institutions that are already in existence, and to extend the same system to the less densely populated parts of the country.

Edinburgh Medical Journal

July, XVII, No. 1

- 7 Syphilitic Diseases of Ear. J. S. Fraser.—p. 5.
- 8 Case of Excessive Local Edema Following Cancer of Breast. D. M. Greig.—p. 23.
- 9 Three Cases of Beriberi. R. A. Fleming and H. J. C. Gibson.—p. 27.

Indian Medical Gazette, Calcutta

June, LI, No. 6

- 10 Ischiopagus Duplicity and Certain Teratoid Growths of Pelvic Region. W. R. Williams.—p. 201.
- 11 Cataract Operations "Old" and "New." M. Corry.—p. 207.
- 12 "New" (Nath) Method of Extracting Cataractous Lenses. E. A. R. Newman.—p. 213.
- 13 Dr. Hossack's Paper on "German Influence on Modern Bacteriology—Need for Elimination and Revision." W. D. Sutherland.—p. 216.
- 14 Hymenolepis Nana (Siebold) (Dwarf Tapeworm) as Parasite of Indian Soldiers. F. H. Stewart.—p. 218.
- 15 Case of Snake Bite. P. H. Hennessy.—p. 219.
- 16 Readily Made Splint for Compound Fractures of Femur and Bones of Leg. W. R. J. Scroggie.—p. 220.

Journal of Tropical Medicine and Hygiene, London

July 1, XIX, No. 13

- 17 Transmission and Examination of Plague Specimens. J. A. Mitchell and G. W. Robertson.—p. 153.
- 18 Intermediary Hosts of Schistosoma in Natal. F. G. Cawston.—p. 154.

Lancet, London

July 8, II, No. 4845

- 19 Development of Structures Associated With Roof of Primitive Mouth. J. E. Frazer.—p. 45.
- 20 *Investigation Into Some of Effects of State of Nutrition of Mother During Pregnancy and Labor on Condition of Child at Birth and for First Few Days of Life. G. F. D. Smith.—p. 54.
- 21 Report on Casualties from Jutland Coast Action Received at Royal Naval Hospital, South Queensferry. W. M. Ash and C. P. G. Wakeley.—p. 56.
- 22 Some Uses and Abuses of Massage. E. B. Clayton.—p. 58.
- 23 Experience of Galyt at Royal Naval Hospital, Chatham. S. F. Dudley.—p. 59.
- 24 Two Cases of Penetrating Wounds of Abdomen Involving Inferior Vena Cava. D. C. Taylor.—p. 60.
- 25 Use of Tuberculin in General Practice. J. L. Bogle.—p. 61.
- 26 Use of Ammonia in Chlorination of Water. J. Race.—p. 71.

20. Nutrition of Mother During Pregnancy.—The total number of cases investigated by Smith was 6,162, of which 3,721 represented hospital experience in London and 2,441 similar experience in Dublin. The percentage of dead births in the case of women of bad nutrition was 7.7 per cent. out of a total of 65 cases. In the class of average nutrition the dead births are 1.1 per cent. out of a total of 183 cases. In the class of good nutrition the percentage is 1.9 for 860 cases. Of 59 labors, 11.9 per cent. were premature in the class of bad nutrition; in the class of average nutrition 2.7 per cent. out of 183 cases; in the class of good nutrition 1.3 per cent. out of 848 cases. Out of 3,693 babies born in the London hospitals 2.1 per cent. died during the first ten days of life. Out of 45 babies born of mothers with bad nutrition 6.66 per cent. died; out of 184 babies of mothers whose state of nutrition was average 0.5 per cent. died; and out of 328 babies of mothers with good nutrition 0.3 per cent. died. The death rate for 12 Dublin babies of mothers with bad nutrition was 8.3 per cent.; in cases in which the mother's state of nutrition was average none of the 8 babies died; where it was good 0.8 per cent. of 512 babies died.

On the whole this study suggests that a state of bad nutrition of the mother at the time of labor due to insufficient

food (1) greatly increases the percentage of dead births; (2) greatly increases the percentage of premature births; (3) slightly decreases the average weight of the full-time baby at birth; (4) definitely increases the postnatal infantile mortality; (5) has little, if any, effect during the first eight or ten days on the progress of babies who live during that time, and (6) possibly increase the death rate of babies during the first three or four days of life. A state of good nutrition of the mother at the time of labor, on the other hand, (1) considerably increases the average weight of the full-time baby at birth, and (2) increases the percentage of mothers who are able to suckle during the first eight or ten days of the puerperium, quite apart from any effect from the use of an ample diet during this time.

Bulletin de l'Académie de Médecine, Paris

July 4, LXXV, No. 27, pp. 1-15

- 27 *Rapid Metastasis After Subsidence of Cancer Under Radiotherapy. (Métastases rapides, à la suite de la disparition de tumeurs malignes traitées par le radium ou la radiothérapie.) E. Kirmisson.—p. 4.
- 28 Effects on Nervous System of Explosions without Direct Contact. (La commotion des centres nerveux par explosion.—Considérations pathogéniques et cliniques.) L. Lépine.—p. 9.
- 29 Blindfold Walking Test for Disturbance in Equilibration after Fracture of the Skull. (Note sur un procédé clinique nouveau permettant de mettre en évidence les perturbations du sens de l'équilibre et de l'orientation chez les traumatisés du crâne.) Cestan, P. Descomps and R. Sauvage.—p. 12.

27. Early Metastasis After Radiotherapy of Cancer.—Kirmisson reports the recent rapid and almost complete subsidence of an inoperable tumor in the neck of a soldier of 34 which seemed to be a ganglionic sarcoma. It was hard and knobby and extended from the left ear to the clavicle. All the viscera seemed sound and there was no trace of a tumor elsewhere and no leukocythemia. As the tumor was inoperable it was given radium treatment and in four months had almost totally disappeared, but a large tumor speedily developed in the iliac fossa of the same side. In a second case a large tumor developed in the right clavicle region after fracture of the clavicle in a girl of 12. The tumor presented the characteristics of a periosteal sarcoma, the clavicle not being enlarged. She was given radiotherapy and in a few months the tumor had completely disappeared but as this subsided there was metastasis in the spine, the vertebrae bulging in the lumbar-sacral region and the child suffering intense pain and unable to move her legs. Kirmisson emphasizes that in estimating the clinical value of radiotherapy, the end-results have not been regarded enough. When they are taken into account, the outcome of radiotherapy for sarcomas is found less favorable. He thinks there is some analogy between the subsidence of the spleen under radiotherapy in leukemia, without the progress of the disease being arrested, and the subsidence of sarcomas with early metastasis. In the discussion that followed, Bazy reported a case of lymphadenoma of the left parotid gland which subsided under radium with no signs of further trouble during the six years to date. E. Schwartz mentioned three cases of fulminating metastasis after radium treatment of sarcoma in the neck, thigh or uterus, but he recalls that the radium treatment in such cases is the ultimate resort when conditions are inoperable, and even the few months gained is not to be despised. Routier reported the complete cure for five years to date of a large lymphosarcoma in the left tonsil treated by introducing radium tubes through an incision back of the jaw. In three cases of mammary carcinoma he applied radium or Roentgen rays after mastectomy and the cancers recurred exceptionally early and extensively, two of the women dying within the year of metastases in the lung or spine. It actually seemed as if the prophylactic radiotherapy had hastened metastasis.

Lyon Médical, Lyons

July, CXXI, No. 7, pp. 245-308

- 30 *Early Operative Reduction of Dislocation of the Temporomaxillary Joint. (De la réduction saignante précoce dans la luxation temporo-maxillaire.) Guilleminet.—p. 245.
- 31 Injection of White of Egg Into the Bladder to Simulate Pathologic Albuminuria. A. C. Hollande, and others.—p. 248.

30. **Operative Reduction of Dislocated Jaw.**—In Guillemin's case the woman had dislocated the jaw on one side while yawning. It was reduced without trouble but five years later she dislocated the temporomaxillary articulation on both sides under similar conditions. It proved impossible to reduce the bilateral dislocation even under general anesthesia. After failure at two sittings, a horizontal incision was made below the malar bone, parallel to the zygomatic process. The fibers of the muscle were separated and the glenoid cavity felt to be empty. The condyle of the jaw was then lifted on the concave surface of curved scissors, and levered into place, resting the scissors lightly on the upper jaw. Hildebrandt in a similar case but of long standing restored the jaw to place by resecting the zygomatic process on each side.

Paris Médical

July 1, VI, No. 27, pp. 1-36

- 32 *Reliability of the Potain Sphygmomanometer. A. B. Marfan.—p. 1.
- 33 *Continuous Morning Headache with Abnormally High Blood Pressure. (La céphalée matinale continue des hypertendus.) L. Rénon.—p. 4.
- 34 *Asystole Resulting from Relative Insufficiency of the Suprarenal Glands. (L'asystolie surrénale.) O. Josué.—p. 7.
- 35 *Puncture in Epigastrium for Pericarditis with Effusion. (La ponction épigastrique de Marfan dans la péricardite rhumatismale avec épanchement.) P. Lereboullet.—p. 14.
- 36 *Diagnosis of Functional Heart Murmurs. (Diagnostic des souffles fonctionnels du cœur.) P. E. Weil.—p. 18.
- 37 War Wounds of Arteries. (Lésions des artères par projectiles de guerre.) R. Grégoire.—p. 22.
- 38 Aneurysmal Hematoma from War Wounds. E. Marquis.—p. 26.
- 39 *Differential Diagnosis of Cardiac Insufficiency. (Les insuffisants cardiaques.) H. Gillet and G. Boyé.—p. 30.
- 40 Technic for Obtaining Blood for Serodiagnosis. (Comment recueillir le sang pour éviter les erreurs dans le séro-diagnostic et spécialement dans la réaction de Wassermann.) M. Leconte.—p. 33.

33. **Continuous Morning Headache with Abnormally High Blood Pressure.**—Rénon has been studying for fifteen years a special type of headache which occurs in persons between 45 and 60 with arteriorenal sclerosis. The sclerosis may be the result of interstitial nephritis from scarlet fever in childhood, or of imperfectly treated syphilis, tobacco poisoning or excessive meat eating. A sedentary life, cares, and excessive mental work are cooperating factors. The minimal blood pressure is quite high in these cases. The headache may be diffuse or partial, but usually spares the occipital region. It wakes the patients at 5, 6, or 7 o'clock, grows worse toward 9 and 10, and gradually subsides by noon or 1 o'clock. On account of the intensity of the pain, which renders all physical or mental work impossible, the patient seeks to arrest it with a headache powder or neuralgia medicine. This may soothe it for an hour or two but it then returns, and more drugs are taken until there is superposed drug intoxication and a vicious circle. The heart is large and there is hypertrophy of the left ventricle, usually with polyuria, and slight albuminuria. The headache may be mild on rising and not become severe until after some physical or mental exertion, climbing stairs, writing a letter, or doing other brain work. This is the sign of hypertension which Josué calls "painful thinking" the pain being brought on by mental effort. The course of the headache is progressive, like that of the hypertension. Death occurs suddenly after some special effort or fatigue or indiscretion in diet. The prognosis is graver the higher the minimal pressure. He does not regard the headache as of toxic origin, as the patients urinate copiously at night; mechanical factors from the reclining are more liable to be responsible.

Treatment must include weaning the patient from headache remedies and tobacco. All physical and mental effort must be stopped and absolute repose enforced, keeping the patient on an exclusive milk diet for a week. Two liters milk in the twenty-four hours should be the limit, adding to each liter of milk 2.5 gm. of sodium citrate. During the following two weeks nothing but milk should be allowed on two days each week, with a fruit and vegetable diet the other days. By the end of the third week, a mixed diet can be resumed, allowing meat only once a day, at midday. Salt should be used sparingly; he gives each patient an

envelop containing 3 gm. salt for each day, which he can use to suit himself. After three weeks of this dieting and repose, if the headache persists and if the minimal pressure keeps high, he prescribes thiosinamin, keeping it up a long time. It may help and is harmless. He adds that this cannot be said of iodid treatment, which, except in the presence of syphilis, has no action on the arteriosclerosis and blood pressure while it is liable to aggravate the headache. If syphilis is suspected, specific treatment should be given, but very cautiously.

34. **Suprarenal Heart Failure.**—Josué relates that at necropsy in four cases of sudden death from cardiac insufficiency he found the myocardium much hypertrophied and apparently strong, not at all the aspect of a muscle that had given out from weakness, and nothing in the vicinity could be found to explain the heart failure. On the other hand, the suprarenals were always extremely small or diseased in these cases, and he presents arguments to show that the heart was suffering from lack of the physiologic stimulus for its contractions supplied normally by the suprarenals. This suprarenal asystoly, as he calls the resulting syndrome, is characterized by a large heart with low arterial pressure. Drawing the finger or a stick along the skin leaves a white mark instead of the usual red mark. There is often complete arrhythmia and auricular fibrillation, with more or less dyspnea.

Digitalis has little effect in these cases, but suprarenal extract had a manifest beneficial action. Early and systematic suprarenal extract treatment may ward off or retard the otherwise inevitable fatal termination. He gives the details of three such cases showing the marked improvement under suprarenal treatment. The white line disappeared in two or three days and the blood pressure rose. It seems probable that the suprarenals become exhausted by their efforts to supply the physiologic stimulus to the enlarged heart, but tuberculosis is probably also a frequent factor in the suprarenal insufficiency. Three of his seven patients with this suprarenal asystoly had tuberculous lesions. In treatment it is necessary to distinguish which of the symptoms are to be ascribed to suprarenal incompetency and which to cardiac incompetency and give suprarenal treatment or digitalis accordingly. He found that extract of the total gland seemed to act quicker and better than epinephrin alone. He gave it by the mouth, 0.4 gm. a day, in two doses, or by subcutaneous injection of 1 c.c. a day. This treatment not only supplies the lacking physiologic stimulus for the heart's functioning but it also aids the suprarenal glands to recuperate. A table is given showing the comparative weight of the heart and total suprarenals in his four cases that came to necropsy: The ratio was 104:1; 98:1, and 55:1 while in twenty-two other cadavers it ranged only from 15:1 to 38.6:1.

35. **Puncture of Pericardium Through the Epigastrium.**—This entire number of the *Paris Médical* is devoted to the heart and vessels. Lereboullet describes cases to demonstrate the advantage of puncturing a pericarditic effusion through the epigastrium, especially when it is a complication of acute febrile rheumatism. Epigastric puncture is not only exploratory but curative, while it is practically harmless and is particularly useful in tuberculous pericarditis and the pericarditis with Bright's disease. Even when the effusion is small, this technic gives confidence to the physician and has repeatedly proved a life-saving measure in Lereboullet's hands. In one instructive case a young man had a first attack of severe acute articular rheumatism, with signs of pericarditis with effusion, and the condition was evidently progressing to a speedily fatal termination. Puncture little to the left of the median line, just below the xiphoid appendix, permitted aspiration of 180 gm. of a serofibrinous fluid with traces of blood. The puncture was followed by severe pain in the epigastrium, hiccup and tendency to syncope, but these symptoms subsided after an injection of morphin in camphorated oil. The young man was left with a mitral lesion but he had quite recovered from the pericarditis. With gonococcus pericarditis, even a small effu-

sion is liable to entail considerable dyspnea, and puncture through the epigastrium, releasing even as little as 50 gm. of fluid, may completely transform the clinical picture. It seems as if the intracardiac nerve ganglia must suffer from the presence of any effusion, regardless of its size, and the relief from this after puncture explains the surprising benefit.

For puncture through the epigastrium, the patient half sitting up in bed, a lumbar puncture needle is introduced just below the xiphoid appendix, on the median line. The handle is then lowered so that the needle slants upward close to the inner side of the sternum, as if trying to shave it. When it has entered for 4 cm. in a child or 5 or 6 cm. in an adult, the tip should be in the pericardium, and at almost its lowest point. By keeping to the median line the peritoneum is not entered, and the muscle fibers of the diaphragm are avoided. Except with much distention of the abdomen from meteorism, or malformation of the sternum, as in the funnel-shaped thorax, the epigastric puncture can be applied with confidence whenever a pericarditic effusion is suspected as responsible for the serious symptoms. With purulent pericarditis, especially pneumococcus pericarditis, the puncture should be followed at once by pericardotomy. In one case the attempt was made to get along without this, but it finally became necessary after twenty punctures had failed to cure. When the effusion is mainly or entirely back of the heart, it is evacuated best by puncture from the back, through the posterior left seventh interspace.

36. Differentiation of Functional Heart Murmurs.—Among the differentiating signs mentioned by Weil are that the points where the murmur sounds loudest are not exactly the same as with organic murmurs. The murmur is not exactly at the apex and not exactly over the valves; it may be most pronounced midway of the sternum. The murmur is not propagated like an organic murmur but dies out where it is born, and the sound is soft, veiled as it were. Functional murmurs are systolic but they do not occupy the entire systole; they usually commence after the first heart sound and finish before the second. The variability from day to day, and during repose and exercise is the most marked characteristic of functional murmurs. During the examination they may change their seat, their rhythm and tone, and they do not occur regularly with each systole. As a rule they are most distinct when reclining, and they are modified by deep breathing and exaggerated by emotions and muscular work. After running a few yards, a second murmur may appear at base or apex when there was only one before. Pressure on the eyeballs arrests functional murmurs as a rule. The heart beat is retarded at the same time. If the patient then runs a few yards the murmur reappears, but can be arrested anew by pressure on the eyeballs, while the accelerated heart beat drops from 120 or 140 to 80, 60, 40 or even 25. Organic murmurs are increased by pressure on the eyeballs as a rule. In some cases, as this abolished the noisy functional murmurs, it disclosed a small mitral murmur previously unsuspected. To determine the functional capacity of the heart, with or without an organic lesion, the behavior of the heart beat and blood pressure after a slight standard exercise is the criterion. With a capable heart the pulse increases from about 70 reclining to 80 standing, and to 90 after a slight exercise but the blood pressure shows little change standing and rises only about 10 mm. minimal and 40 mm. maximal and soon drops back to normal with the pulse in repose. With a weak heart the pulse runs up notably on change of position while the maximal blood pressure does not rise or may fall, but the minimal pressure rises considerably, and all these changes persist for some time in repose. Overexcitable hearts respond like the normal heart, only in a much exaggerated form.

39. Cardiac Insufficiency.—Gillet and Boyé call attention to a small group of cases in which dyspnea on effort, palpitation, fast heart beat and exaggerated reaction to changes of position suggest a cardiac neurosis, but this is disproved by the tendency to cyanosis in the hands and feet and by the lack of any neuropathic predisposition. At night, reclining, everything seems normal. The blood pressure is always

low. Such patients require prolonged repose, reclining, with tonic medication for the heart and general tonics. These measures applied in time may restore the heart to normal, but if left untreated this transient insufficiency will become chronic and run a progressive course.

Revue Médicale de la Suisse Romande, Geneva

June, XXXVI, No. 6, pp. 345-384

- 41 *Clinical Relations between Erythema Nodosum and Tuberculosis. Jaquerod.—p. 345.
- 42 *Technic for and Experience with Spinal Anesthesia for Operations. (Quelques remarques pratiques sur la rachianesthésie appliquée aux opérations chirurgicales.) T. Cavazzani.—p. 354.
- 43 The Public Health Service in the French Colony of Morocco. (Notes sur le service de santé pour les indigènes au Maroc.) F. Blanchod.—p. 359.
- 44 Treatment of War Wounds of the Thigh. (Quelques expériences de chirurgie de guerre sur le traitement des fractures de cuisse.) H. Curchod.—p. 370.

41. Tuberculosis in Connection with Erythema Nodosum.—Jaquerod remarks that the complaisance with which physicians used to regard erythema nodosum has been somewhat shattered in the last ten years. Evidence is accumulating that associated or subsequent tuberculous lesions are not the casual coincidence formerly supposed, but bear a causal relation to the skin disease. Uffelmann suggested a clinical relation between them years ago, and Hildebrandt induced tuberculosis in guinea-pigs by inoculating with scraps from the erythematous nodes. Chauffard found a typical erythematous node develop at the point of injection of tuberculin in a tuberculous girl. Landouzy discovered a tubercle bacillus in cutting an erythematous node, and guinea-pigs inoculated with scraps from this node developed severe local and general tuberculosis. A number of inaugural theses in France have supplied further testimony. The intradermal tuberculin reaction was positive in 100 per cent. of the patients tested and an inherited tuberculous taint was often manifest. Sézary reported in 1912 a case in which erythema nodosum was followed four months later by tuberculous meningitis.

Jaquerod reports two recent cases of erythema nodosum in a girl of 10 and boy of 5, extremely severe but with rapid and apparently complete recovery. Both children had latent glandular tuberculosis and the eruption occurred several days after an acute febrile gastric upset in one case and typical grippe in the other. These intercurrent affections may have roused the torpid tubercle bacilli, and as they made their way into the blood they induced a transient tuberculous toxemia which in turn induced the erythema nodosum. The prognosis therefore is that of the underlying tuberculous infection, and there is nothing to show that those who develop erythema nodosum are more liable than others to have serious tuberculosis later. He has had numbers of patients with erythema nodosum who are now in robust health after intervals ranging up to fifteen years.

42. Spinal Anesthesia.—Cavazzani says that one great advantage of spinal anesthesia is that the patient can be consulted and his consent obtained if a change in the plan of operation is deemed advisable when the region is opened up. The surgeon's tranquil confidence in the anesthesia is also in marked contrast to the agitation and precipitation liable in serious operations under inhalation anesthesia. The amount injected into the spinal cavity must be adequate; he injects as a rule 0.10 gm. of novocain for operations on the regions innervated by the sacral nerves, but for the legs, abdomen or kidneys he uses from 0.11 to 0.14 gm. according to the patient's corpulence, the pressure in the cerebrospinal fluid, and his state of mind. The novocain is in a 10 per cent. solution and he draws the spinal fluid into the syringe to bring it to 2 per cent. The seated patient is then laid horizontal or the pelvis is raised a trifle. If it has to be raised much, he waits for this until the moment for it arrives. When the maximal dose is approximated, there are liable to be vomiting, headache and paralysis of movement, but they are transient. In the hundreds of cases in which he has applied this technic he has never had any other pathologic phenomena at the time or later that could be referred to the lumbar injection, but he would restrict its use to operations on or below the kidneys.

Correspondenz-Blatt für Schweizer Aerzte, Basel

July 1, XLVI, No. 27, pp. 833-864

- 45 Twin Pregnancy at Term, Eclampsia, with Fracture of Skull from Fall at First Convulsion. Recovery after Cesarean Section. (Eklampsie und Unfall.) R. Schweizer.—p. 833.
- 46 *Arrhythmia. (Klinisches über die unregelmässige Herzstätigkeit.) H. Ryser.—p. 839. Concluded.

July 8, No. 28, pp. 865-896

- 47 Experiences in a German Military Hospital Near the Front. (Aus einem Lazarett.) W. Knoll.—p. 865.
- 48 Tuberculosis and Life Insurance for Soldiers. (Tuberkulose und Militärversicherung.) Hauser.—p. 887.

46. **Arrhythmia.**—Ryser's article is continued through three numbers, as he discusses the chief forms of arrhythmia. The finer differentiation of the various types now possible has already given results in diagnosis, prognosis and treatment, as the experiences here related abundantly testify. He emphasizes anew that any and every form of arrhythmia can occur as a transient or persisting functional disturbance in an otherwise normal heart muscle, and reiterates that even the severest type of arrhythmia gives no information as to the condition of the myocardium. Not the arrhythmia in itself determines the prognosis but the conditions in which the arrhythmia occurs. Disturbance in conduction may be of a harmless nature, as, for instance, after influenza. With diphtheria, however, it is of evil import as we know that diphtheria may seriously menace the heart. In discussing tachycardia he comments on the fact that the attacks may be brought on by factors acting on the position of the diaphragm or modifying the circulation, possibly in an apparently insignificant manner. In any event, emptying the bowels may give relief and ward off recurrence. Even vomiting or passage of flatus may abort an attack. The prognosis depends on the strength of the heart and its ability to stand the strain of the tachycardia. In young persons with sound or but slightly impaired hearts, whose attacks are not very frequent and do not last more than a few hours at most, the tachycardia does not seem to be dangerous and almost always has a favorable outcome. There is no specific treatment, but an ice bag to the heart always gave some relief in his cases, and retching or an enema may aid. Ryser once promptly aborted an attack by the vagus pressure method. Digitalis also may aid; by its action on the vagus it brings the heart back into its normal pace. An intravenous injection of strophanthin also has accomplished this in some cases on record.

The respiration seems to have the most marked influence on sinus arrhythmia. This "respiration arrhythmia" must by no means be considered as a sign of incompetency on the part of the heart. It occurs almost exclusively in the young and healthy who are not using their minds much at the time. Study of this type of arrhythmia confirms anew that the respiration reflex on the heart, like other reflexes, is subordinate to the highest centers, which have an inhibiting influence on them. If any attempt at treatment is made, it should be merely to call the mind and body into play, thus striving to accelerate the pulse and make it more regular. He says of *pulsus alternans* that it is usually a phenomenon of the pulse rather than of the heart. It is the expression of an alternating variation in the amount of blood expelled from the heart at each beat, and this depends on conditions in the circulation independent of the heart's energy, as a rule. Only when the systoles are of unequal length is the heart itself responsible for the alternating pulse, and the mechanism of the heart's action is not disturbed even then. *Pulsus alternans* owes its evil reputation to the fact that it is usually associated with arteriosclerosis or kidney disease. As a mere phenomenon of the pulse it requires no treatment.

Gazzetta degli Ospedali e delle Cliniche, Milan

June 25, XXXVII, No. 51, pp. 801-816

- 49 *Small Epidemic of Cerebrospinal Meningitis. M. Vivaldi.—p. 805.
- July 2, No. 53, pp. 817-832
- 50 Pathology and Treatment of Neuroses of the Blood Vessels. (Alcune considerazioni sulla patologia e terapia delle angio-nevrosi.) P. Ercolani.—p. 820.

July 7, No. 54, pp. 833-848

- 51 Operative Treatment of Skull Wounds; Twenty-Nine Cases. (Contributo alla cura chirurgica delle ferite del cranio.) O. Ortali.—p. 835.

49. **Epidemic Meningitis.**—The mortality was 35 per cent. among the thirty-two cases. Two of the young men had complicating thrombosis of the right femoral vein and deafness. One child was left with paresis of the right arm and one with embolic iridochoroiditis. One of the patients who seemed to have almost entirely recovered died in a few hours after return of symptoms and general paralysis. Necropsy revealed anemia and edema of the brain substance while the ventricles were distended with a limpid and sterile fluid. This case taught the necessity for immediate lumbar puncture at the slightest sign of return of symptoms even late in convalescence. In another case necropsy showed that adhesions had walled in the fluid in the ventricles. The specific meningococcus was found in all but five cases and Gram-staining diplococci in these.

Policlinico, Rome

July 2, XXIII, No. 27, pp. 837-864

- 52 Culture Mediums for Cultivation of Cholera Germs. (Sui terreni Dieudonné ed Aronson nella diagnosi batteriologica del colera.) S. Minelli.—p. 837.
- 53 Ten Months in the Medical Corps at the Italian Front. (Dieci mesi di servizio sanitario in guerra.) T. R. Doria.—p. 840. Concluded.
- 54 Sugar in the Urine from the Standpoint of Life Insurance. (La glicosuria e l'assicurazione-vita.) I. Romanelli.—p. 844.
- June, Surgical Section No. 6, pp. 161-192
- 55 Cystic Tumor in Hernial Sac. (Sui tumori intrasacculari dei visceri erniati.) G. Campora.—p. 161.
- 56 *Muscle Flap to Repair Large Gap in Wall of Pharynx and Larynx. P. L. Della Torre.—p. 171.
- 57 Experimental and Clinical Study of Ligation of Coronary Vessels. (Legatura separata e simultanea delle arterie e delle vene coronarie del cuore.) L. Dominici.—p. 181. Continued.

56. **Repair of Gap in the Throat Wall.**—A farmer fell on a sharp iron spike which tore a square gap in the wall of the pharynx and larynx, about one fourth of its circumference. Loss of blood was combatted with hemostatic clamps and tamponing, and the breach was repaired with a flap of muscle and fascia tissue, 10 by 6 cm., taken from the abdominal wall. The illustrations show how the flap was applied to rebuild the wall and also to reduce and hold in place the fractured hyoid bone with the upper end of the flap. It was fitted over the bone with U sutures taken along the entire width of the flap to complete the tunnel in which the bone lies. The operation was a success, the rebuilt air passages functioning perfectly. The voice is natural except for a little hoarseness. The flap was made large enough to extend for some distance beyond the gap, to ensure its nourishment. The jagged and soiled wound—the hyoid bone and the thyroid cartilage were quite denuded—rendered the outcome dubious and the complete success is all the more remarkable.

Siglo Medico, Madrid

June 24, LXIII, No. 3, 263, pp. 401-416

- 58 Heart Block in Man of 62. (Caso de automatismo ventricular con fibrilacion ventricular.) L. Calandre.—p. 402.
- 59 *Atypical Forms of Tuberculous Meningitis. B. Gil y Ortega.—p. 406.

July 1, No. 3264, pp. 417-432

- 60 Arsenic and Tuberculin in Treatment of Pulmonary Tuberculosis. J. A. M. L. de Guevara.
- 61 Wet Packs to Control Fever. (La sabana humeda.) P. Noguera

59. **Tuberculous Meningitis.**—In Ortega's first case, in a girl of 7, tuberculous meningitis was accompanied by hyperesthesia of the skin so intense she could not bear the slightest touch. The child died the twenty-fifth day, the hyperesthesia persisting to the end. The second patient was a young woman who died the ninth day after the onset of severe headache, with slight fever, and extreme prostration passing into complete and persisting coma the third day. In the third of this trio of atypical cases of tuberculous meningitis, the patient was a woman of 24 who had been presenting symptoms of acute pulmonary tuberculosis during a pregnancy. The seventh day after delivery at term of a nonviable child, the woman developed maniacal excitement.

with the senses abnormally acute. It was impossible to make a physical examination at first, but the patient's strength rapidly declined and the signs and symptoms of involvement of the meninges in the tuberculous process were soon apparent, with a fatal termination three weeks after the childbirth.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

July 1, II, No. 1, pp. 1-96

- 62 Pituitary Treatment in Obstetrics. (Pituitrine-inspuitingen bij de baring.) M. M. De Monchy.—p. 5.
- 63 *Progressive Myopia and Its Treatment. W. Koster.—p. 17.
- 64 Workings of the Workmen's Compensation Law. (Eenige opmerkingen over de practijk der ongevallenwet 1901, in verband met art. 61 en den strafrechter.) D. De Snoo.—p. 26.
- 65 *Operative Treatment of Rebellious Trigeminal Neuralgia. (Trigeminus-neuralgie en de behandeling der hardnekkige gevallen.) L. J. J. Muskens.—p. 32. Concluded.
- 66 Cure of Hysteric Deafness by Hypnosis; Two Cases. (Genezing van twee gevallen van hysterische doofheid door hypnose.) I. Zeehandelaar.—p. 41.

63. **Progressive Myopia.**—Koster agrees with Donders that there is usually disease where there is myopia. This is beyond question with severe progressive myopia, and the clinical course and effects of treatment reveal the ocular affection as a primary infectious chronic chorioretinitis. Any degeneration observed is of secondary nature. In treatment the patient and parents must be warned to refrain from taxing the eyes beyond what is strictly necessary, and all exercises, games, etc., must be avoided that are liable to induce congestion in the head. General treatment is important; for this he alternates mercury and potassium iodid for two weeks each, keeping this up unmodified if the myopia continues to progress by the end of six months but the vision has shown no impairment. If there is any decline in vision while the myopia progresses, he keeps the patient in bed for six weeks with daily inunction of 3 gm. of mercury, supplemented by radium treatment of each eye for five hours at weekly intervals. If there is much hyperemia or signs of a tendency to chronic cyclitis, he gives a course of atropin. The eyes are given complete rest therewith. If there are any contraindications to mercury, he gives a course of salicylates instead, with iron and a strengthening diet.

After such a course of treatment the eyes can be used systematically a little and the further development of the case watched. He deplores that he can so seldom induce patients to take this regular course of treatment. The time required, the expense and the dread of mercury combine to make patient and parents shrink from it. Sometimes all he can get consent for is a brief course of radium treatment and protracted medication with small doses of mercury, the salicylates, iodids or iron, but he insists that these must be kept up for years.

Progressive myopia with detachment of the retina or other serious complication he treats in the same way, aiming to retain vision as good as possible in the comparatively sound eye. He declares further that even a slight degree of accommodation is harmful in time for eyes with progressive myopia. The hyperemia induced by accommodation aggravates the infectious process.

He has had many years of experience with treatment based on the above premises. Some patients with myopia of 20 and more D. have had it arrested at this point, so that the myopia was retarded so that the progress grew very slow and vision was less impaired than in the untreated. He adds that the results of operative treatment have proved so unsatisfactory in the long run that operative measures now have been generally abandoned. Koster's study and treatment of simple myopia was summarized in these columns August 5, abstract 89.

65. **Operation for Rebellious Trigeminal Neuralgia.**—Muskens' discussion of the best method of relief for inveterate neuralgia was given, with a description of his technic, in abstract 87 in THE JOURNAL August 5. Instead of gasserectomy he crushes the nerves just below. He here gives the minute details, with illustrations, of the five cases in which he has applied his method, with full details as to the sensory phenomena after the operation. The patients were three

women between 58 and 69, and two men of 53 and 34. The last mentioned was operated on in 1904, after twenty-five years of trigeminal neuralgia, and he has had no further trouble during the twelve years since, occupying the responsible position of train-despatcher.

Hygiea, Stockholm

LXXVIII, No. 11, pp. 721-800

- 67 *Severe Diabetes Mellitus with Atrophy of Thyroid and Pituitary Body and Lipemia in Boy of 16. (Ett fall av svår diabetes mellitus med multipla endokrina rubbningar.) S. Lindblom.—p. 721.
- 68 *Primary Sarcoma of the Trachea. S. Berggren.—p. 765.
- 69 Industrial Arsenic Poisoning. (Om arsenikundersökningar.) P. Klason.—p. 776.
- 70 *Otogenous Abscess in the Brain; Three Cases. (Tre fall av otogen hjärnabscess.) N. Witt.—p. 783.
- 71 Ear Speculum. (Ett nytt öronspekel.) G. Richnau.—p. 789.

67. **Diabetes with Multiple Endocrine Derangement.**—Lindblom's retrospective diagnosis after necropsy is that the internal secretion of the pancreas was first at fault, possibly as the result of severe osteomyelitis over three years before. The patient was a boy of 16, and unusually severe diabetes developed, fatal the sixteenth month. His urine contained from 600 to 800 gm. sugar a day. Owing to the reduced functioning of the pancreas, the thyroid and hypophysis were spurred to excessive functioning, which in time entailed atrophy of both, with resulting functional insufficiency of both. The symptoms from this were benefited to some extent by organ therapy. Toward the last, lipemia of 17.55 per cent. and after death 12.8 per cent. was found in the blood. As the lipemia developed, pustules formed on the limbs and around the mouth, the pustules containing mostly fat. In connection with his case Lindblom discusses analogous observations on record in which diabetes and myxedema were associated, and the mechanism for this and for the lipemia in his case. The suprarenals in his case seemed to be normal but there were signs of excessive functioning. His conclusion from the data presented is that although the hormones of the pancreas and thyroid are antagonistic yet the organs themselves stimulate each other, so that excessive functioning of one spurs up the other, and hypofunction of one entails hypofunctioning of the other. The same relations prevail between the pancreas and the pituitary body. This assumption would explain the frequent coincidence of diabetes and obesity, diabetes mellitus and insipidus, and the cases of myxedema and diabetes cured by thyroid treatment. The lipemia in his case is readily explained by the augmented mobilization of fat and the reduced oxidation of fat from the disturbances in the endocrine system.

68. **Sarcoma of the Trachea.**—Berggren adds another to the twenty cases on record of primary sarcoma of the trachea. As a rule they seem relatively non-malignant; his is the only case in which metastasis is known, and there has been no sign of recurrence during the four months since the operation to date. The patient is a man of 56 who had had a dry cough for twenty years but otherwise had been healthy. During the last six months his voice had become hoarse and he had been short of breath but there were no disturbances in swallowing and no weakness. The pedunculated tumor was in the upper part of the trachea, on the anterior wall, about as large as a hazelnut, and roentgenoscopy showed an enlarged pretracheal gland and a bunch on a rib, both of which were evidently metastases. The tumor was removed from without and with it the enlarged gland; the rib was also resected, and prompt recovery followed with no signs of recurrence to date. In two of the twenty cases in the literature the patients were children of 11 and 13. In Betz's case the tumor was 5 cm. long and hung down like a polyp into a bronchus. Death occurred from sudden suffocation, the tumor having evidently been drawn up into the trachea which it plugged completely. In one case there were several tumors, with broad base and smooth surface.

70. **Otogenous Abscess in the Brain.**—One of Witt's three patients was a young man who had had bilateral purulent

otitis since childhood but was otherwise robust until, four days before the operation, he had developed headache and dizziness and vomited frequently. There could be no question as to the existence of an otogenous abscess, but on which side? There were no focal functional symptoms. The radical operation was done on the right side, but no signs of an abscess were found. As the symptoms persisted, a week later the dura was incised and pus found and drained, fully 10 c.c. of pus being thus evacuated. A complete cure of the otitis on that side followed. The second patient, a girl of 14 was also cured by evacuation of a large abscess in the temporal lobe, with one cavity 5 cm. deep. She had had otitis two years before which had apparently healed, and there had been no symptoms until the last month she had had headache and a bloody purulent discharge from the ear. Both patients were given hexamethylenamin and recovery was prompt and complete. The third patient had had acute otitis for only a week when there was an epileptiform seizure and symptoms of meningitis. An abscess was found in the temporal lobe but the meningitis continued and soon proved fatal.

Ugeskrift for Læger, Copenhagen

June 8, LXXVIII, No. 23, pp. 927-984

- 72 *Operative Treatment of Brain Tumors; Twenty Cases. (Radikal-operation ved Hjærnesvulster.) V. Christiansen.—p. 927.
73 *Spasm of the Cardia. (Kardiospasme.—Dilatatio œsophagi.) E. Madsen.—p. 947.

June 15, No. 24, pp. 985-1030

- 74 *Chronic Gastric Ulcer Presenting the Characteristic Niche in Roentgen Picture. (8 Tilfælde af Ulcus ventriculi chron. frembydende Haudecks Nischesymptom.) J. E. Mauritzen.—p. 985.
75 Impacting of Twins Simultaneously in Pelvic Outlet; Two Cases. (2 Tilfælde af Kollision mellem Tvillinger.) A. Tofte.—p. 995.

June 22, No. 25, pp. 1031-1078

- 76 *Abderhalden's Dialysis Reaction in the Tuberculous. (Abderhalden's Dialysereaktion hos Ftisikere.) V. Petersen.—p. 1031.
77 Positive Wassermann Reaction with Venereal Ulcer Calls for Treatment as for Syphilis. (Om positiv Wassermann's Reaktion ved Ulcus venerum, samt om Betydningen af en mere finmærkende, selvom mindre specifik Wassermann's Reaktion.) C. With.—p. 1054.

72. **Brain Tumors.**—Christiansen is chief of the neurologic clinic at Copenhagen, and he here reviews twenty recent cases in which he diagnosed a tumor in the brain and helped to locate it for surgical removal. Four of the eight patients with a tumor in the motor area were materially benefited by the operation and a number of the ten with a tumor in the cerebellopontile angle. Improvement in the treatment of brain tumors all depends, he declares, on the general practitioner recognizing in their incipency the insignificant symptoms which indicate the beginnings of a brain tumor. Few realize that brain tumors are so common, and yet rare indeed are the cases in which they can be removed in time to avert irreparable injury. In several of his cases the symptoms had seemed to indicate an inoperable tumor, but when the tumor was exposed it was found that it could be easily shelled out, after which the general and local symptoms promptly subsided. This encourages an attempt at operative measures in the most apparently desperate cases. Cortical convulsions in one case, affecting one side only, including the shoulder, returning during three years with long intervals of apparently perfect health, were diagnosed at first as functional, but later the paresis which followed the convulsions became permanent, and the thigh muscles atrophied, with sensory disturbances. The man had occasional attacks of headache, still more rarely vertigo, and once transient double vision. A glioma was found in the left motor area but it blended with the surface of the brain and seemed to be malignant. However, except for ataxia of the right side the symptoms have subsided and the man, fifteen months after removal of the tumor still feels entirely well. Headache, occasional vertigo and transient double vision were the first symptoms in other cases clinically cured by the operation. In another there had been a few convulsions at puberty. In this and in a second case in a man about 38, slight paresis and atrophy of one arm developed with spasms of the face muscles on that side. In these cases the trouble was a subcortical cyst, and both men recovered

after its removal, but in one case the cyst returned and seems now to be returning for the third time.

Cerebellopontile tumors are usually easily shelled out and they induce warning symptoms early in the domain of the cranial nerves, especially deafness and abnormal vestibular and corneal reactions. These, with optic neuritis, suggest a tumor. In one case the deafness had been noticed for several years. In others there was cold paresthesia on one side, including the face, or dizziness or vestibular disturbances. A typical vestibular attack, with aura, subjective noises and dizziness, is characteristic of cerebellopontile mischief. Lumbar puncture revealing abnormal proportions of albumin but no pleocytosis and no Wassermann reaction, is also typical. Roentgen examination seldom gives positive findings but occasionally is very instructive. In one of his fatal cases, fibromas were found also in the esophagus and stomach. In another case a woman of 60 for several years had had attacks of dizziness, and finally headache and somnolency with fleeting double vision. The operation revealed fibrous changes in the dura, and at necropsy a month later, a fibroma was found in the cerebellopontile angle, and others elsewhere.

Of the ten angle tumors, two of the patients are still living fifteen and seventeen months later although it is dubious whether all the growth was removed at the translabyrinthine operation. One of these patients had had symptoms for ten, one for two years. The growth was no larger than a hazelnut in either case. One patient died from the effects of lumbar puncture before the operation had begun. Choked disk rapidly retrogresses after removal of an angle tumor and sometimes after merely a palliative intervention. In one patient the trouble proved to be diffuse sarcomatosis.

73. **Cardiospasm.**—Madsen expatiates on the importance of Roentgen examination in puzzling conditions in the stomach and intestines, relating a case in which erroneous conclusions had been previously drawn as the contraction of the cardia prevented ingress of the exploring catheter into the stomach and the tip had doubled back when it was supposed to have passed straight into the stomach. The patient was a clerk of 20 and he had had stomach trouble for eight years. The esophagus was much dilated, the mucosa hanging like a loose curtain from top to bottom, but nothing suggesting ulceration could be seen. Prompt improvement followed daily introduction into the cardia of an inflatable bag made with an unelastic silk netting between two layers of rubber. While the bag was in place the esophagus was rinsed out. Marked improvement was evident in a week and recovery was soon complete.

74. **Chronic Gastric Ulcer with Recess Shadow.**—Haudeck called attention in 1910 to the peculiar shadow cast by gastric ulcer that had a crater extending deep into the wall of the stomach. The bismuth enters this crater, pushing the air before it, thus casting a shadow, projecting like a finger with an air bubble above. This projecting "niche" shadow remains for a time after the stomach has been otherwise emptied. Mauritzen here relates the details of eight cases of chronic gastric ulcer of this deep boring type. In all, this niche sign was pronounced, and all the patients recovered after resection of the ulcer into sound tissue. The stomach was of hour-glass shape in seven. He regards this niche sign as pathognomonic of this type of ulcer, and declares that it calls for immediate operation.

76. **Abderhalden's Dialysis Reaction in the Tuberculous.**—Petersen comments on the contradictory nature of the literature on this subject to date, and devotes ten pages to the tabulated details of his own experience with 108 tuberculous patients and 12 healthy persons. Using tubercle bacilli as the antigen, a positive response was obtained in 42 per cent. of the healthy; in 80 per cent. of his patients in the first stage of tuberculosis; in 57 per cent. of those in the second stage, and in 46 per cent. of those in the third stage. The dialysis test made with tubercle bacilli or tuberculous gland tissue seems to be a specific reaction for tuberculosis. But it affords no information whether the tuberculosis is active or inactive, and is no aid in the prognosis of the concrete case.

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THE TEACHING OF DERMATOLOGY*

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The tendency in a number of medical schools is to place dermatology in the elective group of the curriculum; in others, the tendency is to decrease the number of required hours, thus conforming too closely to the minimum amount of time allotted by the schedule of the Association of American Medical Colleges, namely, forty-five hours. If there is any special branch of medicine which should be required, it is dermatology.

If the student intends to become a general practitioner, to confine his interest to special branches or to enter public health work, a course in dermatology and syphilography extending over at least sixty hours is absolutely essential. It is certainly unwise to graduate a student who cannot differentiate syphilitic lesions from those of a similar type, or who cannot recognize the present mild form of variola and other exanthems. General practitioners should be able to recognize and successfully treat ordinary impetigo and typicalabies. During vacation periods at summer resorts, while traveling, it is frequently necessary for physicians to express an opinion on some acute cutaneous eruption, and a knowledge of the subject will frequently prevent serious consequences. As examples of common errors, the surgeon is too eager to operate on a tuberculous bromid or iodid eruption, and pityriasis rosea and German measles are frequently diagnosed as syphilitic.

Elementary dermatology should have its place early in the curriculum. Students must be taught the histology of the normal skin and to recognize such histopathologic changes of this organ as are of diagnostic value. As the course progresses, various subjects can be considered in greater detail. This should be done by means of lantern slides, colored photographs, microscopy and by clinical demonstrations.

In addition to this required work, opportunity should be offered to students who desire to do special work in this branch of medicine. As an elective course in the senior year, students should work in the outpatient department as clinical assistants. In this way they have an opportunity of writing prescriptions, observing results of treatment and seeing the application of phototherapy, roentgenotherapy and carbon

dioxid snow. A knowledge of these different types of therapy can be acquired only by practical work.

The teaching of syphilis should be closely allied to the teaching of dermatology, for the reason that the earliest manifestations are cutaneous, and students should be taught to recognize the disease in its incipency. The fact is well established that only on early radical treatment rests our hope of aborting the disease. Ordinarily, patients prefer to have treatment carried on in one department, and it is advisable to have frequent consultations rather than to refer patients to another department of a teaching institution for a continuation of the treatment. Accordingly, a general outline of the course of syphilis should be given at an early period in the tuition of a medical student. This should include all of its manifestations, namely, the microbiology, pathology, cutaneous evidences of the disease, involvement of the circulatory, respiratory, alimentary, renal, osseous and nervous systems, etc. Details of these conditions should be taught in general medicine and in the different specialties. But the student should be taught that no matter where the evidence of syphilis is, this disease should be considered as a general infection, and needs prolonged treatment. Many examples of syphilitic involvement of the iris are treated until the local condition clears and then discharged from further therapeutic interference, whereas the patient should have antisyphilitic treatment extending over many months after the eye signs of the disease have disappeared. Such work should be followed up by those doing special work in syphilis or by the department of internal medicine. Repeated consultations by neurologists, even in early syphilis, are advisable, and frequent serologic examinations are strongly advocated and may be of much value.

When one considers the percentage of the population which is affected with syphilis, it is evident that we should lend our efforts to the control of the disease, and the best way to accomplish this is by early diagnosis and the proper treatment. The examination of syphilitic lesions by means of the dark field microscope is not used as much as it should be. Physicians are still inclined to wait for the so-called secondary syphilitic developments; but it must be emphatically impressed on medical students that all delays in diagnosis and treatment decrease the chances of cure. This is partly due to the lack of proper instruction of medical students, for they should be taught that the early recognition of the disease should be one of the most important functions of the department of dermatology.

Since cases of leprosy are increasing in this country, on account of closer relationship with endemic areas in our tropical possessions, a knowledge of this

*Chairman's address, read before the Section on Dermatology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

subject is most essential. This, again, is a disease which usually is first evidenced by skin changes and therefore should be considered within the teaching range of the dermatologist. In case the government decides to isolate all leprosy patients in one or more leprosariums, this subject should be taught in such an institution or by means of colored photography and lantern slides.

There are a number of substantial reasons why photography, in its various methods of expression, must be considered as a valuable adjunct in the teaching of dermatology. But one of these reasons stands well out above all the others, namely, that by the use of the camera, visual records are obtained of the cases under observation.

Photography is no longer limited to the record of a case in a combination of black and white and their respective tone values. With a constant improvement in the manufacture of the autochrome plate and its subsequent treatment after exposure, a remarkably realistic reproduction of cutaneous lesions is quite within the reach of those who have only the ordinary training in photographic procedures. The Lumière autochrome product seems to have given in a general way the best results. Autochrome plates of the "lantern size" type are unsatisfactory because of technical difficulties in their projection. It is therefore the wiser selection to use larger plates, say 5 by 7 inches. These are easily handled by observers, permit greater size-scope of the subject, and are quite well illuminated by any window of average size, even though there may be but indifferent light conditions.

The black and white method of recording cases has at present two advantages over the autochrome method: one that it permits more detail, and secondly that paper prints may be obtained from this type of making photo impressions.

For projection exhibitions, the black and white lantern slides are most satisfactory. Color may be added to these by the use of dyes and the brush; but, except for selected cases and in the hands of an expert colorist, this phase of photography is not to be recommended in the presentation of skin diseases to medical students.

The advantage of having a serologic department connected with the department of dermatology cannot be overestimated. Students should be taught the uses and abuses of the various serologic procedures now in vogue. Only those students who are particularly interested in this subject should be taught the technic, but all students should be required to know how to interpret results and also to know the limitations of the various methods used.

Medical students should be taught the importance of a social service department in connection with their hospital and outpatient work in dermatology. Patients must be followed into their homes so that proper treatment can be carried on; the importance of continuing treatment after the disappearance of syphilitic manifestations must be urged, and proper methods of preventing the spread of disease must be instituted. This should be brought to the student in two ways: first by allowing those who work in the clinic the advantage of a well organized social service department, and second, by detailing students to work in the social service department itself.

Modern investigation and research in dermatology indicate that there are many dermatoses associated

with internal pathologic conditions. Many types of eczema formerly thought to be the result of local trouble are now considered to be associated with focal infection and sensitization. The various types of leukemia may produce dermatoses which can be classified only after repeated blood examinations. Spontaneous disappearance of tuberculides after the removal of a local tuberculous focus points to the necessity of thorough general examinations. The frequent association between changes in the thyroid, parathyroid and suprarenal glands, with cutaneous pigmentations and dystrophic changes in the teeth and nails, brings the subject of cutaneous diseases in still closer relationship with internal medicine.

These points serve to emphasize the importance of treating patients with obscure cutaneous eruptions in a hospital where they can be studied from all phases by many physicians and observed by advanced students. By this method, cases in which the etiology cannot be ascertained will have the advantage of study by the dermatologist, pathologist, chemist and the physician doing internal medicine; and in this collaboration rests the future in the study and development and teaching of dermatology.

SOME OBSERVATIONS ON THE TEACHING OF SURGERY*

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NEW YORK

Every teacher recognizes the fact that success in the making of a surgeon depends, first of all, on the aptness of the pupil. It may be true that "poets are born, not made," but years of patient toil in training await the making of a surgeon. He must possess by nature those rare qualities which are essential to successful development. His must be a brain not only endowed with an extraordinary power of analysis, but equally gifted in construction. He must possess moral courage of that heroic type which recognizes in "duty" the sublimest word in our language, and physical courage which is not embarrassed by obstacles seemingly insurmountable, nor appalled, even in the presence of the Great Disaster.

In the performance of a formidable operation, the surgeon stands in need of qualifications greater than those of the successful general, for while each must be quick to appreciate the kaleidoscopic changes in their respective fields, the commander relies on others for the execution of his orders: the *hands* of the surgeon alone must meet the issue before him.

May I emphasize the plural of these essential members, the hands? For of all the world's workers, the surgeon needs two hands, instead of one.

Of the various problems in the development of our race to its fullest usefulness, the failure to appreciate the value of ambidexterity is to me the most inexplicable. Bimanual deftness developed in the formative growing period, not only adds to technical perfection, but beyond all doubt aids in the development of both halves of the brain, so that these two halves equally well nourished and alert, work together as one organ, if I may employ a homely simile, like the two

* Read before the Section on Surgery, General and Abdominal, the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

horses of a well trained and well matched team, thus assuring the complement of mental energy.

Physically, mentally and morally qualified, the embryo surgeon enters the laboratory, for on this foundation must rest the hope of efficiency. Only a thorough knowledge of the normal tissues can render possible the recognition of the many morbid changes which are characterized as disease. By the laboratory is implied not only microscopy and organic chemistry, but also normal and abnormal or morbid anatomy, and animal experimentation. In the mastery of regional anatomy, the employment of frozen sections is essential; and while the perfection of modern photography enables the student to preserve accurate pictures of the sections, nothing serves to fix the relations of the tissues in the mind so well as hand tracings on frosted glass, laid directly on the section.

While in the teaching of clinical surgery, some general idea of the technic may be obtained by observation, from points more or less removed, in the ordinary amphitheater, the practical knowledge which is absolutely essential can be acquired only by immediate personal contact. The hospital intern reaps invaluable benefit from his position as assistant at the elbow, or across the table, from the master; and if he be wise, and the teacher foresighted, he will be made to follow each case throughout the postoperative period, even to the necropsy, where the bitter lesson of error in diagnosis or technic may often be profitably emphasized.

Year by year, in our work at the polyclinic, we have approached what we now call the "group method of personal instruction," allotting the rôle of intern or assistant intern to the student who, after the required preliminary term of service, having demonstrated, in our judgment, a justifiable fitness, is allowed to operate under immediate supervision and guidance.

With the advent of motion picture photography, we began, and are still carrying on, experimentation, in order to satisfy ourselves of the value of this means of demonstrating operative technic to our classes. Operations on the cadaver and the living subject have proved fairly satisfactory, and we incline strongly to the opinion that, with an improved apparatus and wider experience on our own part, as well as on the part of the mechanic, still better and even more satisfactory results may be achieved.

A gratifying feature of this particular work is that it makes it possible to lend these films to medical societies in all parts of the country, thus enabling many practitioners who cannot find time to visit the central clinics to profit by these attractive demonstrations.

ABSTRACT OF DISCUSSION

DR. ARTHUR DEAN BEVAN, Chicago: I am not sure whether these moving pictures will have any great value in the teaching of surgery or not. They have a certain value, but I do not think they in any way replace the actual work on living material itself. In the discussion of the teaching of surgery we must differentiate between two very definite and distinct things, the teaching of surgery in the medical school to men who are being prepared to become general practitioners, and the teaching of surgery to men who are to become surgical specialists in various fields. I shall not go into the details of the teaching of undergraduate surgery. I would like to emphasize the point, however, that it must be very largely done with actual material in the hospital and dispensary and that part of that teaching, even for the man who is to become a general practitioner, must be at least a year in a hospital as an intern. Most of us received our surgical training either

in a medical school alone or in a medical school with the addition of a hospital internship, and there was a time when men who had this hospital year were regarded by those who had not as being fortunate and as having had a great advantage. Today there is a demand for a better type of surgeon than the man who starts in simply at the end of his college work in medicine or even with a hospital internship. I believe that the time has come when the members of the organized American profession should recognize the fact that in order to be a skilled specialist in any surgical field that there is required more than the mere training in the college and the hospital internship. It is our duty to provide some scheme for additional special training of at least two or three years of work in our best clinics, in our best surgical departments, in our best hospitals. We must provide some means by which these young men who come to us anxious to specialize in some surgical field will be able to receive the necessary additional instruction, i. e., two or three years of work in a surgical clinic as an assistant in some well organized clinic. To do this we must do another thing. Many men who go into medicine have very little money. They cannot afford to spend two or three years to prepare themselves for special work in surgery. For these men we must provide salaried surgical fellowships, salaried house surgeonships. They are sometimes the very best men that come to us.

DR. THOMAS A. STODDARD, Pueblo, Colo.: We are told many of the things that a medical student must have to perfect himself in surgery. But not all of the things have been mentioned. He must have teachers. That is very important. Neither the profession of medicine nor any other is blessed with many giant intellects in the line of teaching. And when we take into consideration the fact that many of our teachers are chosen because they have a "political pull," if I may use that expression, and not because of any fitness on their part to convey ideas to the students, then we must realize that it is a most important question that we have before us. The ability to teach does not come by education. It is intuitive. Not many, in the aggregate, are able to convey to others the ideas that they possess. Not only must we be able to convey to students' minds the proper methods of operative procedure, when it comes to surgery, but more important, when to operate, and most important of all, when not to operate. The honor of the profession is forgotten too frequently in our rush for new operative procedures, and we must teach our students that there is something more necessary than the ability to cut tissue, to tie a vessel.

DR. HENRY O. MARCY, Boston: Years ago Marion Sims was in the forefront as one of the great surgical pioneers. John A. Wyeth married his beautiful daughter and you can see where Marion Sim's work has fructified in that which was shown you this very day. Our beloved Dr. Wyeth found his inspiration and his encouragement in the greatest of home influences. A large circle of devoted friends mourn the recent death of this most noble woman, Florence Nightingale Sims.

Star of the North; thou most constant star,
Wherever I wander o'er the land or sea;
Beacon of hope, still shining from afar,
Unto the heaven of rest thou guidest me.

DR. JOHN A. WYETH, New York: I agree fully with Dr. Bevan, that moving picture demonstrations of operations can never take the place of that better method of teaching surgery, the "group method" and the "intern method." That the moving pictures will find a large field, I have no doubt, especially in demonstration of the grosser technic of certain surgical procedures to larger audiences than can be benefited by the group method. We still use the amphitheater method with great satisfaction to our students, but we are employing more and more each year that method which allows not more than four or five of our students to be present around the operating table at any one procedure, and, as a rule, some of these are being trained as assistants. We are now going further than this with what we have termed our "assistant intern method." With the very large material at our command, and a large staff, we are enabled to assign a pupil who takes a course of study for six months to one year, or longer,

to two operators, to each of whom he serves as second assistant half of his term, and as first assistant for the remainder, during which later period, if he has demonstrated ability to operate within perfect limits of safety to the patient, he is allowed the same privileges that are granted to interns on the hospital staff in the last months of their service. This method we find has given us more satisfaction as teachers than any other.

HOSPITAL INTERNSHIP *

J. M. BALDY, M.D.,

PHILADELPHIA

To demand a year or more of time of a young man just leaving the medical schools after having undergone all the sacrifices necessary to his medical education is a serious matter, especially when we consider the age at which the average medical student leaves the medical school. Consequently when the state demands an internship of a period of time in a hospital, it is bound to see that the hospital providing this internship is capable of returning to the intern a competent *quid pro quo* for his time and his sacrifice. This means the standardization of hospitals. Just as medical schools have been standardized and are still in process of being standardized.

It is not the intention to discuss in detail the organization of all departments of a hospital; this has been done many times by others well qualified to do so, and a fair understanding obtains as to these matters. Rather is it the intention in a general way to call attention sharply to those departments which really go to make up a true hospital but which, in the course of a systematic and fairly exhaustive inspection of over 200 hospitals, including state owned hospitals, the Pennsylvania medical authorities have found to be generally ignored, or if in existence at all, were in such a large number of instances found to be so poorly developed as to be worthless for the purpose of proper and efficient scientific work, either as aid to proper and accurate diagnosis or as useful for instruction of an intern.

The question then primarily arises, What is a hospital? From the point of view of the internship it is utterly impossible to consider many institutions at the present time calling themselves hospitals, under this designation. In constructing a true hospital, certain scientific departments should first be provided for; the balance of the hospital should be built around these departments. Principally these departments are the pathologic and clinical laboratories, the Roentgen-ray department, the anesthetic department, the morgue and the necropsy room, and a competent system of record keeping throughout the whole institution. These things are as necessary as is a kitchen, a laundry, a superintendent's office, a boiler house, the medical and surgical wards, or any other essential department, and no institution should be dignified with the name of hospital without each and all of them being competently provided for. It were supererogation to state that medicine cannot be competently practiced or taught today without the aid of these departments, and if this be true, then it follows as a matter of course that the intern cannot be competently educated in an institution which does not provide these facilities, nor can the patient submitted to its care receive the full benefits possible from modern medicine. In attempting to do

so, an institution does not give either the intern or the patient a fair and proper service.

For an institution to have these departments within its walls is not sufficient. Their establishment and equipment carries with it the supposition that they must be administered by a proper personnel. By a proper personnel it is not meant that figureheads be appointed for this work, but that men and women with a full technical knowledge of the work of the various departments, aided by competent assistants, be in control; that these heads be active in their duties, and that they be of such a type as to be able to impart a knowledge of the work as well as perform the work of their several departments. Furthermore, it does not mean that these departments should exist in the hospital and not be used by the medical and surgical staff. It is perfectly patent that in many hospitals the staff, in many instances, is composed of men unfitted for the work assigned to them — unfitted not only as teachers of the intern but also to give that service to the patients submitted to their care which should be given, in accordance with the possibilities of modern medicine.

The efficient handling of the scientific departments means team work on the part of every one throughout the whole institution. Staff men who neglect the opportunities offered by the scientific departments should be promptly retired and should be no longer tolerated in the hospital's service. Team work involves not only the cooperation of the staff men with the laboratories, but also the cooperation of the superintendents and boards of managers. If a sufficiency of budget is not provided, competent work cannot be done in the scientific departments for lack of means in the doing. Consequently boards of managers should include in their budget ample funds for carrying on the work of these departments.

Superintendents should so arrange the details of their superintendency that certain routine work goes daily to the laboratory, whether or not the staff men make the request. For instance, all tissue removed in the operating room should be sent as a routine to the laboratories for investigation; certain ward material should be taken as a routine to the laboratories for examination; the milk and water used in the institution should be investigated systematically and periodically; it should be a matter of routine that all vaginal secretions of children, smears from throat infections, sputum in possible tuberculous cases and various other conditions should be carefully studied. If staff doctors do not care for the information derived from these sources, the patients are nevertheless hospital patients and the hospital should secure the proper data for their own uses and records. The staff man who does his duty and is worthy of appointment will use the laboratories freely in many ways. Without this no hospital is doing its full duty to its patients, and it is entirely neglecting its duty to its interns. The hospital function involves the proper scientific treatment of its patients, and the education of the intern as its principal functions; this to be supplemented by the investigation of new remedies and by research work in the larger institutions.

No institution in these days of workmen's compensation acts can do justice to its clientele, whether workmen or employers, without the full and competent use of the Roentgen-ray apparatus. It is not sufficient that the function of this department be confined to primary diagnosis. Diagnosis is of course one of its principal functions, but there follows immediately there-

* Read before the American Academy of Medicine, Detroit, June 9, 1916.

after the great importance of record keeping. To illustrate: For the hospital to assume, in the case of a fracture or dislocation, that its duty is fulfilled when the picture of the injury is recorded, is erroneous. The condition of this injury at the time of discharge and supposed cure is equally as important, and should in every instance be recorded; and the records, in the shape of the roentgenogram, should be properly filed and preserved for a period of years.

The education of the intern in the matter of correctly reading plates and interpreting them is equally a function of this laboratory. And no such laboratory is complete which is not equipped for and actively engaged in treatment work.

Records in all departments of the institution are a requisite of a properly standardized hospital. These records should cover, as a minimum, alphabetical admission card, a record card according to diseases, history sheets, temperature charts, order sheets, bedside records, operative and anesthetic records, laboratory request and findings sheets with card index in the laboratory, request and findings sheets with card index in the Roentgen-ray department, and follow-up cards, all carrying the house number. The laboratory and Roentgen-ray number should appear on their respective request sheets. In addition to this in the laboratory there should be filed seriatim, with the laboratory number attached, all slides and paraffin blocks. In the Roentgen-ray department all plates, having attached the Roentgen-ray laboratory number, should be filed seriatim. It should be essential in every hospital not only that these records be in existence, but also that they be systematically and fully recorded and then properly filed. Here again without competency in the superintendency the situation becomes hopeless. Records properly kept are a source of education to those making them; are a source of the utmost value to future diagnosis and medicolegal matters; are a source of demonstration of the efficiency of the work done in every department, and of those in control of the work, and are a fund of information for the boards of managers as to the competency of superintendents, interns and of members of the medical and surgical staff. By reference to the laboratory records filed in the office, any board of managers can tell promptly which members of the medical and surgical staff are engaged in the scientific practice of medicine and which are mere "prescription writers," and consequently which should be retained on their staff.

The intern cannot receive a competent service in an institution which is manned by a staff whose members walk through their wards, spend a few minutes with their patients, make few or no scientific investigations, do not discuss their cases, and merely prescribe drugs. Such a service is worse than useless to the intern, and in nine cases out of ten it is equally useless to the patient. The intern is entitled to a fair measure of instruction, and the authorities should demand that staff members explain their cases to the intern in the course of the rounds and that the service be made a real educational one.

It is rare that the intern will receive any competent service in the hospital which opens its doors to all the doctors in the community in which it exists. A standardized hospital should have a staff carefully picked for competency in all departments, and the work in the wards of the hospital should be confined to this staff. The intern should receive a rotary service

throughout all departments, the service being so arranged that he will receive a maximum of time in each. In a year's service in a hospital he should have a minimum of two months in the laboratory alone without any other service whatever complicating; and the better time for this service is in the early part of his internship. During this service he should be at the command of the pathologist alone, and his full time daily should be spent in this department. If it is necessary that this service, because of the number of interns employed in the hospital, be combined with, for instance, outpatient work or surgical dressing work, then the time in the laboratory should be increased to three months or more in order that the intern shall have received the equivalent of a full two months' service, as a minimum. It goes without saying that it is desirable that the laboratory service be complicated with no other service whatever.

The anesthetic department should be under the direction of a member of the staff, this member to have at least one trained full-time individual, preferably a woman, as assistant. During the service of the intern in this department, which should be a distinct and definite service, there should always be a watchful hand kept over him during each administration of anesthesia, throughout his full term. To simply instruct a new intern, fresh from college, for a week in the giving of anesthesia, and then to allow him to administer it for the next two months without supervision, is not competent either for the safety of the patient, for the comfort of the surgeon or for the education of the intern, and should not be tolerated. One or more full-time individuals in this department are a necessity in a modern hospital, and should be insisted on. The work of the anesthetizer should be to administer anesthesia in certain cases and to educate and supervise the intern when giving the anesthesia, throughout his full service. A physician living out of the hospital and practicing medicine is not competent to undertake this work: few hospitals can afford a physician on full time for such work. A reasonable solution is the woman anesthetist, preferably a former trained nurse especially instructed in these matters. In small hospitals a very competent and economical arrangement may obtain by which the laboratory technician and the anesthetizer may be combined in the same individual: the responsibility of seeing that the records throughout the hospital are properly recorded and filed might in some instances be properly placed in the same hands.

The lack of interest in necropsy work in America is usually attributed to difficulty in obtaining material for this purpose, but as a matter of fact is largely due to indifference on the part of the hospital authorities. An effort should be made in every instance, especially in an institution with educational pretensions, to obtain this material; the pathologist might obtain many a consent if he be given an opportunity to do so. It is plainly evident that the less work of this kind performed, the less efficient is the staff, the less reliable are the records, and the less vital is the instruction received by the intern. This indifference is one of the greatest defects of the American hospital, and a supreme effort should be made to rectify it.

2219 Delancey Street.

Chronic Diseases and Advertised Remedies.—It is safe to say that most advertised remedies for chronic disease are actually harmful in such conditions.—*Health Letter*, Life Extension Institute.

THORACIC DISEASES

THE STATUS OF SURGICAL THERAPY *

SAMUEL ROBINSON, M.D.

Fellow of the American College of Surgeons

ROCHESTER, MINN.

In addressing, single handed, a group of practitioners of internal medicine, I realize that I do so at my own risk. I beg your indulgence, however, for my theme is one which vitally concerns us all.

The treatment of diseases of the lung, pleura and mediastinum is in a lamentably chaotic state. Much has been written on the pathology, bacteriology and clinical picture of thoracic diseases. But what are we doing which is curative for the mortals thus afflicted? Are we not grossly incompetent? Is it not probable that more cooperation between the internist and surgeon might result in better treatment of the patient? Is the surgeon operating on lesions which the practitioner might cure? Is the practitioner treating some patients unsuccessfully whom the surgeon might cure? Are we sufficiently familiar each with the other's more recent advances in therapy? Or have we perhaps made no advances?

The thoracic cavity is too treacherous a region to become the scene of pastime surgery. The thorax surrenders all playground titles to the pelvis.

Surgery of the pleura begins only at the point where nonoperative treatments have failed. Duodenal ulcer may respond to both surgical and medical treatment. Both will be employed. Not so of lesions of the thorax. No surgeon will be fool enough to enter the chest until his "angel brother" internist fears to tread further without success.

No region in the body demands the combined efforts of physician and surgeon more than the pleural cavity. The internist occasionally needs the surgeon, and the surgeon never ceases to require the conservative help of the physician. Therefore, kindly regard us thoracic surgeons as your servants rather than as your substitutes, as your consultants rather than your competitors.

If we are to be your servants we must convince you that we are neither presumptuous, bold nor boisterous, but rather cautious, conservative and conscientious.

You will find us useful and safe in the treatment of postpneumonic abscess. We are not unmindful of the high percentage of spontaneous cures by bronchial drainage alone. We urge, however, the privilege of early consultation that we may aid in determining the point at which spontaneous recovery is doubtful and at which the operative risk begins to increase. In such cases, ours is a record of extremely low mortality.

In chronic lung abscesses we are less successful. We drain single abscesses and overlook others. We allow our drainage tubes to produce lung necrosis and fatal hemorrhage. We would welcome the exclusion of this group of cases from the surgical field. We watch with interest your efforts with vaccines, climatic influences and hygiene, but we grieve at your limited accomplishments.

We believe that early compression therapy in chronic abscess cases will do great good. If you are unsuccessful in collapsing the infected lung with artificial pneumothorax, we would much prefer to operate to strip adhesions, thus facilitating the collapse which you will maintain later, than to be requested at a late

hour to perform a drainage operation in a thoroughly septic patient.

Bronchiectasis would seem to be a chronic, incurable disease. The records are hopelessly void of successes without surgery and painfully attended with fatalities by operation. We venture to suggest that the practitioner withhold such patients with even more than his accustomed tenacity; not obstinately, however, but intelligently.

In true bronchiectasis, expectorants, inhalations, cough mixtures, climatic changes and vaccines fail. Artificial pneumothorax has been reported as curative. I entertain grave doubts as to the truth of such reports. Either the reported cases have not been true bronchiectasis or a cure has been claimed merely because of a considerable temporary reduction in the quantity of sputum. In three cases of bronchiectasis confined to one lower lobe I have packed the lower pleural cavity with many yards of gauze. A chronic empyema has been artificially produced with incarceration and compression of the diseased lobe. The quantity of sputum has been slightly reduced; otherwise the disease has continued unaltered. If such radical compression fails to obliterate the cavitations and to produce cicatrization, how much less will the intermittent maintenance of artificial nitrogen pneumothorax accomplish?

Further, do not invite or permit a surgeon to drain your case of bronchiectasis. He will do no good and possibly much harm.

Assuming the correctness of my contention that expectant treatment, vaccine therapy, artificial pneumothorax and drainage operations are valueless in bronchiectasis, we ask what can be accomplished with our present knowledge? In eight or nine cases out of ten, absolutely nothing which is curative. In the tenth case, however, with the process confined to one lower lobe in a young adult patient with good resistance, further consideration is to be entertained. Look on the pathologic condition of the diseased lobe as beyond hope of correction except by actual removal. Let no man attempt a lobe excision in a single operation. Your otherwise comparatively content and even efficient patient, if thus treated, will soon be dead. A single lobe of the lung may be removed safely in a three-stage or four-stage operation, which I have described elsewhere. Within a year a small series of cases thus treated will be reported. The results so far are certainly most promising. Meanwhile we remain hopeful and open to conviction that internists will substitute a nonoperative cure; the surgery of bronchiectasis is at best treacherous and laborious, and, to say the least, filthy.

Emphysema is another stumbling block and again a chronic pathologic condition. Surgery offers but one operation, namely, the removal of several costal cartilages on one or both sides. It accomplishes increased mobility and expansion of an otherwise rigid thorax. In a considerable proportion of cases it relieves distressing symptoms. It does not cure. Heart and kidney complications and suppurative bronchitis are contraindications. Much reduced expansion is the sine qua non of indications. We have too few results on which to base definite opinions as to the value of this procedure, but inasmuch as it is comparatively safe, we urge you to submit cases that we may both know more as to its real significance.

To spare you the mortification of accusing us surgeons of incompetency in the handling of pleural empyema, I will make a series of confessions. No

* Read before the Section on Practice of Medicine at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

infrequently we operate for acute empyema and fail to find pus at the very point at which you have recently located it with a needle. You may justly contend that our methods of exploring the pleural cavity are inadequate. If a finger thrust through an opening made by the removal of a half-inch of rib fails to strike pus, naturally you cannot be entirely satisfied that it is absent. Having urged the internist to prevent the recurrence of chronic empyema by the early detection of pus following pneumonia, we sometimes so badly handle an acute case that it is soon converted into a chronic case. We fail to place the drainage tubes at the bottom of the cavity. We either apply suction at the expense of drainage or we drain without providing for the expansion of the lung.

These and numerous other surgical errors it is well you should know. You have much to do with the post-operative conduct of empyemas and are justified in demanding that such surgical fallacies be corrected so that your patient may more promptly recover. If an operative case of acute empyema is still draining at the end of eight weeks, do not remove the drainage tubes and trust to the Almighty; do not inject various pastes and solutions or administer vaccines until you have called back the surgeon. Point out to him that the Roentgen ray shows lack of lung expansion, introduce a probe and demonstrate the persistence of a considerable cavity. Remove a small piece of tissue at the mouth of the drainage opening, and have a section made and examined for tubercles. Be satisfied only by this procedure as to the possibility of a tuberculous empyema. (Cultures and guinea-pig inoculations from the purulent discharge will rarely prove the presence or absence of tuberculosis.) With such data at your command, the surgeon may admit that the delay in healing is mechanical. He may advise redrainage and freer drainage at a lower point. He should consider the advisability of opening the chest widely and freeing the lung of its adhesions to prevent such fixation as will otherwise result in a chronic empyema.

If despite all such further efforts an empyemic discharge continues four and five months, another surgical consultation is indicated. Probably then a decortication of the lung or some form of osteoplastic operation is indicated to obliterate the cavity. If such is done early when the ultimate necessity is obvious, healing may be complete in less than a year. It is criminal that these patients should be allowed to drift along with chronic sepsis into amyloid disease.

Vaccines may be employed to lessen the profuseness or foulness of drainage, but if designed as a curative measure necessary surgical measures will be detrimentally postponed. Bismuth and petrolatum should be used in very small cavities, and only when the need for further surgery is excluded.

Of course, the surgeon is essentially at fault in that he does not follow the progress of each patient with empyema whom he operates on in the acute stage, but dwell on this subject of empyema to emphasize that surgery properly and persistently applied is the best, not the only means of cure. After the primary operation the patients return to you, essentially, perhaps, because the surgeon neglects to follow their convalescence. Apologetically, therefore, we ask your assistance and urge you to demand further surgical intervention when the obliteration of empyema cavities is obviously not progressing.

In the management of tuberculosis, the practitioner has ceased to look to the surgeon for help. Ten years

ago, when the experimental removal of large portions of the lungs of animals was first successfully executed, we wondered if such might be possible and feasible in tuberculosis in man. Thus far, however, such is not the case. The removal of the diseased lung of man is associated with obstacles not present in the excision of the normal lung of a healthy dog. Respiratory and circulatory disturbances occur in the process of intrathoracic operating which we are struggling to interpret and overcome, and in the diseased person these complications are exaggerated. The tuberculous patients is *a priori* a poor surgical risk and the outlook for successful extirpation of tuberculous lung tissue is particularly discouraging. You read of collapsing the tuberculous lung by an extrathoracic operation, pleuropneumolysis, or the resection of numerous ribs to collapse the chest wall and, therefore, the lungs. Let us suspend such radical and dangerous experiments until we have learned more of the actual value of collapse therapy by artificial pneumothorax. We surgeons may well await your developments with this harmless method before substituting a method that is dangerous. For the present, at least, in those cases in which adhesions prevent the introduction of gases into the pleural cavity, let nature rather than ill-applied surgery take its course.

We do not regard the drainage of tuberculous cavities as a profitable surgical measure. At present writing the only justifiable mechanical procedure in pulmonary tuberculosis is collapsing the lung by the introduction of nitrogen or fluid into the pleural cavity. This treatment is carried on very properly by internists. Suffice it to say that collapse therapy has almost a specific effect in the arrest of pulmonary hemorrhage. In progressive cases with unilateral or even bilateral involvement, symptomatic relief can be expected in 40 per cent. of the cases in which collapse is conscientiously maintained. The disease is arrested in a considerable number of cases of the progressive type; 13 per cent. would not be an exaggerated estimate.

I am involved in the study of a group of cases which we have doubtless misinterpreted. We see swellings on the chest wall, generally on the anterior side. There is some fluctuation, but no redness or tenderness for many weeks. Eventually they rupture or are incised. They then discharge pus and finally a bloody, watery secretion. These swellings are called cold abscesses, tuberculosis of the ribs, and necrosis of the chest wall. Stereoscopic radiograms should be taken in each of these cases. One generally finds the shadow of a localized pleurisy in the region of the swelling. Operation performed as an excision or dissection reveals a minute fistulous opening between two ribs leading to the outer surface of the parietal pleura. The ribs are almost never necrosed. It is often impossible to find either bacilli or tuberculous tissue. Nevertheless, the conduct of the lesion in every way resembles that of a tuberculous process.

Drainage alone in these cases has no curative effect, and excision of the abscessed area alone is likewise inadequate. However—and here the internist's cooperation is imperative—free drainage or excision, plus the maintenance of the hygiene advised for tuberculosis, is the sole source of success. Either one is valueless alone, but in combination the healing of an otherwise chronic discharging focus may be effected. In other words, the treatment of the case as one primarily of tuberculous pleurisy, which time will prove to be the basis of such lesions, in conjunction with free abscess drainage, is the treatment of choice.

There are other swellings on the chest wall adherent to the ribs. These are tumors, either primary in the ribs and cartilages or extending to the tissues of the chest wall from the pleura or mediastinum, rarely from the lungs. Some practitioners are accustomed to regard such tumors as inoperable. I suggest the following routine in these cases: Examine the stereoscopic radiogram. Evidences of underlying pleurisy will suggest the tuberculous abscess just mentioned; to all external appearances these abscesses are identical at the beginning with tumors. Examine the ribs with the Roentgen ray; sometimes destruction of bone will confirm the diagnosis of malignant metastases. Study the mediastinal shadow. If there are lateral bulgings suggesting mediastinal tumor, the growth seen on the chest wall is inoperable. Lymphosarcoma is the probable diagnosis; Roentgen ray and radium are the only treatments. If, on the contrary, the intrathoracic Roentgen-ray findings are negative, an operable tumor confined to the chest wall may be confronting you. Myxochondrosarcoma of the ribs is the probable lesion. Radical removal of the tumor with the involved ribs may be performed with or without opening the underlying normal pleura. Pray do not consent to the dissection of such a growth from the ribs. It will recur. Permit only a total extirpation and see to it that despite assurances to the contrary by the surgeon, Roentgen-ray therapy is employed during convalescence. If such operations are thorough, a lively reaction is to be expected on the chart. Bloody fluid accumulates in the pleural cavity. These developments are to be expected, but are almost universally withstood, and recovery ensues.

Of all swellings on the chest wall, then, there are at least two types that are curable. A careful radiographic study of the case is imperative to determine the surgical possibilities.

In primary malignant disease of the lung itself surgery laments its incompetency. In the first or operable stages there are not sufficient symptoms to force the patient to seek medical advice. If roentgenograms are taken at the beginning of symptoms, a diffuse inoperable process may be detected. If a localized shadow is shown, it is misinterpreted generally as abscess or local pneumonitis. Expectant treatment in the hope of spontaneous drainage is employed. Meanwhile the disease progresses and at a late hour the cachexia of the patient reveals the probable diagnosis.

The removal of an early localized malignant tumor of the lung is surgically possible; but we cannot expect the internist to diagnose such tumors at the early stage. We, therefore, urge you to retaliate by ridiculing our unwillingness to perform exploratory operations within the chest as within the abdomen for diagnosis and for the determination of operability. The technic of such exploration has been perfected and yet it is not done. An exploratory thoracotomy should be a safe performance. Nothing will so promptly force us to more frequent explorations than the demands of our consulting internists.

The distressing predicament of persons with esophageal obstruction from carcinoma is a familiar picture. With the Roentgen ray and esophagoscope you make the diagnosis. Despite the recent admirable studies and investigations, the general surgeon seeks to avoid an operative fatality. In view of our present knowledge and results, we would again assure you of our conservatism. We are devoted essentially to seek-

ing the maintenance of nutrition by early gastrostomy; second, we are learning to sidetrack the esophageal constriction, at the same time maintaining for the patient the consoling function of swallowing food. The esophagus is brought to the surface at some point above the stricture. A new esophagus is manufactured from the greater curvature of the stomach and brought subcutaneously to the upper thoracic region in close approximation to the presenting proximal end. The two are sometimes successfully connected either by suture or tubing. Then, and not until then is intrathoracic extirpation of the exophageal cancer to be considered. Radium and the Roentgen ray are first to be employed, but within a few years more successful extirpation may be recorded. In consulting with a patient thus afflicted the internist is urged to bear in mind the value of early gastrostomy, the recent successes in intrathoracic esophagoplastic surgery and the possible value of intra-esophageal radium and extra-thoracic Roentgen therapy.

My title is the present status of surgery of thoracic disease. He must indeed be an optimist who reads this story with any considerable enthusiasm as to the contributions which surgery at present affords. Should this paper be followed by an address detailing the results of expectant and medicinal treatment, you then would have listened to two sad stories instead of one. In view, therefore, of our individual incompetency, is it not imperative that our energies should be applied cooperatively that the much neglected thoracic region may become the scene of greater accomplishments?

ABSTRACT OF DISCUSSION

DR. WILLY MEYER, New York: Dr. Robinson's paper reflects the view I have held for the last eight years; namely, that if abdominal disease represents a true chapter of borderland troubles, then thoracic disease does this still more. Bronchiectasis is originally and principally an affection of the bronchi. As a matter of necessity the lung parenchyma will gradually become affected, just as the tuberculous process affects the bronchial system later on.

Regarding the etiology of the trouble, there can be no doubt that in quite a number of these cases the disease is due to aspiration, particularly during general anesthesia. If a patient then gets through the aspiration pneumonia, he is still threatened with subsequent bronchiectasis; especially often is the latter complication observed after operations on tonsils or adenoids. For distinct localization, particularly in the early stages, the bronchoscope renders the greatest assistance. Today every hospital in which thoracic affections are treated ought to have on its staff a carefully trained, reliable specialist for bronchoscopy and esophagoscopy, a man who will conduct these examinations without doing harm to patients, and who is able to interpret what he sees. In the early stage a specialist may treat the case conservatively. The only cure for the advanced stage is extirpation of the diseased portion of the lung. We must learn to lessen the dangers of pneumectomy. At present a two-stage operation appears advisable. As to the surgical treatment of tuberculosis, it has been just in the patients, in whom, on account of adhesions between pulmonary and costal pleura, nitrogen-insufflation is impossible, that thoracoplasty in two or three stages has had its greatest triumphs in the hands of Sauerbruch and Wilms abroad. They were able to effect improvement or cure in 60 to 70 per cent. of consumptives who under continued medical and hygienic treatment were hopelessly lost. Personally, I could well do extensive thoracoplasty (in bronchiectatics), under local and regional novocain anesthesia; only now and then a whiff of a general anesthetic became necessary. So far it has been impossible in New York City to get tuberculous patients with cavity formation admitted to hospitals, but I still hope to overcome

the difficulty. If anywhere, then here, internist and surgeon must work together. Regarding the diagnosis of esophageal affections: A patient who experiences difficulty in deglutition will always first consult an internist. Let the latter then remember, that, with the single exception of the presence of an aortic aneurysm, every one of these patients represents a surgical case. The paramount necessity for carcinoma is the early establishment of the diagnosis. Here the Roentgen ray, next to esophagoscopy, promises to become of greatest help to us.

DR. FREDERICK T. LORD, Boston: As an internist I want to endorse the plea made by Dr. Robinson and by Dr. Meyer that the physician and the surgeon work together in these therapeutic cases. Pulmonary abscess usually comes first under the observation of the physician on whom falls the responsibility of recognizing the nature of the process and the indications for surgical intervention. It should be appreciated that acute abscess is far more amenable to surgical treatment than chronic abscess and that by delay in the consideration of surgery a favorable opportunity for relief may be lost. Dr. Meyer referred to the frequency with which pulmonary abscess follows operation on the upper parts of the respiratory tract and this has recently impressed me also. Of 206 cases in our series, the pulmonary abscess followed the removal of tonsils or adenoids, the extraction of teeth, operations on the nasal septum or about the mouth in nineteen—or about one in every ten cases. An interval of from one to four days usually intervenes between the operation and the onset of symptoms. The right lower lobe was involved in about one half the cases. Nine patients died. This is not the only field, however, in which surgery is to be accounted a contributing cause of pulmonary disease.

About one quarter of all deaths following operations under general anesthesia are due to lung complications of which bronchopneumonia and less often lobar pneumonia are the most common and serious. The aspiration of infected blood or tissue is the usual cause of pulmonary abscess following operations on the mouth or nasopharynx, and an acute infection of the respiratory tract existing at the time of the operation is responsible for a considerable proportion of the postoperative pneumonias. It is our duty to see that due consideration is given to the indications for operation in the acute cases lest we become responsible for the progress to a less favorable chronic stage of the disease. Spontaneous recovery is to be expected in only a small number of cases. It was noted in only five of 206 cases of pulmonary abscess in our series. The usual termination of acute abscess is either in death or in permanent damage to the pulmonary tissue. In the milder acute cases, in which the pulmonary infection is small, without marked symptoms of sepsis, with purulent and not foul sputum, without a large amount of necrotic tissue or lung shreds, the usual medical treatment under close observation with the surgeon may be tried for three to four weeks. In the absence of favorable progress at the expiration of this period operation should be considered. When, on the other hand, the abscess is large, accompanied by marked symptoms of sepsis and with foul sputum and abundant lung shreds a resort to immediate operation is imperative. Medical treatment of abscess seems to be a futile and irrational procedure. I cannot agree with Dr. Robinson that collapse therapy is a desirable procedure in chronic lung abscess or in the treatment of pulmonary hemorrhage due to tuberculosis. Sudden death from air embolism, collapse induction of previously uninvolved parts of the lung, and extension of suppuration from the lung to the pleura by rupture of adhesions are dangers which cannot be disregarded. To these dangers is added the almost even chance of compressing the wrong side of the chest in the attempt to treat hemoptysis due to pulmonary tuberculosis by this means.

Bronchiectasis is fortunately of rare occurrence, being noted only about one in one thousand clinical cases and five in one hundred necropsy cases in our series. Isolated saccular bronchiectasis may be found unexpectedly and treated successfully surgically. When the bronchiectasis and complicating bronchopulmonary infection is sufficiently extensive to involve one or more lobes of the lung, incision and drainage of a large cavity

may ameliorate the symptoms. Pneumectomy and even lobectomy are such desperate measures as to exclude them from serious consideration by any one anxious for other than relief or death. Regarding the treatment of acute empyema, immediate and free drainage of the pus is essential for prompt and permanent relief with the following exceptions. If the pus is sterile or contains tubercle bacilli alone, removal by thoracentesis is the procedure of choice and should be repeated at sufficiently frequent intervals to prevent the fixation of the lung in an abnormal position. Empyema complicating advanced pulmonary tuberculosis is also best treated by puncture. In patients who are gravely ill open incision and free drainage is often followed by a rapidly fatal termination and removal by thoracentesis is to be preferred as a preliminary to operation or as a life saving measure.

DR. SAMUEL JAMES MELTZER, New York: I would like to suggest the attempt to treat some cases of bronchiectasis by the following method. It is easy to introduce a tube into a bronchus, especially in that of the right side. Would it not be possible and advisable, when, for instance, the bronchiectasis is in the right lung, to introduce a tube as far as it will go, and then, after retracting it for about five millimeters, to inject a weak solution of nitrate of silver? The tube should have its opening at the end; it should not be a catheter. It may be advisable, before using the solution of nitrate of silver, to remove some of the pus from the cavity by blowing it out. The entire procedure, of course, would have to be repeated many times. I agree with Dr. Robinson that an exploratory thoracotomy, which may be followed by an operation, is indicated in many cases. I wish Dr. Robinson would tell us what he thinks of the practicability of my suggestion.

DR. SAMUEL ROBINSON, Rochester, Minn.: In reply to Dr. Meltzer's suggestion as to the advisability of irrigating the bronchial tree with solutions such as silver nitrate: Of course we look on Dr. Meltzer as the authority in intratracheal insufflation, and while I have had no experience in irrigation therapy through the intratracheal tube, Dr. Meltzer would doubtless be interested to know the recent experience which I have had during the intratracheal anesthesia of a patient with bronchiectasis. Inserting the intratracheal tube in the usual manner, suction rather than insufflation was applied to the tube, removing purulent secretion throughout the operation. Meanwhile, the anesthesia was carried on by the drop method, the intratracheal tube coming out of the corner of the mouth under the mask. Fluid has been introduced into the bronchial tree and removed by suction, but as to the therapeutic value of this procedure in bronchiectasis, I do not know.

THE USE OF CHLOROFORM IN THE FIRST STAGES OF LABOR*

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In the world at large, in hospitals and private practice, both in town and in the country, chloroform is still the anesthetic most largely used in obstetrics. It has survived many eras of criticism. In Simpson's¹ early exploitation of it some of the objections encountered were the alleged production of epilepsy, insanity and septicemia and the pious belief that it was sacrilegious to remove the sorrows of childbirth.

Later, when deaths were found to be more frequent from chloroform than from ether in surgical anesthesia, its use in obstetrics was criticized. But chloroform accidents in midwifery were almost unknown. On its own merits it prevailed again on the evidence of experience, and theories were advanced to explain an apparent special immunity in labor.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Simpson, J. Y.: Account of a New Anesthetic, 1847.

At present we are in a period of active criticism of its use because of late chloroform poisoning with degeneration of the liver and other organs.

At an obstetric meeting a few years ago, a pathologist in discussion² said that chloroform was shown to have toxic effects and that in its use obstetricians were the worst offenders.

An obstetrician of wide experience in reply said that he had never seen harmful results³ from chloroform in labor and did not believe its use was dangerous.

This expression of divergent opinions by the pathologist and the clinical observer represents fairly well the present status of this narcosis in midwifery. Very recently a tendency is shown on the part of the obstetricians to yield their position based on experience to the findings of the experimentalists. We find some hospitals have given up the use of chloroform entirely because of its late toxic effects.⁴ Current medical literature shows little or nothing written in favor of chloroform in obstetrics, yet its use continues. It is time to rehabilitate or abandon it. We cannot go on with the surreptitious use of this narcosis as if it were a secret vice.

To ask the abandonment of so widely used a drug we should expect pathologic evidence proportionate to its exhibition. Chloroform has been used in labor millions of times. We could reasonably expect some worker to gather statistics showing results of some hundred necropsies in women dying from its use in normal childbirth.

H. Roulland⁵ in 1910 gathered a series of reported cases of late chloroform poisoning. Among them was one by Fraenkel⁶ in 1892 of a woman dying twenty days after labor with fatty degeneration of kidneys and heart. The liver was not mentioned in Fraenkel's article. There was thrombosis of the large pelvic veins and death occurred suddenly from pulmonary embolism.

In the other cases assembled by Roulland from the time of Casper⁷ and Langenbeck,⁸ from 1850 to 1910, the date of his article, the deaths (less than twenty) were found to follow surgical anesthesia in operations for various diseases, including suppurations of long standing.

Von Braeckel⁹ reports two cases in surgical anesthesia and ascribes the liver damage to deficient glycogen.

Moran¹⁰ reported a delayed chloroform death after labor, but the patient had previously had nephritis and had been on a restricted diet.

A careful search of medical literature does not seem to reveal the elements for a series of cases of late chloroform poisoning in obstetrics.

Meanwhile we can find the testimony of countless obstetricians whose cases combined aggregate hundreds of thousands, to the effect that they have never seen injurious results following chloroform in labor. These men have not been unmindful, but have been warned to be watchful for this sequel; for it has been frequently called to the attention of the profession at large for over sixty years.

After the report of the Hyderabad Chloroform Commission¹¹ a controversy raged, in which apparently everything that could be said about chloroform was published. Lawrie¹² showed a series of 45,000 chloroform anesthetics without a death. Patrick Hehir¹³ reported giving chloroform continuously for over twelve hours in three cases of eclampsia, with recovery. Although every unfavorable narcosis event in contemporary medicine was also brought to light, it is noteworthy that no untoward occurrence was mentioned concerning chloroform in labor.

More recently Eisenberg¹⁴ reported no late injurious effects even in prolonged obstetric chloroform anesthetics and advocated its extensive employment in labor.¹⁵

Leading obstetricians and practitioners of wide experience, such as Georghi,¹⁶ Engel,¹⁷ Veit,¹⁸ Tissier,¹⁹ Müller,²⁰ Flammer²¹ and Buxton,²² all bear favorable testimony based on extensive clinical material.

With the overwhelming clinical evidence of safety on the one hand and the scant pathologic findings on the other, it is apparent that some other factor must have caused the obstetricians to distrust their time-honored anesthetic. This has arisen from animal experimentation.

The earlier work of Nothnagel,²³ Thiem and Fischer²⁴ and others does not seem to have had much influence on clinicians. We begin to see a certain reflection in obstetric journals from the observations of Doyen and Billet²⁵ and particularly of John Howland and A. N. Richards,²⁶ who made numerous experiments in chloroforming animals, revealing subsequent changes in the liver and kidneys. Whipple and Sperry²⁷ did similar work. Fischler²⁸ produced the lesions, but ascribed only an indirect influence to chloroform. Clark²⁹ showed that pregnant animals have no special immunity to chloroform poisoning.

Donzelli,³⁰ Delbert, Herrenschildt and Beauvy,³¹ C. Oliva,³² G. S. Graham³³ and others have made special study of changes in the suprarenals.

Evarts Graham,³⁴ in a particularly convincing work has produced necrosis in guinea-pigs and dogs, and has shown that the damage takes place through the liberation of hydrochloric acid. He has found that when alkalis are simultaneously administered the destructive effects of chloroform are inhibited.

Most of the experimentalists who have shown changes in the organs have called attention to the extremely rapid and complete regeneration which takes place, the tissues appearing normal in a few days.

2. Ewing: Tr. Wash. Obst. Soc., Am. Jour. Obst., 1910, lxi, 516.
3. Bovee: Tr. Wash. Obst. Soc., Am. Jour. Obst., 1910, lxi, 516.
4. Rongy: Am. Jour. Obst., 1914, lxx, 636.
5. Roulland, H.: Gynécologie, 1910, xiv, 26.
6. Fraenkel: Virchows Arch. f. path. Anat., 1892, cxxvii, 381.
7. Casper: Casper's Wehnschr., 1850.
8. Langenbeck: Quoting from Berend's Chloroform Casuistik, 1850.
9. Von Braeckel: Samml. klin. Vortr., 1913, No. 674.
10. Moran: Tr. Wash. Obst. Soc., Am. Jour. Obst., 1910, lxi, 512.

11. Lancet, London, 1890, i, 149.
12. Lawrie: Lancet, London, 1890, i, 174.
13. Hehir, Patrick: Med. Chronicle, June, 1891, xiv, 179.
14. Eisenberg: Wien. klin. Wehnschr., 1910, xxx, 209.
15. Eisenberg: Zentralbl. f. Gynäk., 1910, xxxiv, 689.
16. Georghi: Zentralbl. f. Gynäk., 1910, xxxiv, 888.
17. Engel: Zentralbl. f. Gynäk., 1909, xxxiii, 496.
18. Veit: Therap. Monatsh., December, 1908.
19. Tissier: Zentralbl. f. Gynäk., 1909, xxxi, 54.
20. Müller: Zentralbl. f. Gynäk., 1906, xxx, 502.
21. Flammer: La narcose theorie et pratique, Paris, 1913, p. 221.
22. Buxton: Anesthetics, Their Use and Administration, Ed. 5, Philadelphia, 1914.
23. Nothnagel: Berl. klin. Wehnschr., 1866, iii, p. 111, p. 31, p. 3.
24. Thiem and Fischer: Deutsch. med. Ztg. 1889, p. 1111.
25. Doyen and Billet: Jour. de phys. et de path. gén., 1905, vii, 6.
26. Howland, John, and Richards, A. N.: Jour. Exper. Med., 1909, xi, 344.
27. Whipple and Sperry: Bull. Johns Hopkins Hosp., 1909, xx, 2.
28. Fischler: Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1913, xxvi, 5.
29. Clark: Glasgow Med. Jour., 1914, lxxxi, 33.
30. Donzelli: Arch. di farmacologia sper., 1911, xi, 51.
31. Delbert, Herrenschildt and Beauvy: Rev. de chir., 1912, xi, 544.
32. Oliva, C.: Tr. Int. Cong. Med., 1913, Subsection 7, B, Part p. 167.
33. Graham, G. S.: Jour. Med. Research, 1916, xxxiv, 241.
34. Graham, Evarts: Jour. Exper. Med., 1915, xxii, 48.

Lengeman³⁵ found that by using a special apparatus which permitted the administration of the minimum of diluted chloroform vapor necessary to keep dogs in anesthesia he did not usually succeed in producing the changes in the liver which had been found by others. How far is this experimental work applicable to practical obstetrics?

It occurred to me that full surgical anesthesia, more or less prolonged and often repeated on successive days, as done by the experimentalists who report these findings, does not represent the narcosis commonly used in obstetrics.

I determined to give chloroform to animals in a manner imitating its administration in obstetrics and watch the results. Dogs and guinea-pigs were anesthetized in the following manner:

The animal was strapped to a board and given chloroform³⁶ from a mask for thirty seconds (the period representing a labor pain). This was repeated every four minutes for two hours, every three minutes for one hour, every two minutes for one hour and then the animal was continuously anesthetized for a half hour. Some of the animals received the anesthetic for one hour less than that and the complete final anesthesia was omitted.

The animals were killed at intervals of two, four and six days and the livers examined. Contrary to my expectation, the same changes in the liver were found as described by Howland, Graham and others, as well as the same tendency to rapid regeneration.

The study of these experiments, however, seemed to furnish the key to the mystery. It explained how women may be given chloroform in labor and never show symptoms or come to necropsy while dogs and guinea-pigs certainly suffer pathologic changes, at least temporarily.

Although planned theoretically to imitate the narcosis of childbirth, my anesthetization of these animals did not in fact resemble it at all. The animals were strapped to boards, where they strained for a considerable period until finally they became drowsy from exhaustion or somnolent from the effect of the anesthetic. One 15-pound dog was given at times 25 drops at a dose on a closely fitting mask to obtain the semblance of quietude. There was no euphoria in these animals.

A woman in labor has suffered pains and fears their return. She believes chloroform will give relief. She receives an adequate inhalation during a pain. This is repeated with other pains. She anticipates relief from chloroform. All the forces of suggestion are at work. The wonderful relief from small doses is due in a small part to its analgesic effect, in much larger part to a sort of hypnotism.

CASE 1.—Mrs. M., tripara, weight 155 pounds, was exceedingly nervous and hyperesthetic. There were slight pains beginning 3 a. m., which became regular and hard at 5 a. m. Six three fingers. Suffering intensely. Began chloroform 5:07, 7 drops on mask applied for thirty seconds. Pains every two minutes. Seven drops of chloroform with each pain. Patient in perfect analgesia. Pituitary extract ½ ampule given. Eleven more pains up to 5:48. Pituitary extract ½ ampule given. Five more pains up to 6:05, when child was delivered. Fifteen drops instead of 7 at each pain for each of last three expulsive pains. Weight of child, 4 pounds 4 ounces. Total chloroform 185 drops.

Lengeman: Beitr. z. klin. Chir., 1900, xxvii, 805.
These experiments were performed in the laboratory of Dr. Heinrich Oppenheimer and in the Pathological Laboratory of the College of Physicians and Surgeons of New York. The sections were prepared and studied by Dr. Mark Gottlieb.

Guinea-pig No. 1 in my series weighing ½ pound received 112 drops of chloroform on a more closely fitting mask in its theoretical analgesia.

CASE 2.—Mrs. H., primipara, aged 32, weight 138 pounds. Labor began 6 a. m. Examined 9 a. m., external os 1 finger, cervix 2 cm. long. Head at brim, left occipito-anterior presentation, pains every four minutes, lasting fifteen seconds. Weak contractions, no suffering. Membranes ruptured spontaneously at 11:10. Pains irregular, short, intensely painful. Practically no increase in dilatation. Patient neurotic, became hysterical. Chloroform with each pain beginning 11:50. Pituitary extract ½ ampule. Contractions improved, patient in agreeable analgesia. Pituitary extract ½ ampule repeated every twenty-five minutes. Chloroform continued 5 to 10 drops at each pain. Contractions lasted from thirty to forty seconds, but chloroform mask held to face only during height of pain, usually twenty seconds. At 2:05 dilatation complete, pains every two minutes. Strong contractions, well sustained. Pains more powerful, intermission one minute. At 2:45 head on perineum. Full anesthesia. Delivered at 2:57. Placenta 3:05. Total pituitary extract 4 ampules. Total chloroform 500 drops.

Dog No. 2 in my experiment, weight 15¾ pounds, received 635 drops of chloroform. Struggling and howling except during last forty minutes of three hour narcosis.

I am convinced that there is no parallel in the giving of small doses of chloroform during labor pains to a woman and the experimental anesthetics of animals on which the condemnation of chloroform is based.

The legitimacy of applying to the human subject the results produced in laboratory animals has often been contested. There is a great variation in susceptibility to given poisons and toxins among different kinds of animals. It may be assumed that human beings may differ from other animals in susceptibility to poisoning by this drug.

Certainly the large doses of chloroform in proportion to the weight given to a fear-exhausted animal are not comparable with the whiffs of chloroform given to a healthy woman in a cheerful and receptive frame of mind.

I have never seen any symptoms due to this narcosis, the so-called chloroform *à la reine*, and am inclined to take a position based on the evidence of the numerous competent clinical observers who have reported favorably on it from their actual experience.

If we are reluctant to ignore the effects shown in animal experiments, we can accept the findings of the recent work of Evarts Graham.³⁴ He has shown that alkalies administered along with chloroform inhibit its toxic effects on animals. If we are giving a protracted anesthesia, we can give alkalies.

The experiments of Marshall and Rowntree³⁷ and others showing decreased fibrinogen in the blood of animals from chloroform anesthesia are open to the same objection as the other experimental findings as having no proved application to human beings.

There have been objections to the use of chloroform in the second stage of labor on the ground that it weakens contractions and delays progress. For the same reasons it is practically forbidden during the first stage of labor by most textbook writers.

There are many cases, however, in which chloroform greatly shortens labor by relieving suffering and encouraging voluntary expulsive efforts in the second stage. Every accoucheur has seen patients who were making no progress, suddenly delivered with the

37. Marshall and Rowntree: Jour. Exper. Med., 1915, xxii, 333.

administration of chloroform, while preparations were under way for forceps extraction.

A number of authorities, among them Galabin³⁸ and Eisenberg¹⁴ approve of chloroform for certain cases in the first stage. Newell³⁹ recommended anesthesia in the first stage for various indications but used ether.

In 1855 Edward William Murphy⁴⁰ wrote of chloroform as follows:

There is one condition of the cervix uteri in which I have given it with great advantage in the first stage of labor. The neck of the womb is sometimes caught and greatly compressed between the head and pelvis. The pain is excruciating and the action of the uterus is often deranged or suspended, the woman cannot endure her agony and her strong apprehensions interrupt the pains. Let her have chloroform and she becomes tranquil, the action of the uterus returns regularly and the dilation is soon completed. Under such circumstances I have given chloroform when the mouth of the womb was not opened more than a sixpence and was gratified to find the dilatation advance more rapidly.

In my experience practically all objections to chloroform on the ground of delaying contractions have disappeared since I have been using pituitary extract.

Bandler⁴¹ reports that more pituitary extract is necessary when chloroform is used. There need be no objection on that ground. A small percentage of each agent may be neutralized by the other. At all events using $\frac{1}{2}$ ampule of pituitary extract every twenty-five minutes during the administration of chloroform in small doses at each pain I find that labor progresses rapidly.

In fact the labor is so short that the total period during which chloroform need be given must relieve the anxiety of those who fear its use.

Many patients, particularly multiparas, do not need an anesthetic at any time during labor. Some require it only at the final expulsion. But there must be no arbitrary rule as to when it should be begun. The time to administer chloroform is not at two hours or at fifteen minutes before the expected end of labor. It is when the patient begins to be unequal to the suffering. Hold the morale of the patient. Keep the pain within the limits of her fortitude. Have her inspired with her efforts and assured of your assistance if the suffering is too great. She will not be the worse for such consciousness of pain as she has borne easily and willingly. She will not regret amnesia, but will remember with satisfaction her share in the victory. A very little chloroform in the early periods of labor will be sufficient to control the patient and secure her tranquil cooperation. It is a fortunate circumstance that the neurotic women, who are most likely to need early analgesia, are also most amenable to suggestion and on small doses are brought into the semihypnotic state.⁴²

It is not within the scope of this paper to make a comparison between chloroform and various other agents. Ether, nitrous oxid alone, nitrous oxid and oxygen, and scopolamin and morphin all have adherents. Some of these narcotics have just begun to arouse interest. Others have attained a great popularity which is already subsiding.

My purpose has been to seek reassurance for the many who find chloroform satisfactory. I wish to

emphasize the fact that chloroform in normal childbirth produces a distinct anesthesia in which its effects are strengthened and supplemented by the influence of suggestion.

The use of pituitary extract with chloroform by greatly shortening the labor further restricts the dosage of the anesthetic and modifies the rôle played heretofore by chloroform in labor cases.

The question of remote poisoning is not new, but has been before the profession for more than half a century. Late developments in labor cases in which chloroform was used have necessarily been watched by many competent obstetricians, yet there is practically no incontestable evidence of late poisoning in normal women in labor.

There is no parallel between animal experimentation on which the late toxic effect of chloroform is alleged and its use in normal obstetrics.

ABSTRACT OF DISCUSSION

DR. C. H. DAVIS, Chicago: In view of Graham's results in producing hemorrhagic disease in new-born animals together with the changes in the maternal liver, which Dr. Hill has also found present, we must still use chloroform with a degree of reserve, and especially so, since these changes do not follow the similar use of nitrous oxid or ether. Until seven years ago chloroform was used in our outpatient maternity service, but after a patient and three of us were severely poisoned from its decomposition, due to its being used in a close room in the presence of a gas jet, it was discarded in favor of ether. Graham and Woodyatt have shown experimentally that chloroform may cause acute dilatation of the stomach. Audebert collected ten puerperal cases from the French literature, and since chloroform had been used in eight, he considers it an exciting factor in causing this acute dilatation. While I will concede that chloroform may still be used to advantage in some cases, I cannot believe that with our present knowledge we are ever justified in using it as a first stage procedure or over a long period of time. With a long drawn out or painful first stage we may better use morphin or heroin, either alone or with chloral hydrate or scopolamin. For the second stage of labor nitrous oxid and oxygen has proved more satisfactory than chloroform. If nitrous oxid is not available certainly ether will answer the requirements without the danger element of chloroform. Dr. Hill's cases suggest that chloroform tends to increase the use of pituitary extract. Early in our experiments with pituitary extract four babies died shortly after birth on whom necropsy revealed no cause of death. Cases of babies dying from the excessive use of pituitary extract have been reported from German clinics. It must be used with great care and in very small doses. If chloroform has a tendency to increase the use of pituitary extract we have an even greater argument against its use than the animal experiments. Ether, I would always prefer to chloroform, but when available, nitrous oxid and oxygen because of greater efficiency and safety is the analgesic of choice.

DR. JOSEPH B. DE LEE, Chicago: I did not discontinue the use of chloroform because of any animal experimentation. I discontinued it, first, because of the frequency of postpartum hemorrhage after its use; and, second, because of the frequency of pneumonia after chloroform administered in close rooms with an open flame. Many times I have been made sick by the chloroform, and the patient, exposed to the same fumes, certainly suffered as much as I did. I have seen several cases of late chloroform poisoning, and death from acute yellow atrophy of the liver following the administration of chloroform. We know that chloroform has an injurious effect on the liver. For this and its other ill effects I would raise my voice very strongly against the use of chloroform in labor.

DR. JOHN OSBORN POLAK, Brooklyn: I am opposed to the use of chloroform in labor. My reasons are the same as

38. Galabin and Blacker: *The Practice of Midwifery*, New York, The Macmillan Company, 1910, p. 315.

39. Newell: *Surg., Gynec. and Obst.*, 1906, iii, 126.

40. Murphy, Walton and Maberly: *Chloroform in Childbirth*, London, 1855.

41. Bandler: *Am. Jour. Obst.*, 1916, lxxiii, 77.

42. Hallauer: *Deutsch. med. Wchnschr.*, 1910, xxxvi, 263.

case of Dr. De Lee. Not only did death occur from a condition similar to acute yellow atrophy, but in these two cases there was no previous evidence of any kidney lesion. In these cases chloroform was administered by an intern, in the case the quantity being 1 ounce and 1 dram; in the other, 1 ounce and 3 drams. Both patients died on the fourth day. Necropsy showed all the liver changes found in acute yellow atrophy. Another point to be mentioned is that chloroform, like ether, like gas, like scopolamin, depends largely for its results on the one who administers it. It is not chloroform that does so much harm in minimum dosage, but the anesthetizer and repeated anesthetization. This is true also of the use of ether, of scopolamin and of morphin. The question at issue is the manner in which these drugs are to be used, and I am opposed decidedly to the dictum going out from this section that chloroform can be used with impunity in the first stage of labor, even after that first stage may be fairly well advanced. I am opposed to any routine use of it because there are sufficient data as to the serious effect of the drug to make us at least cautious in its use. With morphin and scopolamin to relieve the first stage and ether and oxygen for the second stage there is no reason why a woman may not have a painless labor without the risk of liver necrosis.

DR. E. GUSTAV ZINKE, Cincinnati: I have practiced midwifery nearly forty-two years. Chloroform was the anesthetic in use then and it held undisputed sway for many years. As a young man I gave anesthetics, chloroform and ether, hundreds of times for practitioners and surgeons of repute. Later I have had it given in my own cases as many times and with no danger. For a period of fifteen years I had seen no ill effects from chloroform under any circumstances. Then, suddenly, numerous deaths from chloroform occurred, not only in Cincinnati hospitals, but the country over. Whether death was really due to chloroform was, as far as I know, never definitely determined. On one occasion I was present at a surgical operation when death took place. The difference between ether and chloroform depends much on how they are used. There is good in both. Dr. De Lee has given a good reason why he does not want to continue chloroform; but I say, when we have electric lights, his objection does not obtain. The first stage of labor, under ordinary circumstances, does not require chloroform for the relief of pain. Much depends on the individual patient. As a rule, chloral hydrate or, if necessary, a hypodermic of one-fourth grain of morphin, answers the purpose.

DR. J. H. CARSTENS, Detroit: I gave chloroform for many years. I think I averaged 100 cases a year. It is unique that I did not have any trouble with chloroform. I never had a woman die during labor, nor do I remember a single case of acute yellow atrophy of the liver in these women, but I have seen a number of cases in consultation. I think it depends, as Dr. Polak says, on how chloroform is given. The men who do not advocate the use of chloroform are men in the hospitals who have the facilities, the assistants, by which any anesthetic can be given properly. I hold that more of your patients will die from postoperative pneumonia who have been given ether, than will die from yellow atrophy of the liver following the use of chloroform in labor. That once in a while a patient will die after chloroform, I will admit, but they also die after having been given ether. I have known a man to die after "twilight sleep"! I have seen them die on the table after having been given gas and oxygen. But not many cases in labor. If you are out in the country, five miles from nowhere, with nobody in the house but the husband, and he faints and you have to take him by the collar and put him out in the snow and then come back to the house and give that woman an anesthetic all alone, I put on forceps—I would like to see anybody do it and give ether. I uphold everything that is said about ether when you have all the facilities, the anesthetist, and the assistants in the hospitals, but leave chloroform to the general practitioner who has to do the whole work. Do not rob him of that boon. He is very careful and nobody will die from its use in labor.

DR. W. P. MANTON, Detroit: Chloroform has been the chief anesthetic in labor since 1847. I have used it in thou-

sands of cases and up to the present time have not seen a single instance of either early or late chloroform poisoning, and many of these patients I have followed for twenty-five years and longer. I think we are too much inclined to yield our clinical experience to the experience and dicta of the pathologist and laboratory man. I quite agree with Dr. Hill that the proper administration of chloroform is quite valuable during the first stage of labor. I do not see what Dr. Zinke's experience with a death in a surgical case following the use of chloroform has to do with the use of chloroform in labor. We may all have been unfortunate enough to have lost surgical cases under chloroform, but few of us have lost confinement cases from the same anesthetic. I do not believe, either, that, if properly administered, chloroform tends to produce postpartum hemorrhage. With the uterus properly controlled after delivery of the child and placenta, I have yet to see postpartum hemorrhage, except in those cases where there is laceration of the cervical artery, and that can be remedied by a stitch. In my own practice I prefer in the first stage of labor to give the patient a hypodermic of one ampule of pantopon. In an hour, if there is no effect, she gets another dose and with that perhaps a little chloroform. In 75 per cent., if not more, of all cases, the pantopon and chloroform combination will give the patient just as good a "twilight sleep" as morphin and scopolamin, and without danger. I have used this method for a number of years without evil effect on either mother or child. I have seen two or three children slightly asphyxiated but no child has died from asphyxiation, which may have been due to pressure in a protracted labor. Now, if chloroform is such a disastrous anesthetic in childbirth, why do we, as clinicians, have so little trouble?

DR. E. GUSTAV ZINKE, Cincinnati: I have been misunderstood by Dr. Manton and lest others misunderstand me, I wish to say that I did not abandon the use of chloroform after having used it for fifteen years; but some of my friends did. I told them that I would not abandon a friend who had served me thousands of times faithfully, simply because that friend disappointed me once.

DR. H. O. MARCY, Boston: One factor in this question which has not been referred to is the effect of chloroform in overdoses on the heart. I have been told by my medical friends in Boston that if a legal case should occur claiming damage in which chloroform has been the anesthetic, its having been used with extreme care would not absolve the one employing it. In my own practice I have never seen a single case of injury from the use of chloroform. With proper use I think chloroform is usually safe. It is given as a routine anesthetic with me. It is a much more powerful drug than ether and requires careful administration.

DR. C. W. SIMPSON, Waxahachie, Tex.: I am in country practice and often deliver women without any assistance. I have to use chloroform. All other anesthetics are out of the question when one man does the operating and gives the anesthetic at the same time. I would ask those gentlemen who are writing books on obstetrics, to please, for our country practitioners' sake, put in their books a saving clause for us in using chloroform, so that when we do have an accident, and little damage suit lawyers get after us, we have some way of getting justice.

DR. CHESTER R. OGDEN, Clarksburg, W. Va.: What are we who go out from this meeting into the smaller towns and country places to do with reference to chloroform in obstetrics? Are we going to be frightened because we have heard of supposed deaths from chloroform poisoning in labor and discard it? What if there have been deaths from chloroform? Do we not have deaths from other forms of anesthesia? The good obtained from the use of chloroform by physicians practicing in the country far outweighs the possible ill effects from its use. Besides, the comparison of its use on a dog which resists, and on a woman in labor is not to be considered. I have seen no serious results that could be attributed to the use of chloroform in obstetrics. When the country physician, or those in larger places for that matter, give chloroform, they give it cautiously, in the presence of a genuine necessity and with the patient in full composure.

It seems to me that to discard chloroform in obstetrics would be working a great hardship on the physician who is attending his woman in confinement away from trained help when he meets with a difficult labor, besides taking from the suffering woman a means of tiding her over a very stormy experience. Too many of our hospital interns and so-called professional anesthetists who give ether almost exclusively, are not fit to give chloroform for the reason that they become interested in the operation and forget they are giving chloroform and pour it on as they would ether. I notice that when I am called into the country to perform an operation and depend, as I am sometimes compelled to do, on the family physician to administer ether, he has difficulty in keeping my patient asleep for the reason that his careful habits of giving chloroform slowly in labor, which usually constitute about all of his anesthesia experience, does not fit him for giving ether as an anesthetic.

Let us drop the argument against the use of chloroform in obstetrics by agreeing that its use is permissible so long as we use it with care and good judgment.

DR. GORDON GROTE COPELAND, Toronto, Ont.: To me the important element in the discussion is the judicious use of chloroform in favorable cases only. I unfortunately had the experience, in working under Dr. Cragin in the Sloane Hospital in New York, of having a patient die of delayed chloroform poisoning following the careful administration of chloroform several times for a very short period. I saw the liver and kidneys at necropsy and there is no doubt in my mind but that the chloroform caused the damage. I am in accord with Dr. DeLee that, if given in too large amount, chloroform is the cause of postpartum hemorrhage. It should not be given in a case of eclampsia at all. Cragin and Hull and others have shown conclusively that it produces in the liver, kidneys and other solid organs similar changes to those seen in eclampsia and acute yellow atrophy of the liver. We ought, therefore, to discriminate carefully in the use of chloroform. Personally I am in favor of, and use, nitrous oxid and oxygen whenever possible, but these are not yet generally available for the country practitioner or in the average poor case. The practical thing to do in chloroform administration is to make a careful test of the urine. If albumin or sugar are present chloroform should not be used.

DR. J. L. HILL, New York: Dr. Marcy called attention to the danger of sudden heart failure. Almost since Simpson's time a controversy has existed as to whether respiration or heart gave way first in chloroform deaths. The experimental work of Cathcart, Clarke, and others brings to light the state of ventricular fibrillation in these cases of shock during incomplete anesthesia. But these deaths from shock occur in incomplete anesthesia in surgery. This incomplete surgical anesthesia in which the patient only partly narcotized is subjected to severe shock differs from the analgesia with chloroform in labor. Awaiting a surgical operation the patient is terrified and when only partly anesthetized is particularly susceptible to shock. In obstetric analgesia the patient's mind is at ease and suggestion plays an important part, so there is a lessened necessity for the anesthetic.

Dr. De Lee referred to the dangers of chloroform, but reported no cases occurring in labor. It has occurred to me that such observations are too generally taken from surgical experience and applied to obstetric usage of chloroform just as they are taken from animal experimentation and applied to the human. Reference was made by Dr. Copeland of Toronto to a case at Sloane Hospital in which necropsy showed liver changes. Death had followed a few slight anesthetizations. Animal experimentation has shown that repeated anesthetizations particularly predispose to this condition. But although they occurred in an obstetric hospital these were complete surgical anesthetics for minor procedures. There is a difference between repeated surgical anesthetics and the obstetric administration of a few drops of chloroform during labor just at the moment of the pain in a woman in health for no operations but simply for the analgesic effect. I do not wish to convey the idea that pituitary extract is always necessary when chloroform is used. I brought up the matter of its use with chloroform particularly

because some of the advocates of pituitary extract have not favored the use of the two drugs together while I have found them to combine most favorably. I do not recommend the very general use of chloroform in the first stage of labor, but believe there are certain indications for it. I feel, moreover, that the obstetric administration of chloroform during labor tends to produce that quiet analgesic semihypnotic state which we are so anxious to obtain, and that it is better than ether for this purpose.

THE INFLUENCE OF DIET ON THE DEVELOPMENT AND HEALTH OF THE TEETH*

JAY I. DURAND, M.D.

SEATTLE, WASH.

The steadily increasing tendency of the teeth of civilized races to decay is one of the remarkable facts of human pathology.

An examination of 10,500 schoolchildren of England and Scotland showed caries in 86 per cent.¹; of 19,721 in northern Germany, 95 per cent.² Schoolchildren to the number of 3,236, from 7 to 14 years of age, examined by Dr. McCullough³ of Philadelphia, showed decay or loss of 5,575 first molars and 2,188 of the other permanent teeth.

There is no doubt that our grandfathers had better teeth than we have, but the great extent of this steadily increasing process is best appreciated by investigations of our more distant ancestors.

Mummery⁴ in an examination of ancient British and Anglo Saxon skulls found decay in only 15 per cent. of Anglo Saxon skulls, 2.9 per cent. of British skulls of the Stone Age, 21.8 per cent. of British skulls from the Bronze age, and 32 per cent. of British skulls from the Romano-British Age. Among uncivilized races 1.4 per cent. of Esquimaux showed decay, 3 per cent. of Maoris, 3.9 per cent. of Indians of northwestern American coast, 9.5 per cent. of North American Indians, 5.2 per cent. of Fiji islanders.

Pickerill⁵ found decay in only 0.76 per cent. of 20 Maori skulls from an uncivilized age, yet Maori children brought under civilized conditions in two schools which he examined showed 15.6 per cent. of the teeth to be carious.

The importance of good teeth in the general health of the individual will hardly be questioned by any one in this section. Any new observation bearing on the subject should be of interest.

Three years ago the Department of Public Health of Seattle examined the teeth of 2,000 children from 2 to 7 years of age. The work was carried out by Dr. Mabel Seagrave in a commendably thorough and painstaking manner. Those who had been fed 6 months of the first year on any one form of nourishment were tabulated with results as follows:

Food	No. Examined	No. Showing Caries	Percentage of Caries
Breast milk	859	366	42.6
Cows' milk mixtures.....	232	102	42.9
Sweetened condensed milk....	61	41	72.1

* Read before the Section on Diseases of Children at the Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Rose and British Dental Assn., Reports, quoted by Smalley in *Diseases and Inquiries of the Teeth*, p. 242.

2. Schlesswig: Holstein Dental Association, quoted by Pickerill (Footnote 5).

3. McCullough: *Arch. Pediat.*, 1913, xxx, 43.

4. Mummery: *Transactions of the Odontological Society*, Vol. 1, New Series.

5. Pickerill: *The Prevention of Dental Caries and Oral Stomatitis*, Baillière, Tindall & Cox, London, England, 1912, p. 11.

During the past year I have enlarged these statistics by an examination of children at the Better Babies contests, held in Seattle and Bremerton, Washington, and children seen in private and dispensary practice. The results seem to confirm the earlier statistics. From better babies contests the following results were obtained:

Food	No. Examined	No. Showing Caries	Percentage of Caries
Breast milk	418	118	28.2
Cows' milk mixtures.....	102	30	29.4
Sweetened condensed milk....	32	17	53.1

Of 104 cases collected from private and dispensary practice in which the children had been fed five months or longer on sweetened condensed milk, seventy-seven, or 74 per cent., showed caries of the teeth.

The significance of these statistics is that a poorly balanced diet, high in carbohydrate and low in fat, protein and mineral constituents, fed during the period in which the teeth were developing and calcifying in the jaws, seems to have rendered them doubly susceptible to decay after they erupted.

Confirmatory evidence is added by the fact that the first molar, in which the articulating surface calcifies during the first year of life, shows vastly more imperfections, faults, fissures and absence of enamel and is three times as frequently decayed as the third molar, which does not begin to calcify until the ninth year of life.

These facts emphasize the importance of a well-balanced diet during infancy. Such a diet I should consider breast milk, a properly modified cows milk, when this is unobtainable, with the early addition of vegetables, fruits and meat. Alfred Hess says that orange juice may be begun any time after the first month. Vegetables, fruits and meats, properly prepared, and given in small but increasing amounts, may safely be begun as early as the sixth or seventh month. Such additions to the diet are valuable aids in preventing or curing rickets and spasmophylia, both of which adversely affect the development and subsequent soundness of the teeth; they make for firmer, more elastic tissues, and a more vigorous, agile and resistant child.

The second point of importance is giving early a diet which will teach the proper function of the jaws and teeth. A child raised on pap will not learn to chew solid food. But if given strips of tough meat to chew the juice out of, such foods as bacon rinds, bones, tough crusts, hard breads, and, later, apples, celery, lettuce, etc., the muscles of mastication and in turn the jaws are enlarged and strengthened. More room for developing teeth is given and they are hardened, cleaned and polished after they erupt.

The third point I wish to emphasize is the prevention of decay, which may be effected through selection of food and its proper sequence during a meal. The last article eaten should be one which will cleanse the teeth and leave no sticky, carbohydrate, decay-producing residue. A tooth brush will not remove sticky pastries, cake and other carbohydrate remains from the fissures of the teeth, but meat, a green salad, celery, radish, onions, apple, orange and fibrous food generally, under the 100 to 250 pounds pressure of the healthy bite will grind such food out and the residue left, if any, will have a detergent action toward caries. Pickerill in his exhaustive work has shown that the amount, ptyalin content and alkalinity of the saliva secreted in response to various flavors, acidity

and hardness of foods varies greatly. Acid fruits produce much highly alkaline saliva, a high ptyalin content and are an ideal food with which to finish a meal.

Sim Wallace,⁶ applying these principles and directing the diet from an early age in fourteen children, found at the ages of from 5 to 7 years "not one tooth showing the slightest trace of caries."

Dean Owre of the dental department of the University of Minnesota is applying this test in a few children whose diet he is directing and feels that his observation has gone far enough to convince him of the possibility of keeping teeth free from decay. He lays emphasis on the importance of giving hard food to force vigorous mastication and of sufficient "roughage" in the diet to wear down the irregularities of the articulating surfaces and prevent stagnation in the bowel.

Our Chairman, Dr. McCleave, has recognized the importance of this subject by choosing it for his Presidential address. It is my hope that this paper may assist him in arousing pediatricians who are directing the great child welfare movements to give more consideration to this phase of the work.

A PLEA FOR THE PREVENTION OF DEFORMITIES IN THE HEALING OF BURNS *

CHARLES A. PARKER, M.D.

CHICAGO

We are all familiar with the deformities following the healing of burns and the difficulties attending their subsequent correction. The relief of the bat-wing deformity following burns of the axillary region and the often severe flexion deformities of the joints of the extremities is no pleasant task for the surgeon and the improvement obtained is frequently but a painful compromise. The deformities following burns of the anterior and lateral region of the neck are also quite unpromising.

The burns on the extensor surfaces as a rule cause very little interference with function, as the movements of the unsupported joint are usually best controlled in a position of partial flexion. This keeps the extensor surface long during the healing and flexor efficiency prevents further contraction after healing.

Deep burns may affect the integrity of the structures so severely that recover of function is impossible and even amputation may be necessary. These will be treated according to the indications, the same as equally extensive traumas from other sources; but the burns I especially wish to consider are the usual ones of the so-called third degree, destroying the skin completely in some areas and leaving the deeper structures practically intact and ready to resume their function when the wound is healed.

It is with reference to this class of burns, the usual type, that I recently made the statement that "however extensive they may be, as long as they are compatible with life, healing may and should be obtained without deformity and with good function."

This refers particularly to burns of the limbs and their connections with the body and does not include

6. Wallace, Sim: The Prevention of Dental Caries, Dental Record, London, 1912, p. 51.

* Read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

burns of the face, although it may well apply to burns of the neck.

If this position can be maintained the surgeon is thus relieved of another serious problem and the patient of much suffering from his permanent physical handicap.

The procedure is simple and aims at the prevention of the deformity by fixing the limb in the most desirable position during the process of healing and for some time thereafter to prevent subsequent contractures. I have been able to do this best with removable plaster casts applied in the early stage of healing, before contractures occur, over the proper dressing of the burn.

The elbow, wrist and fingers should be kept extended. The hip and knee should be extended with the foot at right angles to the axis of the limb, and the toes extended. For burns of the axillary region the arm should be maintained in an abducted position. In burns of the front and sides of the neck the chin must be kept high. The cast can be removed daily, the wounds dressed and the cast immediately replaced during the whole process of healing.

The fixation also directly enhances the healing by preventing injury of new tissue by movements of the limbs. It relieves the flexor muscles of their constant attempts at immobilization to prevent pain and takes away the cause of the pain.

The method as applied combines two features that are mutually helpful. One relates to the dressing of the burn itself, and the other to the application of the cast. The burn, then, is an ulcer and may be treated by skin grafting or such other methods as the surgeon has found successful, provided the limb can be maintained throughout the period of treatment in the desired position.

My method in this stage has been the application of ribbons of adhesive plaster directly on the wound and extending some distance beyond the margins for attachment to the normal skin. The ribbons are usually placed at the margin of the burned area first and then laid on in parallel strips slightly overlapping each other until the whole region is covered.

It is usually best to wait until all sloughs have separated before beginning this part of the treatment, as there is no danger of contractures occurring during this early stage. The adhesive plaster is changed two or three times a week or whenever it becomes loosened from the healthy skin. Its removal causes no pain as it does not adhere to the moist surface of the wound, and its application by gentle pressure is equally painless. By its pressure it also prevents exuberent granulations and probably reduces the amount of secretion by its influence on osmosis. Owing to its permeability it furnishes an ideal condition for healing, conserving heat and moisture the same as an unbroken scab, though it is quite impossible to maintain the latter complete over large areas. The absence of mesh also prevents the penetration of the granulations with the subsequent bleeding and pain on their removal. The inclusion of the secretion, that is, the pus, has no more deleterious effect than the same condition existing under a complete scab and is rather to be desired for its moisture than deprecated, as growth can occur only in the presence of moisture, even under the scab. It is much more efficient than the scab over large areas. It is really a wet dressing with the moisture consisting of the patient's own serum plus the ever present bacteria.

Over the adhesive plaster is placed a dressing of dry gauze sufficient to absorb the secretions that make their way out from under the plaster strips at various places. This is usually changed daily, and as it does not come in contact with the wound, its removal is also painless. Over this is made the circular plaster cast which is afterward opened at convenient places for daily removal for changes of dressing. For the limbs it is usually made bivalve. For the other regions it is cut as ingenuity suggests for its removal and reapplication.

After healing is obtained, night casts closely fitting the parts are made and these are worn for several months, usually at night only, as long as there is a tendency to deformity. Persistent use of the after-treatment is essential to permanent success.

With the proper use of this method the deformities of limbs following this type of burns need no longer occur, and, indeed, their presence must be a reproach to the surgeon responsible for their development.

ABSTRACT OF DISCUSSION

DR. J. P. LORD, Omaha: The first function of the orthopedic surgeon is to prevent deformity. Dr. Parker's paper is therefore opportune. Though not strictly new, we are indebted to him for emphasizing this particular method of preventing deformity. His use of plaster of Paris seems desirable. The mere mention of splints in surgical textbooks is not sufficient to bring the matter to the attention of any class of doctors. The time of healing should be conserved by timely early skin-grafting. We should hasten healing even by the early excision of eschars and deep sloughs when indicated. Tissues that have been so deeply burned as to be destroyed should be removed early, to lessen the period of sepsis and hasten the period at which skin-grafting may be resorted to. Such tissue should be excised, and its place covered with a skin-graft or a skin-flap. Otherwise contractures will be invited. There is going to be a tendency to contraction if a number of weeks or months are consumed in the healing of the wounds, because a large amount of connective tissue is formed, and this has the inherent quality of contraction, weeks or months after healing has taken place. The present tendency in general surgery is to get these wounds covered by skin at the earliest possible date, and it has been my experience that it is best when possible to use whole flaps of skin and subcutaneous fat in the more extreme cases. It is my observation that long periods of healing in these cases are quite unnecessary. The securing of straight members at first is not sufficient to prevent the deformity that is bound to take place subsequently. Early grafting or plastic repair should be applied to flexures of the limbs to secure a more flexible and pliable condition, and one more free from the dangers of subsequent contraction, than it would be after a number of months of healing by granulation under any method. Another reason for the early covering of these suppurating areas with skin-grafts is to prevent the occurrence of intercurrent diseases, to which they are an easy prey in the patient's weakened condition from prolonged suppuration. I would therefore, sound a warning against a too thorough application of the methods of Dr. Parker and favor lessening the period of healing by application of the resources of surgery.

DR. CHARLES M. JACOBS, Chicago: I should like to bring out, as a point of interest, that this method of applying adhesive strips may be used not only in cases of burn but also on pressure sores as a result of plaster casts. At the Home for Crippled Children, balsam of Peru dressing for pressure sores have been discarded for zinc adhesive strips. The strips can be changed through windows cut out of the plaster casts.

DR. EDWIN W. RYERSON, Chicago: I have seen some of Dr. Parker's work, and consider it better than anything

have seen in the past. Even if skin-grafts be applied, as suggested by Dr. Lord, none the less should we use apparatus of this kind, because skin-grafts often tend to contract, and one may be disappointed in the result after skin-grafting unless such precautions are taken. The method advised by Tubby to relieve this contraction should receive more attention than it apparently has in this country. I have had occasion to use it in a few cases. The results are excellent, and one obtains a pliable scar that does not tend to recontract.

DR. CHARLES A. PARKER, Chicago: I have taken up only one phase of the subject. The treatment of the burn is the treatment of the ulcer, and you can treat it as such. If you know how to treat ulcers well, you can take care of burns. You do not need a lot of literature, but plenty of adhesive plaster and some grains of common sense. I am much more proud of the two boys that had the straight legs and never had any contractures than I am of the ones that I had to straighten afterward. The skin-grafting is all right, but I have been taking care of a boy whose burns after four years of skin-grafting, never were healed. Auto-skin-grafting is all right as far as it goes, but when you have a little girl with so much burn that there is not enough skin left on the patient to take grafts from, what are you going to do? The patients do badly in extensive burns with skin grafts. I get that information from the general surgeon, because I get his cases to treat afterward. It is proper to use skin-grafting when it can be done, but when you come to heal up a wound like that in this boy and get cured in fourteen months with a straight leg, it is something worth while.

Removal of the eschar is advised by German surgeons. Unfortunately, people who read German think that everything that comes from Germany is good. That, I think, is one of the objections to being able to read German. In the case of a child burned like that, not one of you would do it. He has a hard struggle to live at all. There may be cases in which it is advisable, but not in very large burns. As to overcoming these contracted scars, it does require several months, any way, depending on what the tendency to contracture is. I have seen the scars quit their tendency to contract after some months, but some go on for much longer. Nevertheless, scars do give up this tendency. They sometimes give up when you wish they would hold. We know now that scars of the esophagus give up. I have seen scars from drinking lye do this. So it is in the scar from the effects of a burn. You get scars, of course; but you get the most rapid healing and the smallest amount of cutaneous scar tissue possible, with no destruction of skin that you have made one day by see-sawing and stretching it out the next. Hold the fingers out straight while they are healing, and there will be no necessity for skin grafts.

Age and Accomplishment

"But why, you ask me, should this tale be told
To men grown old, or growing old?
It is too late! Ah, nothing is too late
Till the tired heart shall cease to palpitate.
Cato learned Greek at 80; Sophocles
Wrote his grand Oedipus, and Simonides
Bore off the prize of verse from his compeers
When each had numbered more than fourscore years.
And Theophrastus, at fourscore, and ten,
Had but begun his 'Characters of Men.'
Chaucer at Woodstock with the nightingales
At 60 wrote the 'Canterbury Tales.'
Goethe at Weimar, toiling to the last,
Completed 'Faust' when 80 years were past.
These are indeed exceptions, but they show
How far the gulf stream of our youth may flow
Into the arctic regions of our lives,
Where little else than life survives."

—Longfellow.

SHEET RUBBER SUPERIOR TO GAUZE SPONGES IN ABDOMINAL OPERATIONS *

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It has been said that as long as surgery remains an art sponges will be overlooked and unintentionally left in the abdominal cavity. Yet I believe the day is coming when we will not place a sponge, clamp or any other instrument wholly within the abdomen.

The ablest surgeons the world has known have had the misfortune to have left a sponge, a drainage tube or an instrument in some cavity of the body.

The possibility of leaving a sponge in the abdominal cavity has been a source of anxiety to every surgeon, and although we have devised numerous methods to avoid this accident, the human element is always present, and must be reckoned with, and alas, too often this unfortunate accident takes place.

The man who has to bear the stress of the unexpected calamities that occur in surgery realizes how easy it is to leave a foreign body in the abdominal cavity; while the layman, who so little appreciates the situation, invariably states that it is criminal negligence to leave gauze, a drainage tube or a part of the surgeon's armamentarium in the patient's anatomy.

Neugebauer, Schachner,¹ Kretschmer, Crossen and others have collected from the literature about 300 cases of foreign bodies left unintentionally in the cavities or tissues of the body.

The number of times that this accident has happened will never be known. Death may have taken place as the result of an overlooked sponge, and the cause may never have been suspected. Many cases never come to necropsy, while several necropsies revealed a sponge in the abdominal cavity, although the sponge had not been missed by the operator. Surgeons hesitate to report these cases, fearing the loss of reputation, and the modern tendency to suits for damages.

Among the causes of this accident may be enumerated faulty anesthesia, absence of good light, unfavorable position of the patient, operating in the home and without the regular assistant, deep-seated operations, the occurrence of profuse bleeding, and unusual complications arising during the course of an operation. Many instances occurred in operations for extra-uterine pregnancy. Sponges have been found following operation on the thyroid, breast and thigh, and even operations for hernia and suprapubic operations on the bladder.

Sponges and clamps have wandered into the bowels and have been passed by rectum. It seems incredible, yet it has happened, that a yard of gauze has been left in the abdominal cavity and later removed from the rectum. A foreign body has been known to have remained in the abdominal cavity for years and caused no inconvenience. A sponge was passed after a lapse of twelve years, and a forceps after four years.

Dr. Edouard Martin² of Berlin makes comment on a decision of the superior court of Germany, July, 1913. Foreign bodies, namely, a gauze compress, a

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Schachner: *Ann. Surg.*, 1901, xxxiv, 499, 679.

2. Martin, Edouard: *Deutsch. med. Wchnschr.*, Jan. 21, 1915, p. 108; *ibid.*, Jan. 28, 1915, p. 137.

broken piece of sponge and a clamp were left during an operation. The court held that the surgeon was not responsible if he had used the safeguards which are usually employed; claiming that the accident was due to the human element, which must of necessity enter all cases.

In a later decision by the court, concerning an appendix operation with local anesthesia, in which were adhesions and free pus, a compress was left in the wound. The patient was a witness in his own behalf. The surgeon was found guilty of negligence.

The court held that if some unusual accident occurred during the operation, such as hemorrhage, the leaving of a sponge might be excused.

The patient was ten weeks at the hospital, five weeks in bed. In the operation a pus appendix was removed in two pieces, and the wound was drained. A gauze sponge was accidentally left in the wound. Narcosis was given five weeks after operation, and the wound was examined; the gauze was not found. Three months later a gauze strip was removed, and the wound then healed.

At the first trial of the case the court decided in favor of the doctor, who was sued for 12,000 marks. The court held that if, in spite of all precautions,

injury occurs to the patient, it is an oversight, on the part of the surgeon, but not a culpable one.

On appeal to the highest court of the country, the patient was awarded a verdict of 40,000 marks. The testimony showed that the most conscientious and eminent surgeons have had these accidents. The patient testified that he had full consciousness and that he saw all that happened, and that the operation went along smoothly without any unusual occurrence.

The diary of the operating room stated that there were adhesions, pus, and an appendix was removed in two parts, but said nothing about complications. This emphasizes the value of taking careful notes at the time of the operation.

The court decided that to leave a foreign body was not allowable by an expert. The supreme court held that if you cannot show that something unusual happened during an operation you are liable. The court also stated that a way must be found to prevent gauze slipping into the wound.

The defendant claimed that the patient was responsible, because he saw the sponge put in, and as he saw everything that took place, he should have asked that the sponge be removed. It is of interest to note that a man under local anesthesia may be a witness

CASES OF OBJECTS LEFT IN WOUND AFTER SURGICAL OPERATION

No.	Where and by Whom Reported	Operator	Character of Operation	Article Lost	When and How Removed	Result
241	Kretschmer: Ann. Surg., 1909, xl, 814	?.....	Herniotomy.....	Gauze.....	Two and a half years later; removed by forceps from scrotum	Recovery
242	Kretschmer: Ann. Surg., 1909, xl, 814	?.....	Goiter.....	Gauze sponge...	Six weeks later found in eurenting fistulous tract	Recovery
243	Kretschmer: Ann. Surg., 1909, xl, 814	?.....	Goiter.....	Gauze.....	One and a half years later pulled from fistulous tract	Recovery
244	Kretschmer: Ann. Surg., 1909, xl, 814	?.....	Suprapubic cystotomy	Gauze strip....	Six weeks later removed from fistula on dressing wound	Recovery
245	Kretschmer: Ann. Surg., 1909, xl, 814	?.....	Suprapubic cystotomy	Gauze sponge...	Several years later; suprapubic cystotomy	Recovery
246	Kretschmer: Ann. Surg., 1909, xl, 814	?.....	Osteomyelitis of femur	Metal probe....	Sometime later, detail not given....	?
247	Kretschmer: THE JOURNAL A. M. A., Oct. 9, 1909, p. 1229	Willis.....	For ovaritis.....	Surgical sponge	Thirty days later, discovered through part of original opening in abdomen	?
248	Kretschmer: THE JOURNAL A. M. A., Dec. 11, 1909, p. 2203	Smith.....	Laparotomy.....	Sponge.....	Ten months later; details not given	?
249	Kretschmer: THE JOURNAL A. M. A., March 12, 1910, p. 906	Ruth.....	Appendicitis.....	Gauze pad.....	Ninety-eight days; later laparotomy	Recovery
250	Robb: Cleveland Med. Jour., 1910, ix, 434	Robb.....	Abdominal section...	Gauze sponge...	Nine months later; abdominal section	Recovery
251	Maylard: Lancet, London, Feb. 28, 1914, p. 608	Maylard.....	Gallstone.....	Gauze.....	Two weeks; laparotomy.....	Recovery
252	Hinterstoisser: Wien. klin. Wchnsehr., April 18, 1912, p. 589	Hinterstoisser.	Extra-uterine pregnancy	Gauze compress	Four months later; laparotomy was performed for tumor mass	?
253	Hinterstoisser: Wien. klin. Wchnsehr., April 18, 1912, p. 589	Hinterstoisser.	Total extirpation of uterus	Sponge.....	Fifty-one days later; sponge was pulled out with forceps through vagina	?
254	Hinterstoisser: THE JOURNAL A. M. A., Feb. 17, 1912, p. 511	Johnson.....	?.....	Gauze.....	Details not given except that gauze was left in abdomen at operation	?
255	Furniss: THE JOURNAL A. M. A., March 22, 1913, p. 879	?.....	Duhrssen operation...	Two sponges....	Five months later; one removed from bladder eight months later, other removed from vagina	Recovery
256	Furniss: THE JOURNAL A. M. A., Dec. 6, 1913, p. 2094	Humiston.....	?.....	Gauze sponge...	Six months later, details not given except that sponge was left in abdomen	?
257	Stoeckel: Ztschr. f. gynäk. Urol., January, 1913, p. 38	?.....	Prolapsed uterus....	Gauze compress	Cystitis developed; colpoecystotomy necessary to remove supposed calculus, which proved to be gauze compress	Recovery
258	Stoeckel: THE JOURNAL A. M. A., Jan. 10, 1914, p. 154	Kerr.....	Tuberculous peritonitis	Sponge.....	Nine months later; laparotomy....	Recovery
259	Gerich: Zentralbl. f. Gynäk., March 28, 1914, p. 474	Gerich.....	Monocystic ovarian cyst	Gauze compress	Eight months later when fistula, which had developed, was operated on	Recovery
260	Gerich: Zentralbl. f. Gynäk., March 28, 1914, p. 474	Doleris.....	Cesarean section.....	Sponge.....	Details not given.....	Recovery
261	Gerich: Zentralbl. f. Gynäk., March 28, 1914, p. 474	Dallinger.....	Sarcoma.....	Artery clamp...	Two and three quarter years later; operation after they had been noticed in abscess found in abdominal sear	Death
262	Kuntzsch: Zentralbl. f. Gynäk., Jan. 31, 1914, p. 199	?.....	Placental polyps.....	Gauze.....	About ten months later at a normal birth, gauze was pushed out with head of fetus	Recovery
263	Kuntzsch: THE JOURNAL A. M. A., Sept. 4, 1915, p. 900	Berry.....	Removal of ovaries...	Sponges.....	Details not given.....	Death
264	Kuntzsch: THE JOURNAL A. M. A., Dec. 11, 1915, p. 2113	Holbrook.....	Appendicitis.....	Sponge.....	Nearly a year; details not given...	?
265	Kuntzsch: THE JOURNAL A. M. A., May 6, 1916, p. 1489	Brand.....	Removal of ovaries...	Gauze pad.....	Pad missed by nurse after incision was closed; later reopened and pad removed	Death

against the surgeon. How much must be done and what to satisfy what is called necessary care?

Some surgeons have had patients sign papers waiving their rights to sue and thus protect the surgeon against damage suits. The legal value of the above, however, doubtful. It was argued that it could not be gross carelessness, but an oversight, which is excusable.

The imperfections of all human acts was dwelt on as well as unexplainable happenings. After the act it is easy to criticize, as the excitement of the moment has ceased. We should consider all the difficulties and impediments with which the surgeon has to deal.

Each case should be decided by itself. We should not demand infallibility. The best and most advanced surgeons have made mistakes. There is as yet no method commonly adopted. Incidents may happen during an operation, so that the attention may be diverted and a sponge in the cavity be forgotten.

I report in the accompanying table the cases taken from the literature, adding these to Crossen's collection.

CASE 1.—The first case to come under my personal observation of sponges being left in the abdominal cavity was that of a man operated on for gallstones by one of the leading surgeons of New York. I happened to be present at the operation as a spectator. Sea sponges were used, and these sponges were torn into small pieces and held by sponge holders. There was no attempt made to keep count of them, and there must have been at least two hundred pieces scattered on the floor of the operating room at the close of the operation.

The patient rallied from the operation, and in about five weeks left the hospital for his home in a distant city. He continued to have rise in temperature, and two weeks after arriving home, he was again operated on by another surgeon. There were no sea sponges used at this second operation, but ten days later an abscess broke into the wound and four pieces of sponge used at the primary operation were removed. The patient died within two months.

CASE 2.—The second patient was operated on at the Rhode Island Hospital by a colleague of mine. The patient was a man of about 30 years of age who had received a stab wound in the abdomen, just to the left of the navel. There was some bleeding from vessels of the mesentery, which was checked with ligatures, and the wound was closed without drainage.

Two years later this man was admitted to my service at the Rhode Island Hospital. He had a movable mass about the size of a hen's egg which could be felt through the thin abdominal wall. On opening the abdomen we found this mass involved the omentum. The tumor was removed, and the severed vessels in the mesentery were ligated.

After the operation, the specimen removed was examined, and it consisted of a gauze sponge rolled into a small ball, completely covered with omentum; the omentum had wrapped itself entirely about the sponge. There were no adhesions to the abdominal wall or to the intestine.

CASE 3.—This was the case of a woman operated on for the removal of a small ovarian cyst. A nurse, whose sole duty it was to count and take care of the sponges used in the operation, and who was an exceptionally intelligent and conscientious woman, was assigned to this case. Just before the abdominal wound was to be closed, the sponge count was checked for and found to be correct; but while closing the abdominal wound the anesthetist allowed the patient to come partly out of the anesthesia, and as the intestine appeared in the wound, a sponge was asked for and placed over the intestine, just beneath the wound.

The wound was then closed, and neither the operator, his assistant, nor several physicians who were looking on at the operation, nor the nurse who had charge of the sponges again thought of the sponge placed in the abdominal cavity.

The fact that the count had been asked for, and was satisfactory, seemed to relieve the minds of all interested in the operation.

Twenty-six hours after the operation the patient had some rise in pulse and temperature. The probable cause of her condition was considered by the operator, assistant and the nurse who had charge of the sponges; each one, separately, recollected the placing of the sponge and leaving it in the abdominal cavity.

The patient was again anesthetized, the wound opened and the sponge, found just beneath the abdominal wall, was removed. The patient then made an uninterrupted recovery.

Since witnessing this accident I never have relied on any one to take charge of the sponges. I am no longer annoyed with the counting of sponges and with the discussions by nurses and doctors as to whether a sponge was lost in the abdominal cavity or thrown away.

The methods now in use to avoid the accident of leaving a sponge or instrument in the tissues are as follows: counting the sponges before and after the operation, by one, two, or even three individuals; attaching tapes to the gauze pads and a clamp bead or metal disk to the tape, using large pads or strips of gauze, and as few as possible; tying together gauze drains, when several are used; the use of four or five long gauze strips, kept in bags, which are attached to the laparotomy sheet near the wound.

The only sure way to prevent sponges being left in the abdominal cavity during an operation is not to place the sponge wholly within the abdominal cavity.

Numerous are the suits that have been brought, and in some cases verdicts for heavy damages have been rendered the complainant. In not a few instances a reputation built up by years of hard work is practically ruined by the mishap of leaving a sponge in the tissues.

Learned authorities both at home and abroad have argued pro and con as to whether the surgeon or nurse was to blame, and in some cases whether the patient was at fault, from the mere fact that he had to undergo an operation, and of necessity must assume this risk with others that attend an operation.

We owe a debt of gratitude to Yandell Henderson³ for his remarkable experimental studies with reference to the carbon dioxid content of the blood and its relation to shock.

His experiments and deductions are of great practical value to us as surgeons. He states that from excessive pulmonary ventilation, reflexly induced by laying open the abdomen, or indeed, by any surgical operation, there results a diminution of the carbon dioxid content of the arterial blood. This is known as acapnia.

When the viscera are exposed to the air, exhalation of carbon dioxid occurs, and the local acapnia which results is a factor in the peripheral inhibition.

General acapnia from the hyperpnea and local acapnia from exposure are the initial causes of surgical shock following laparotomy.

Cloths moistened in warm saline solution and frequently changed produce local acapnia. When acapnia is prevented the forms of motility of the gastrointestinal canal are practically identical with those shown by roentgenograms of unoperated animals.

He caused to pass over the exposed viscera a gentle current of normal, moist air, and found that this treatment is a highly effective procedure for the production of shock.

3. Henderson, Yandell: *Am. Jour. Physiol.*, 1909, xxiv, 66.

In another experiment one loop of intestine was laid in cotton wool and left untouched by the hand, during twenty minutes of warm moist aeration; while a control loop was wrapped in sheet rubber to protect it from the air, and was handled continuously for this period. Both became congested, but the former underwent by far the greater loss of tonus and motility. The carbon dioxid content of the animal's blood was then increased, and the exposed loop recovered its tonus and motility.

He thus demonstrates the value of sheet rubber as a covering for the intestine during operation, as it reduces acapnia and lessens shock.

Crile says that "when the omentum is made to cover the viscera there is much less shock." When the abdomen is opened peristalsis ceases.

Henderson found that aeration of the viscera of a bulldog for three hours lowered the arterial pressure 50 per cent. The small intestine changed color from pink to dark purple; then 200 c.c. of Ringer's solution were slowly injected into the femoral vein.

This fluid while cold had been shaken thoroughly in a flask, through which carbon dioxid was bubbled, and then had been warmed to 35 C.

Ringer's solution saturated with carbon dioxid was introduced into the peritoneal cavity and a stream of carbon dioxid gas was bubbled through this liquid from a tube inserted deep among the viscera.

At the end of twenty minutes the animal had come out of coma, arterial pressure had risen considerably and the pulse was of nearly normal amplitude. Later the viscera recovered their normal appearance and tonus.

Local acapnia due to direct exhalation of carbon dioxid is a factor in the loss of tonus in exposed viscera. Exposing the viscera to a current of air at body temperature saturated with moisture rapidly induces congestion and loss of tonus and motility.

Restoration of the body's store of carbon dioxid is effective, as a method of relief from all except the extreme stages of acapnia shock.

If the conclusions of Henderson are correct, we should no longer cover the exposed intestine with warm moist towels or gauze. Sheet rubber is far preferable. Should it be found necessary temporarily to remove loops of intestine from the abdomen, a rubber bag may be fastened to the sterile sheet near the wound, and the intestine placed in this bag.

If we can by any means lessen the risk or avoid altogether the possibility of leaving a foreign body in the abdominal cavity we should strive to do so.

During the last ten years we have been using a roll of sheet rubber, which has proved in every way satisfactory. This rubber roll is about the thickness that is used for rubber bandages. It is about 8 inches wide and 18 feet long. When the abdominal cavity is opened, folds of this rubber are tucked in the wound, walling off the intestine from the site of the operative field. A part of the rubber roll lies outside the abdominal cavity, as the entire roll is never placed wholly within the abdomen.

The edges of the wound may be covered by part of the rubber roll, thus protecting them from infection and trauma from use of retractors.

It is of equal service whether we are operating in the pelvis, on the uterus, tubes or ovaries, or whether we are excising a gallbladder or doing a gastroenterostomy.

The work of Henderson and other observers⁴ has shown us that rubber is less irritating to the intestine than gauze. I believe the use of the rubber roll to protect the intestine undoubtedly lessens the shock attending the operation, and I am quite sure that we have fewer adhesions following an operation.

The ease of sterilization of the rubber roll is important. We can as readily sterilize this roll as we can our rubber gloves, and the same roll can be used many times. I have known them to last for more than a year. After an operation the rubber is washed and while unrolled it is boiled for twenty minutes. It is then dried, powdered, and rolled into a bandage. Previous to operating it is again unrolled and then sterilized by boiling for twenty minutes. It is then rolled and placed in a hot saline solution.

A towel is folded so as to make a pocket, into which the roll of rubber is placed and the pocket is then clamped to the sterile operating sheet near the wound. During the operation as much or as little of this rubber roll can be unwound, walling off the intestine and thus protect the operative field.

Gauze sponges 18 inches long and 3 inches wide made of several thicknesses of gauze are used to wipe dry the field of operation. These sponges, however, are never placed in the abdominal cavity; but gauze amputation rolls, 6 feet by 4 inches are used.

It will be noted that few sponges are needed in any operation when the rubber roll is used, and that it is no longer necessary for us to place sponges in the abdominal cavity. The use of the rubber roll prevents the loss of the carbon dioxid content of the blood, and thereby lessens shock. It is moist and smooth and does not injure the peritoneum, thus preventing postoperative adhesions.

We are all creatures of habit, and it has so long been the custom to use gauze sponges to wall off our operative field that we are reluctant to dispense with them. I firmly believe, however, that one who has never used this rubber roll cannot appreciate the satisfaction I feel in being relieved of the annoyance of counting sponges, and the possibility of leaving a foreign body in the abdominal cavity.

ABSTRACT OF DISCUSSION

DR. RICHARD R. SMITH, Grand Rapids, Mich.: It is my belief that Dr. Keefe has given us a valuable hint in the technique of abdominal operations in suggesting the use of a rubber dam instead of gauze pads for walling off. He speaks at some length of the danger of leaving sponges in the abdominal cavity, and the advantage that the dam presents in doing away with this danger. Unfortunately, we have not solved the problem of leaving foreign bodies in the abdominal cavity when we do away with sponges, for instruments and needles have been left there in spite of every precaution. It seems to me that the methods employed to prevent this accident are less at fault than the organization of our operating rooms. In a carefully organized operating room this accident seldom occurs, for operations proceed in an orderly way and there is less confusion. An operating room to be well organized must have a well organized hospital behind it, so it seems to me that surgeons must go back of mere methods of dealing with technical problems, and must interest themselves in the hospital itself in order to prevent this and other accidents in the operating room. Comparing the merits of gauze pad and sponges with those of the rubber dam, it would seem that the former had some advantages. One is that the gauze adheres to the tissues with which it comes in contact, and can hold back the intestines from the field of operation better

4. Peters: Jour. South Carolina Med. Assn., 1915, xi, 16; *Lancet* London, Nov. 15, 1913. Black: *Railway Surg. Jour.*, 1915, xxi, 17

than the smooth rubber dam can possibly do. Aside from protecting the intestines from the air and the manipulation of the operator, the gauze absorbs blood and other fluids which may be septic and is a distinct advantage in this way. Its greatest disadvantage is that it traumatizes the intestines and peritoneum, adds to shock and postoperative ileus, and I believe has much to do with postoperative distention. Undoubtedly the so-called gas pains following operation are partially due to the reestablishment of peristalsis in intestines that have been traumatized by the gauze. The rubber dam has the distinct advantage of not doing this, but of leaving the intestines smooth, moist and glistening when removed. It seems to me that this advantage may offset the disadvantage that the rubber dam has in not holding back the parts so well, or of absorbing fluid so readily. I have not personally used it sufficiently to speak further of it, but in the few cases in which I have employed it it has been satisfactory, and I am planning to give it a good trial.

DR. C. H. MAGEE, Burlington, Ia.: I wish to relate two unique cases in which foreign bodies were left in the abdominal cavity. I was dresser in the North London Hospital some years ago, and an eminent English surgeon at that time operated on a case of extra-uterine pregnancy. During the night the ligature slipped and the patient died. We were called to attend the necropsy the next morning. A few stitches were cut and a black object came into view. It was a sea sponge of the kind used at that time. This shows that such things may happen to any of us. Another case happened in a hospital in Chicago. The operator was a prominent surgeon of that city. He told us there was a cyst in the stomach and he would cut down and see if he could remove it. Cutting down he found a cavity, and after exploring it he put in a yard of iodoform gauze. We went into another room and soon a nurse came to the door and beckoned violently to him to come back. We went back into the hall and when we got to the patient's room I saw a sight I shall never forget. The man was vomiting, and from his mouth protruded a strip of gauze half a yard long. A big safety pin fastened the gauze to a band about his belly, or he would have vomited the strip.

DR. S. C. STREMMEL, Macomb, Ill.: In sixteen years I have left two sponges in the abdomen. I have taken out four in that time. One of the sponges that I left in protruded from the rectum and was taken out by the patient herself. It was a case of fibromyoma, with severe bleeding, and in packing the sponges to prevent bleeding the surgical nurse failed to make her count right. That was ten years ago. Since then I have never left a sponge in, because I have my sponges made large with a tape half a yard long and another sponge at the end and that sponge never goes in. I was much impressed with this idea of the rubber, but I do not think rubber answers as well as gauze. The same thing can be accomplished with a big roll of gauze. The method we have used in the last ten years has served us well.

DR. STEPHEN E. TRACY, Philadelphia: Some weeks ago we operated on a patient with a mass in the left upper quadrant of the abdomen which had been diagnosed carcinoma of the ascending colon. A rather extensive operation was performed and a large section of the colon removed. After operation the bowel portion of the specimen was split open and we were surprised to find a large abscess cavity which communicated with the bowel, and through the opening a piece of gauze projected. The patient had had an abdominal operation, supposedly for an inflammatory pelvic lesion, seventeen years before. The gauze had caused no symptoms until about six months before its removal. I agree with Dr. Smith that a hospital is well organized and the operating room staff well trained, it will be seldom that a piece of gauze will be left in the abdomen.

DR. F. F. LAWRENCE, Columbus, Ohio: This matter of sponges causes more worries for the surgeon and more on the part of the patient and friends than any other subject. The morbidity of abdominal surgery is in direct proportion to the number of sponges or yards of gauze or other things the surgeon unnecessarily puts into the abdomen. Postoperative adhesions are in direct relation to the packing of gauze. I witnessed an operation a few days ago,

a perfectly aseptic case, a little bit of an ovarian cyst, without an adhesion or other evidence of infection, and the surgeon put in four or five yards of gauze. He unnecessarily invited or courted adhesions. I often say to students that there are two things to be put into the abdomen—a clean hand, and a clean and active conscience, and to avoid putting in anything else. Retractors and sponges produce local irritation, bruising of tissues and consequently postoperative adhesions. Even in pus cases, if you will maintain intra-abdominal pressure by having an assistant press on the side of the abdomen, any pus present will be forced out and you will not need to put in sponges. You will save your patient nine times out of ten, where you would lose her seven out of ten if you pack with gauze. We should not create pathology by unnecessary traumatism.

DR. JOHN J. REYCRAFT, Petoskey, Mich.: How to get around the accident of having sponges left in the abdomen is an important question and has been given great study by me. Too many men take much time in operating and much of the time is consumed by placing in wall-off sponges. Sometimes I have seen men taking an hour in doing an operation which should be done in twenty minutes because of that very thing. If sponges must be put in do not put in small ones, large ones are better and a large aseptic towel is better than gauze and walls off the field of operation well. If there is much pus in the wound you need packing. The omentum will adhere to gauze very readily. In a case of ascites in which I had placed in the abdomen a pad of gauze to drain the fluid off I was much surprised to find after three days that its removal was most difficult. An extraordinary find in my experience was in a case following ectopic operation. The woman did not do well. A mass formed in the abdomen. The woman could not have a bowel movement without great difficulty and I deemed it advisable to do a second operation and found a large crushed gauze sponge in the lumen of the bowel. There was no possibility whatever that this could have entered only by way of the mouth or the anus. A nurse claimed that the patient had difficulty in swallowing after the operation, and as it could not well get into the ileum against peristalsis it becomes evident that the patient swallowed the sponge.

DR. JOHN W. KEEFE, Providence, R. I.: Regarding the well organized operating room as a preventive to leaving sponges in the abdomen, I may say that in one of the cases cited in the paper, we had at that time an operating room in which the same people had been working together day after day, and with a bright, conscientious nurse and yet that sponge was left in. There have been instances in which sponges or pads with the tapes attached for safety have been found within the abdomen, so that, no matter how perfect your operative technic may be, a sponge may be overlooked. It is possible that the tape may be cut during the operation and the sponge allowed to remain in the wound. The great relief felt by one who uses the rubber roll is a large factor in abdominal operations.

Tongue Signs of Typhus.—Some weeks ago THE JOURNAL mentioned the tongue sign of typhus to which P. Remlinger called attention. In his extensive experience with typhoid, paratyphoid and typhus in northern Africa, he noticed that when a patient with typhoid or paratyphoid was asked to put out his tongue he did so without effort. But when the patient had typhus, his tongue did not seem to be under his control. Try as he might, he was unable to get the tongue past the teeth, and sometimes the tongue seemed to be attracted back, toward the pharynx. There was occasionally at the same time a slight tendency to trismus, from contraction of the masseters. In three years' experience at points where typhus was far from infrequent, he never knew this tongue sign to fail in cases which proved to be typhus. In his communication on the subject in the *Paris médical*, 1916, vi, 42, he cites three articles on typhus by army surgeons who mention that the tongue "seems shorter than usual," or that "the patient is unable to show his tongue"; "it cleaves to the palate," or "the tongue trembles and cannot be extended beyond the teeth."

LOCALIZED OSTEOSPONDYLITIS *

WILLIS C. CAMPBELL, M.D.

MEMPHIS, TENN.

During the past three years I have seen four cases with varying symptoms, showing certain local changes

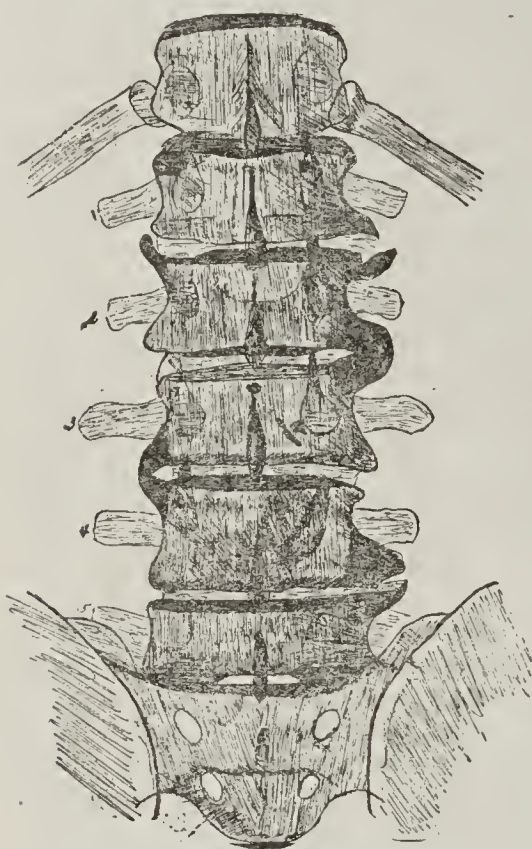


Fig. 1.—Spondylitis deformans, showing spurs and crescents about the intervertebral disks with marked flattening and atrophic changes in all parts of the spinal column.

vertebra to its adjacent fellow, and may completely encapsulate the disk, producing solid external fixation

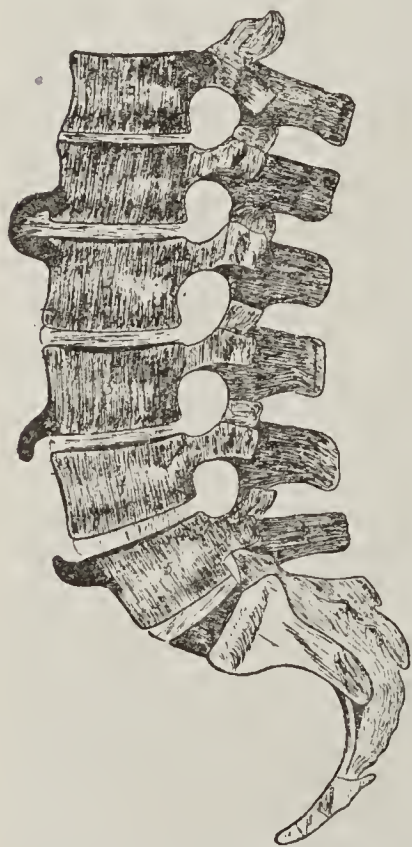


Fig. 2.—Spondylitis deformans, side view.

I have repeatedly seen similar anomalies in other spinal affections, especially spondylitis deformans, but always multiple and often involving the entire spine,

in the vertebra, which appear to be analogous to mon-articular osteoarthritis, for which reason I have used the term "osteospondylitis." The condition is probably known to others as a limited spondylitis deformans of the hypertrophic type, but I can find no accurate description in literature.

The process is decidedly local and seems to be an affection of one intervertebral disk. The roentgenogram shows crescent shaped lamellae of bone, which are thrown from the body of one

of two vertebrae, or only a part of the circumference may be involved. In some the bony bridge may be incomplete and connected by only one extremity to the vertebral body, and at times there may be no apparent union of either extremity to the bodies, which is probably explained by assuming that the process was fibrous in the early stage with later ossification. The bony lamellae may connect the bodies at their margins, the so-called "lipping," or may extend from the center of the exterior surfaces. The bodies or other portions of the vertebra show no abnormalities in shape, size or structure. In one acute case there was atrophy of the disk with bony substitution.

and associated with definite bony changes in other portions of the vertebra itself (bodies, articular processes, ligaments, etc.). Garrod reports spondylitis deformans in one articulation, but before the days of universal use of the Roentgen ray. Goldthwait states that only a small area may be affected, but more frequently one region and often the entire spine.

In all four of my cases the affection was in the lumbar region.

REPORT OF CASES

CASE 1.—L., man, aged 40, was first seen at the Baptist Memorial Hospital, Feb. 22, 1913. In December, 1912, he had lobar pneumonia from which he recovered, to be followed in a few weeks with pain in both lower extremities and gradual flexion of hips until walking was impossible. On examination the spine was rigid from extreme muscular spasm, both hips flexed 90 degrees, evidently double psoas contraction. Diurnal temperature, 99 to 101. Blood and urine negative. Roentgenoscopy revealed bodies of fourth and fifth lumbar vertebrae united by bridge of bone extending from the center of the exterior surface of the body of the fourth to the same point on the fifth, surrounding the intervertebral disk, which was atrophic and partially ossified. Clinically this case was identical with tuberculosis of the lumbar region, the diagnosis of "local osteospondylitis" being made by the Roentgen ray. The causative agent we presume was probably pneumococci, and a sequela to lobar pneumonia. Bradford frame with extension and hyperextension followed by plaster jackets gave perfect relief with no recurrence to present time. Repeated roentgenograms show no extension of process.

CASE 2.—R. L., man, aged 22, had gonorrhea, December, 1910. In May, 1911, he had severe pain in right lower quadrant of abdomen, also pain in back which radiated down right thigh and knee. Does not know whether fever existed. The appendix was removed with slight if any relief, and after two years, May, 1913, was operated on for "adhesions" with recurrence of symptoms, when a kidney exploration was considered. Patient very nervous and at times hysterical. Examination revealed tender area in the region of appendix. The movements of the spine were limited in side bending to the left, free to the right and slightly limited in flexion. Temperature, blood and urine were normal. Roentgenoscopy revealed bridge of bone on the right lateral aspect of lumbar spine between third and fourth vertebrae. Diagnosis, localized osteospondylitis. Extension of head and both lower extremities on Bradford frame followed by fixation of spine gave decided relief with no recurrence to the present time.

CASE 3.—A., man, aged 27, single, fell from horse at age of 12, and wrenched back at 22, but no serious inconvenience followed either injury. For past three years has suffered pain in lumbar spine and in both lower extremities. Examination, June 1, 1915, revealed very slight limitation of motion in all directions. Roentgenogram shows bony bridge between second and third lumbar vertebrae, right lateral aspect. Evidently "localized osteospondylitis." Extension, hyperextension with later fixation gave relief.

CASE 4.—Mrs. D., aged 40, in July, 1914, had suffered for one year with very acute attacks of pain in kidney region which referred pain to vulva and thigh. No abnormality could be found in urine following attacks. Roentgenoscopy was advised

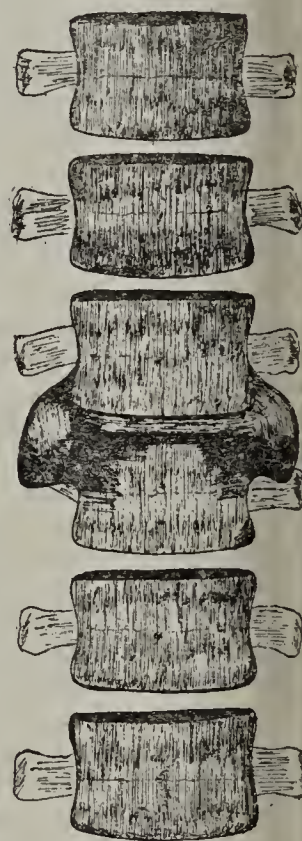


Fig. 3 (Case 1)—Extension of superior border about intervertebral disk shows partial ossification, being surrounded by bony extension from the center of the exterior surface of adjacent vertebrae.

* Read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

y general surgeon, who suspected renal calculi, after which, patient was seen in consultation, July 11, 1914. The roentgenogram showed crescent of bone between second and third lumbar vertebrae surrounding disk. No other region of the spine was affected. Diagnosis, localized osteospondylitis. No treatment was instituted, and I have not heard from patient since.

COMMENT

Evidently Case 1 was an acute pneumococcic infection of the cartilaginous disk between the fourth and fifth lumbar vertebrae, and could not clinically be differentiated from tuberculosis of this region. Pneumococcic infection of large joints is a rather common sequela of pneumonia, but no mention could be found when the spine was affected. The other three were of insidious onset and do not show so complete an osseous bridge, and are probably analogous to monarticular osteoarthritis occurring in other joints. In operating on the hip for this condition one will frequently find a complete bony hood extending from the margins of the acetabulum to the neck of the femur materially restricting motion, though the joint proper may remain intact.

Two useless major operations were done in Case 2 and a third proposed, on account of the referred pains.

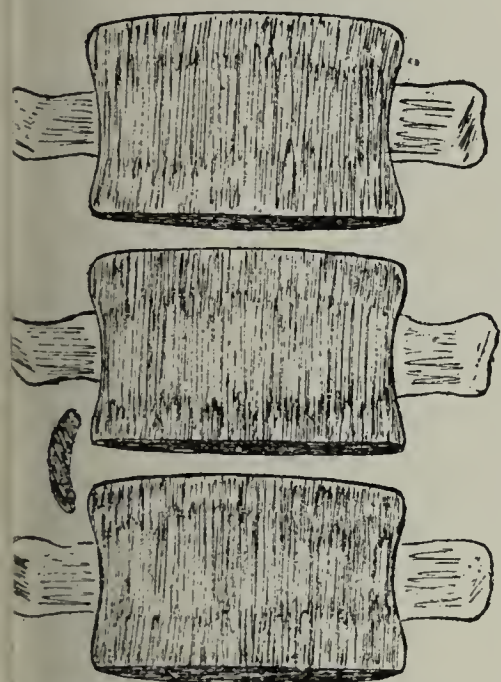


Fig. 4.—A crescent may be seen, as in Case 2, which indicates fibrous bands joining adjacent vertebrae with incomplete ossification.

the referred pains, and the patient submitted to useless major operations; but this is also true in other spinal infections, especially tuberculosis of the vertebra with abscess and contraction on the right side simulating appendicitis, which should give the spine more serious consideration in differential diagnosis of affections in the abdomen.

The etiology is probably the same as in monarticular osteoarthritis. In no case was there a definite history of trauma in close relation to the affection; besides, I was unable to find similar changes in the roentgenograms of undoubted traumatic spines.

Three cases were relieved by simple orthopedic procedures, as no focal infections could be found.

Differential diagnosis of spinal lesions by the Roentgen ray is very meagerly considered in literature; in fact, few textbooks mention local manifestations except traumatic and tuberculous, for which reason the subject was considered worthy of presentation at this time.

Exchange Building.

After three years of definite symptoms, permanent and lasting relief was attained by simple and persistent orthopedic measures. In Case 4, kidney stone was suspected and operation seriously considered until averse opinion was given after seeing the Roentgen-ray plate.

As spinal movements are not usually materially impaired (except in acute types), a diagnosis of abdominal lesions is frequently made from

ABSTRACT OF DISCUSSION

DR. F. J. GAENSLER, Milwaukee: It is well for all of us to be reminded constantly of these referred pains. As was shown in one of the histories, the patient had been subjected to a number of operative procedures, and others were contemplated. In considering the cases cited the idea naturally suggests itself, as it did to the essayist, that the condition in question is an early localized lesion of the generalized process, which we recognize under the name of hypertrophic arthritis of the spine. It is perfectly conceivable that calcium deposits may occur much earlier in certain areas than in others, and in such instances the condition would appear to be a local one rather than generalized at least for the time being. Whether the new term osteospondylitis, or any new name, should be given to this condition, because it is merely a localized process, is a debatable point. Dr. Murray of Liverpool some years ago called my attention to the

fact that these hypertrophic deposits of the spine are rarely found on the left side of the bodies of the vertebra, while they may be very prominent on the right. He suggested at that time, that the pulsating aorta probably prevented the deposit on the left. Since that time, I have always examined museum specimens with that point in view and have confirmed his observation. The diagnosis between a localized process of this kind and tuberculosis may be difficult at times. I recall one of my own cases, in which there was a very definite spike in one of the upper lumbar vertebrae with a loss of substance in the vertebra immediately below. Because of the unequal limitation of motion and the marked bony deposit early in the disease, I decided in favor of a local condition, such as that described. Future development proved the diagnosis to be correct.

DR. ALBERT H. FREIBERG, Cincinnati: The cases which have been shown by Dr. Campbell are very interesting, but I think that they are far from being rare. We see cases of that kind, every now and then; but Dr. Campbell, I think, has shown us cases of infectious osteoarthritis of the spine. I object very seriously to a multiplication of names. "Localized osteospondylitis" is unscientific, as the disease is not always localized in these cases, and because such a term produces con-

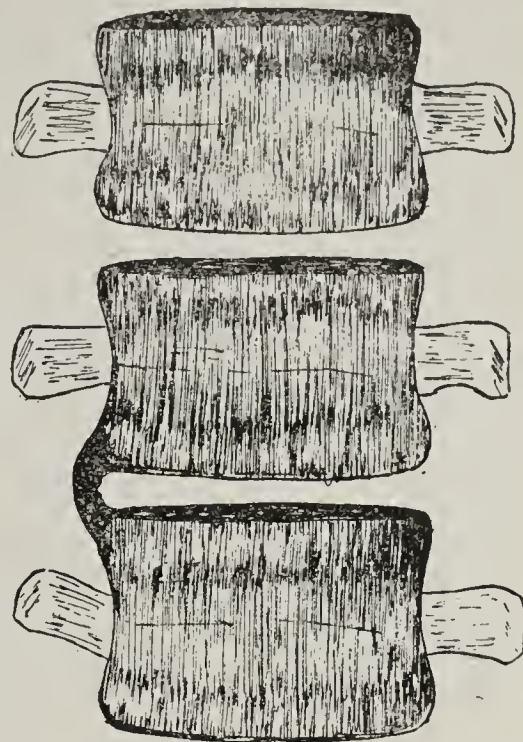


Fig. 5.—Roentgenogram of Case 3 indicates bony lapping of adjacent borders about intervertebral disk; no change in disk or other portions of spine.

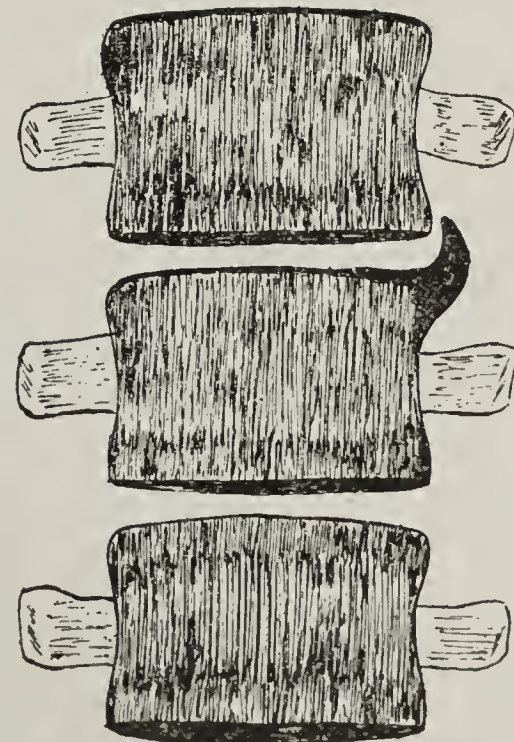


Fig. 6. (Case 4)—Extension of superior border about intervertebral disk, the adjacent vertebra above showing no change.

fusion. We do not need a new term for this disease. I have seen this condition half a dozen times or more, and on both sides at once; and I think that it is a part of the condition which we call infectious osteoperiostitis or osteo-arthritis, as the case may be. In one of my cases, there was some difficulty in diagnosis; because, soon after the onset of the disease, abscess formation was apparent. I do not remember what the etiology of the case was, but we were fairly clear about it. Unless we are dealing with a mixed infection which is unusual in these conditions, they very soon clear up in the roentgenogram by the appearance of new bone, which we do not see as an early manifestation in tuberculosis. When we see new bone early in the course of disease, we should be cautious about making a diagnosis of tuberculosis; for it is not a part of the pathologic anatomy of that disease except late as a part of the process of repair.

DR. ROLAND MEISENBACH, Buffalo: In the main, I agree with Dr. Freiberg. I do not believe that Dr. Campbell wishes us to understand that the spurs which he has shown represent a local process, but rather a localized entity of a general metabolic diathesis. I believe that in some cases the osseous spurs are seen in a very early stage, even an earlier stage than Dr. Campbell has shown. I especially refer to patients complaining of backache, with only slight muscular spasms, or very slight restriction of spinal motions, due rather to muscular spasms than to the actual bony formation. I believe that these muscle spasms are produced by very small spicules such as Dr. Campbell has shown, but in an earlier stage. These I have seen in a number of cases to be embedded in the intervertebral disks, and later on they grow in size and also appear in other joints than the vertebrae. I think, however, that it is very important to make early diagnoses of these cases, if possible. I have followed some of these cases and have had an opportunity to make a careful study, including the metabolic study, by which it was possible to diet the patient according to the metabolic chart rather than at random. It is also interesting to note how these charts would change. One of the earliest objective symptoms which is noted is a slight rigidity in the spine. The early diagnosis can sometimes be made by noting clouded intervertebral disks on the roentgenogram and in rare instances, actual small spicules can be seen. These are often the patients who complain of vague rheumatic conditions. My plea is for early diagnosis.

DR. W. RUSSELL MACAUSLAND, Boston: This nomenclature is very confusing. It seems to me that the roentgenogram Dr. Campbell showed and the clinical picture correspond to a monarticular infectious process. We see these spicules or spurs thrown out in different stages in other monarticular infections—notably in the elbow joint, around the acetabulum, and on the bottom of the os calcis. It seems to me that this condition can be classified under a much simpler terminology; that is, infectious arthritis of the spine with spur formation in the lateral ligaments.

DR. J. T. RUGH, Philadelphia: I want to mention two cases of the older type with pain that I have treated. I anticipated Nature's efforts at ankylosis of the spine, and placed bone grafts after the method of Albee, with excellent results.

DR. W. C. CAMPBELL, Memphis: I had no idea of originating a new term. "Osteospondylitis" would be the natural term to apply to the same condition in the spine that in a joint we call osteo-arthritis. I used the term "local" as the process in all of my cases was confined to one intervertebral disk in the same manner that monarticular osteo-arthritis of a joint is confined to one joint. Such a process, of course, may originate at a distant focus. If "osteospondylitis" is confusing to anyone, I am perfectly willing to apply "osteo-arthritis" or any other term, for it was only my desire to call attention to certain local processes with referred pains which had been diagnosed as acute abdominal lesions. Two of the cases were observed over a long period of years, and show no extension to other portions of the spine. All responded to simple orthopedic measures. I do not believe that the aorta has any influence on the distribution of the process, as suggested by Dr. Gaenslen, for the condition is frequently bilateral or on either side. I stated that I did not regard the condition as uncommon, though one can find scant reference to such local changes in the spine; but there is ample discussion of analogous affections in joints—i. e., monarticular osteo-arthritis.

THE VALUE OF THE WASSERMANN TEST IN PREGNANCY *

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AND

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In consideration of this subject it was thought advisable to discuss it under three main headings: (1) its value from a sociologic point of view; (2) its value from a medical point of view; and (3) theoretical serologic considerations.

VALUE OF WASSERMANN TEST FROM A SOCIOLOGIC POINT OF VIEW

Under the first caption we primarily consider the case of the mother who may or may not have a dependent family. She may be, but usually is not, aware of the fact that she has the disease. This state of affairs is dependent on several causes. In the first place, many more women than men contract the disease innocently, and therefore are much more apt to ascribe its manifestations to other causes.

Second, the initial lesion is usually within the vagina and causes relatively little discomfort. Gaucher¹ has shown that in 33 per cent. of pregnant and 37 per cent. of nonpregnant women with primary syphilis the initial lesion cannot be demonstrated. Frequently the secondary manifestations are slight or are of such a character that they are ascribed to other causes. There are a certain number of patients who give no manifestations of the disease even though carefully observed and closely questioned. These patients, therefore, demand more than a casual examination to detect the presence of the disease. They have the inherent right of any patient to a careful, thorough examination, which is all the more important because they are the actual or potential mothers of families. Moreover, the danger to which these women are exposed because of the inherent tendency to miscarriage and premature labor in this disease is not to be thought of lightly. Because of the general debilitated condition consequent on the syphilitic infection, these patients are much more susceptible to puerperal sepsis and much less able to withstand its ravages. Even if puerperal sepsis does not occur, considerable harm may result from the psychic shock attendant on one or several miscarriages or the birth of diseased or marasmic children.

The rights of the fetus must next be considered. Proper treatment during gestation will usually permit the mother to carry the fetus to full term. Trinchese has shown that pregnancy is rarely terminated before the fourth month by syphilis. Of the cases of miscarriage from the fourth to the seventh months with dead children, from 35 to 40 per cent. are from syphilitic women. Of the cases of premature birth at the eighth month, a large percentage are from syphilitic

* From the Departments of Experimental Medicine and of Obstetrics, University of Illinois, College of Medicine.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Gaucher: Quoted by Carle, *Ann. de dermat. et de syph.*, 1913, iv, 451.

2. Trinchese: *Beitr. z. Geburtsh. u. Gynäk.*, Berlin, 1913, xviii, 149.

women, and this group comprises about two thirds of all the syphilitic children. He believes, therefore, that the infection usually occurs after the fourth month and more commonly in the latter months of pregnancy, and hence early and intensive treatment in a given case gives the baby a good chance. Repeated miscarriages, therefore, or the birth of undeveloped children from this cause are unnecessary and cast a decided reflection on the skill of the attendant physician.

According to reliable authorities there is a high percentage of cases in which mental deficiency varying from absolute idiocy to the moron state is attributable, at least in part, to the deleterious effects of congenital syphilis. Gordon³ found 50 per cent. of this group reacting positively.

Also the prevention of various deformities, such as the saddle nose, saber shin, syphilitic keratitis, deafness and deformities of the teeth and bones, is coming to be regarded as necessary to the complete fulfilment of our obligations to the patients.

Again, there is the indirect loss of life seen in the cases of marasmic babies that do not develop normally and die of malnutrition or some mild infection which they would be able to withstand if they were not syphilitic. Engle and Reimer⁴ in this connection have shown that of children who show syphilitic lesions within the first month nearly all die. If the lesions appear in the second month two thirds die. Of those who first show lesions in the third month one half die. Only 29 per cent. of syphilitic children survive one year.

The protection of society in general from these possible sources of infection is an important consideration, and under this heading must be considered the danger from promiscuous osculation, the infection of a second husband, the transmission to other children in various ways from a congenital syphilitic baby or child, or its potential danger to a wetnurse or to foster parents. Besides these considerations the less probable though undeniably possible transmission of the disease through the medium of clothing, towels, drinking cups, and other fomites must be taken into account.

When individuals suffer mental impairment due to acquired or congenital syphilis, they become, depending on the amount of impairment, complete or partial charges of the state. It requires but a glance through the great charitable institutions with their cases of general paresis, tabes dorsalis, cerebrospinal syphilis, syphilitic keratitis, congenitally syphilitic idiots, imbeciles and morons to convince one of the great practical importance to society of the early recognition and effective treatment of the disease.

Another great class of state charges which is a constant source of expense and menace to society is the criminal class. The percentage of syphilis is very high among these people but it is very hard to estimate in which cases the degeneracy is due to the infection and in which the infection follows as a result of the degeneracy. In this connection the statistics of the New York Health department quoted by Pollitzer⁵ are of interest. He states that 35 per cent. of 3,809 cases from the criminal, degenerate and derelict class have syphilis. These were divided as shown in Table 1.

Of late years much has been said of the overproduction of inferior material by the lower and mentally

inferior strata of society, and many meetings are being held throughout the country to consider the question of birth control. By preventing the birth of feeble-minded syphilitic children this movement would be aided in no inconsiderable degree. Again, every social unit has an actual value to the state if it is capable of self-support. Therefore, the prevention of the death of the fetus by abortion or from other causes predisposed to by syphilis and the protection of the mother from puerperal sepsis or the various manifestations of the disease is an economic measure of great importance.

Another group of individuals must come in for consideration as regards protection from infection by a syphilitic pregnant woman, namely, the obstetrician and nurses. It is a significant fact that the forefinger of physicians is the second most common site for extragenital chancre. Dr. Hyde has said that rarely a week went by that he did not have a case of this kind in his office. The use of rubber gloves has reduced the number of these infections, but certainly not eliminated the possible danger of contamination. A positive Wassermann in any given case would serve to protect the medical attendants completely by insuring proper prophylactic measures. The protection of physicians and hospitals from malpractice suits by proving that the cause of an abortion or syphilitic

TABLE 1.—SYPHILIS IN THE DERELICT CLASS

	Number of Tests	Positive	Per Cent. Positive
Tombs Prison (men awaiting trial).....	391	45	11.5
Hart's Island Reformatory (boys).....	544	37	6.8
Penitentiary, Blackwell's Island (both sexes)	253	62	24.5
Workhouse (both sexes).....	2,621	1,209	45.7

infection antedated the time of entrance into the hospital or the attendance of the physician is of considerable medicolegal importance.

VALUE OF WASSERMANN TEST FROM THE MEDICAL POINT OF VIEW

In order intelligently to consider the value of the Wassermann test in pregnant women let us briefly consider its value in the various forms of syphilis uncomplicated by pregnancy. The test is now of such great value in medicine that it has become a routine measure in many hospitals, dispensary clinics and asylums. The percentage of positive reactions in the different stages of syphilis varies somewhat in the hands of different investigators, but on the whole the results agree fairly well. In primary syphilis the test is positive in about 80 per cent. of the cases after the seventh week. Previous to that time a negative reaction does not exclude syphilis.

It is in secondary syphilis, especially in the untreated, that we obtain the largest number of positive results, averaging from 90 to 100 per cent. Treatment will considerably lower this percentage. In tertiary syphilis the Wassermann test is of greatest value in diagnosis. Patients that have not been treated react positively in about 95 per cent. of cases. In those having irregular treatment the reactions are positive in about 75 per cent. of cases. The so-called parasyphilitic diseases, which a decade ago were classed under various headings, have now been proved by the Wassermann test and tissue stains to be but a manifestation of syphilis of the nervous system. In

3. Gordon: Arch. Pediat., 1916, xxiii, 273.
4. Engle and Reimer, quoted by Kellner: Ztschr. f. d. Erforsch. u. handl. d. jugend. Schwachsinn, iv, 1.
5. Pollitzer: Am. Jour. Obst., 1916, lxxiii, 857.

general paresis the reaction is positive in the blood in about 100 per cent. of cases, and in the spinal fluid in about 90 per cent. Patients who have been treated in cases of tabes dorsalis average from 40 to 50 per cent. positive in the blood test, while those who are untreated give positive results in from 96 to 100 per cent. The cerebrospinal fluid in tabes dorsalis averages 60 per cent. positive. In cerebrospinal syphilis the positive reactions are nearly as high as in paresis.

The difficulty of diagnosis of latent cases of syphilis is increased by the indefinite history, by lack of clinical evidence of disease or by the peculiar and obscure manifestations of the disease. It has been demonstrated by many that a history of the disease as given by the majority of those who may have been con-

88.8 per cent. positive Wassermann tests in cases showing secondaries, 88.8 per cent. in latent cases and 61.5 per cent. in suspected cases. In mothers of syphilitic children Leroux and L'Abbé⁹ found 71 per cent. in cases with no manifestations, 71.33 per cent. in cases with outspoken manifestations, and 71 per cent. in cases with doubtful manifestations. E. Adronesco and F. Saratzeano¹⁰ found 92.3 per cent. in mothers with latent or developing syphilis. P. Mulzer and Michaelis¹¹ found 83 per cent. positive in these cases. In a series of 72 cases only twenty-one of which showed clinical manifestations, Baish¹² found 87.5 per cent. positive Wassermanns.

Some authors give lower figures. Thus, Bar and Dannay¹³ in pregnant and puerperal women with outspoken lesions found 41.66 per cent. with total inhibition and 8.33 per cent. with partial inhibition, and positive in only 13.12 per cent. of cases with suspicious history, as repeated abortion and macerated fetuses. Dannay¹⁴ reports 53.3 per cent. strong and 33.55 per cent. moderately strong reactions in cases with open syphilis and 30 per cent. in suspected cases. Comisky¹⁵ in a series of 1,822 routine Wassermann test on pregnant women found 8 per cent. positive. Of those positive, 82 per cent. gave no history or clinical evidence of the disease. He quotes Williams to the effect that 75 per cent. of his series give no history of the disease.

The Wassermann reaction is still a reaction of mystery. It is now recognized by most authorities that the test is not a true antibody-antigen reaction, but depends on certain lipotropic substances produced in the tissues of syphilitics during the progress of the disease. The results of Noguchi¹⁶ with practically pure spirochete antigen confirm those who hold that the Wassermann test is not a true immunity reaction. He obtained a much smaller percentage of positive

sciously or innocently exposed is of very little value. Again, the patient may have syphilis clouded by a second disease or the symptoms may be those of a clinical entity entirely different from syphilis, and unless a Wassermann test is performed the true condition is overlooked and proper therapy neglected. This difficulty of correct diagnosis is shown in a recent paper by one of us,⁶ in which of fifty-six cases in the medical dispensary that reacted positively the tentative diagnosis of thirty-two was other than syphilis. Only 50 per cent. of those having positive reactions gave a history of having syphilis. In another series of dispensary patients examined by Krumbhaar and Montgomery,⁷ nineteen of forty-eight cases that gave positive reactions were tentatively diagnosed under other headings at the first visit. Any physician who has had many Wassermann reactions performed on his patients knows how frequently a difficult and troublesome case is set right by the results of the test. In latent syphilis the positive Wassermann reaction may constitute the only evidence of the existence of the disease and prompt specific therapy may prevent the appearance of tertiary lesions.

The Wassermann reaction is not only a valuable aid in diagnosis, but is equally important as a guide in the treatment of syphilis. It should be emphasized in every case that the earlier treatment is begun the greater the possibility for the production of a permanent cure. Moreover, treatment should be continued until the Wassermann becomes negative. Treatment will modify the Wassermann in practically all stages of syphilis and change it to a negative in about 80 per cent. of cases. Since most investigators agree that a positive Wassermann means the presence of living spirochetes somewhere in the body, even though the lesion is not clinically manifest, it is necessary to persist in proper treatment until the Wassermann becomes negative and then to continue to keep it so.

Most of the series of Wassermann tests in pregnancy that we have found reported deal with cases of known or suspected syphilis. Thus E. Bunzel⁸ reports

TABLE 2.—SYPHILIS AMONG WOMEN OF ALL CLASSES

	Number	Per Cent. Positive
Married women.....	116	10.6
Single women.....	44	13.6
White women.....	146	9.5
Colored women.....	14	28.5

TABLE 3.—SYPHILIS AMONG DIFFERENT NATIONALITIES

Nationality	Number	Negative	Positive	Per Cent. Positive
Negro.....	14	10	4	28.5
U. S. A.....	29	21	5	17.3
Polish.....	36	28	6	16.6
Irish.....	11	10	1	9
German.....	27	25	2	7.4
Bohemian.....	10	10		
Hungarian.....	6	6		
Lithuanian.....	5	5		
Swedish.....	4	4		
English.....	4	4		
Russian.....	4	4		
Jewish.....	3	3		
Slavish.....	2	2		
Roumanian.....	1	1		
Finnish.....	1	1		
French.....	1	1		
Danish.....	1	1		
Syrian.....	1	1		

reactions with this antigen in known syphilitics than the Wassermann gave, and a larger percentage of positive reactions was obtained when the Wassermann had become negative. On the other hand, negative reactions were obtained in leprosy when the Wassermann was strongly positive. His results are very closely related to the immunity reactions as we understand them at this time. Recently Zinsser, Malcolm and

6. Moore, J. J.: THE JOURNAL A. M. A., Dec. 4, 1915, p. 1980.
7. Krumbhaar and Montgomery: THE JOURNAL A. M. A., Jan. 24, 1914, p. 290.
8. Bunzel, E.: Wien. klin. Wchnschr., 1909, xxii, 1230.

9. Leroux and L'Abbé: Arch. de méd. d. enfants, 1911, xiv, 881.
10. Adronesco, E., and Saratzeano, F.: Presse méd., 1912, xx, 1.
11. Mulzer, P., and Michaelis: Berl. klin. Wchnschr., 1910, xlvii, 1.
12. Baish: Quoted by Mulzer and Michaelis (Footnote 11).
13. Bar, P., and Dannay, R.: Obstétrique, 1909, i, 1.
14. Dannay: Nouv. arch. d'obst. et de gynéc., 1912, i, 320.
15. Comisky: Am. Jour. Obst., 1916, lxiii, 676.
16. Noguchi: THE JOURNAL A. M. A., April 20, 1912, p. 1163.

McBurney¹⁷ have used a pure spirochete antigen as a control in 159 cases and found twenty-one discrepancies, in a considerable number of which the spirochete antigen fixation indicated syphilis, which the ordinary antigen had missed. They do not regard their reaction, however, as specific, because similar reactions could be obtained from cultures of typhoid and colon bacilli obtained in the same way. They believe, however, from the apparently greater delicacy of the reaction that there is a certain specific element superadded.

There are various theories in explanation of the test. One of them by Bergel¹⁸ is worthy of consideration. The spirochetes contain lipid substance which induces the formation of antibodies or ferments invested with the properties of dissociating fats. The lipid is similar to lecithin. The ferment after it is formed causes a positive reaction by acting on the lipid substances which are always employed as antigens and the splitting of these produces an absorption of complement. Whether the complement is used up in the splitting process or becomes absorbed by the split products he does not state. As long as the tissue fluids do not

act.²¹ Hence, it will be seen that any condition such as pregnancy in which the lipoidal content of the blood is increased, an interference might theoretically be expected in the reaction that depends for its specificity on the presence or schism of lipoidal bodies.

Abderhalden reactions performed in twenty-five cases of this series gave decided positive reactions, but no difference was noted in the cases giving a positive Wassermann. This is not surprising, as by the dialysis method of the Abderhalden test quantitative results are not to be expected except in serums of widely different ferment titer.

TECHNIC

In our series of tests we used the antichickens hemolytic system. Washed chicken corpuscles were made up in a 2 per cent. suspension and to this was added twice the titer of hemolysin. For complement we used fresh guinea-pig serum diluted to 8 per cent. This was titrated each day and twice the titer employed in the test. Two or more antigens were used in each test. These were acetone insoluble fractions of beef and

TABLE 4.—POSITIVE WASSERMANN IN PREGNANCY

Number	Race	Age	Para	Length of Pregnancy	Abortions	Civil Status	Social State	History of Syphilis	Remarks
1	U. S. A.	28	3	8 mo.	...	M.	L.	0	Healthy
2	U. S. A. ....	..	6	6 wk. after birth	...	M.	L.	...	Eclampsia, blood drawn 6 hours after birth
3	German.....	..	4	7 days puerper.	...	M.	L.	...	Postpart. mania, 2 tests, 32 days apart
4	Polish.....	23	1	9.5 mo.	...	S.	L.	0	
5	Polish.....	23	1	9 mo.	...	M.	L.	0	
6	German.....	27	2	6 mo.	0	M.	L.	0	Threatened abortion
7	U. S. A.	21	2	9 mo.	0	M.	L.	0	
8	Polish.....	22	1	9.5 mo.	0	S.	L.	0	
9	Polish.....	19	1	8 hrs. p.p.	0	S.	L.	0	
10	Negress.....	22	2	8 mo.	1	M.	L.	0	
11	Irish.....	25	2	.....	0	S.	L.	0	
12	Negress.....	36	6	10 mo.	2	M.	L.	+	Two tests 1 month apart
13	Polish.....	24	2	9 mo.	0	M.	L.	0	
14	Polish.....	23	2	.....	1	S.	..	0	
15	U. S. A.	43	8	.....	3	M.	L.	0	
16	U. S. A.	20	1	.....	2	S.	L.	0	
17	Negress.....	27	2	10 mo.	0	M.	L.	0	Goiter
18	Negress.....	27	2	.....	2	M.	L.	0	
Weak Pos.									
19	U. S. A.	17	2	8.5 mo.	0	M.	L.	0	
20	Polish.....	27	2	8.5 mo.	0	M.	L.	0	
21	U. S. A.	21	2	10 mo.	0	M.	L.	0	
22	Bohemian.....	24	6	.....	1	M.	L.	0	
23	U. S. A.	17	1	10 mo.	0	S.	L.	0	
24	Polish.....	22	2	9.5	1	S.	L.	0	

contain these fat-splitting ferments the reaction is negative. Later, as this lipase increases, the reaction becomes positive. It is well known that all ferments, but especially the proteolytic, are increased in syphilis.¹⁹ Likewise we have a great concentration of ferments, especially the proteolytic, in pregnancy, pneumonia and various other conditions, as previously pointed out by one of us.²⁰

In nonpregnant conditions and in various diseases which increase the proteolytic ferments the Wassermann when performed with the best controlled technic is specific. Whether such is the case in pregnancy, which state the ferments of the blood are greatly increased, is one of the points for investigation in the present paper.

The later work on the Abderhalden reaction has shown that there is a rise in the antiferment titer of the blood in pregnancy coincident with the increase in ferments. The antiferments, at least for the proteolytic ferments, have been shown to be of lipoidal char-

acter. Hence, it will be seen that any condition such as pregnancy in which the lipoidal content of the blood is increased, an interference might theoretically be expected in the reaction that depends for its specificity on the presence or schism of lipoidal bodies.

All serums were heated to 56 C. (132.8 F.) for one-half hour and used in amounts of 0.1 c.c. After the patient's serum, the antigen and complement were added to the test tubes, the total volume was made up to 1 c.c. by the addition of normal salt solution and then incubated for one hour, after which 1 c.c. of sensitized chicken corpuscles were added and the whole again incubated for one hour, at which time the readings were made.

CLINICAL MATERIAL

The serums studied were obtained in a routine examination of the cases in the obstetric ward of Cook County Hospital, Chicago, and a few from private hospitals. Blood was drawn at various intervals from the fifth week of gestation to the thirty-second day of the puerperium. The majority were from the ninth month to term. In a few cases only the retroplacental blood was examined. In several cases fetal blood from the cord and mother's blood were examined simultaneously. In a few cases Wassermann tests

17. Zinsser, Malcolm and McBurney: Jour. Immunology, 1916, i, 180.
18. Bergel: Munchen. med. Wehnschr., 1912, lix, 1095.
19. Falls: THE JOURNAL A. M. A., Jan. 1, 1916, p. 22.
20. Falls: Jour. Infect. Dis., 1915, xvi, 466.

21. Jobling and Peterson: Jour. Exper. Med., 1914, xix, 459.

were repeated. The results were identical in all but one. This was a case of eclampsia with several postpartum convulsions. The serum for the first test was obtained six hours after the delivery and was strongly positive. A second one made eighteen days later proved negative. No explanation of this is offered at this time.

The ideal way would be to have a test made on the patient's entering the hospital, one at the time of delivery, and one a month later, but this was found to be impossible in the present series because of the nature of the material used.

In the history of each patient we recorded the age, nationality, the number of the present pregnancy, length of the present pregnancy, history of syphilis, number of abortions, the legal status as to whether married or single, complications, and any other points that might be of interest.

A total of 160 women were examined. They ranged in age from 15 to 43 years, over 90 per cent. being from 18 to 22 years of age. Eight nationalities are included in this group. The number of each with the percentage of positive reactions is shown in Table 1. Parity varied from 1 to 14, the majority being under 4. Only one gave a history of syphilis and five gave doubtful histories. Twenty-three had had previous abortions, varying from one to four. Forty-four women were unmarried.

Eighteen, or 11.3 per cent. of the women, gave strong positive reactions; six gave doubtful reactions, and not being repeated we could not justifiably classify these as being syphilitic. Of 116 married women, 10.3 per cent. were positive; of forty-four single women, the percentage positive was higher, being 13.6 per cent. Among twenty-three giving a history of previous abortions, six, or 26 per cent., had positive tests. All the positive results were on patients in the Cook County Hospital, as none of the patients from other hospitals who come into this series had syphilis. These results are very close to those obtained by one of us⁶ in a series of Wassermann reactions on medical dispensary patients, a class of individuals of the same social status as those under discussion. In the dispensary series 13.6 per cent. had positive reactions.

Whitney²² in the medical division of the outpatient department of the University of California Hospital found 21.8 per cent. positive, and of the entire outpatient department, a series of 7,885 cases, found 6.9 per cent. It might be objected that these series deal with patients of the lower grade of society in whom a prevalence of syphilis is more to be expected. However, Kolmer²³ states that the disease is from three to eight times more prevalent among the better than among the lower classes. Considering the eighteen giving a positive reaction, we find one had eclampsia, one postpartum mania, one threatened abortion, and one goiter. None of the others had any complications. The parity ranged from 1 to 8, the age from 18 to 43. One gave a history of syphilis and six, as stated previously, had previous abortions. Six were unmarried. Four were negroes.

It is well known that syphilis is more prevalent among negroes than in the white race. Our findings agree with this. Among 146 white women examined 9.5 per cent. were positive; among fourteen colored women 28.5 per cent., practically three times as many, were positive.

From the results of this series it would seem that the cases complicated by toxemias and mental disturbances give a higher percentage of positive reactions. From the small number of cases we do not feel justified in drawing definite conclusions.

When we consider this fairly large percentage of pregnant women who have positive Wassermann reactions, who have improper treatment or none at all, and who are continuously bearing syphilitic offspring, it is open to serious question if we as a profession are doing our duty by those patients. Moreover, it must be remembered that all mothers who have latent syphilis do not react positively to the Wassermann test. Boas²⁴ found that in eighty-one mothers giving birth to syphilitic children, only sixty-one, or 75 per cent., had a positive reaction. Leroux and L'Abbé,⁹ in another series of mothers who had given birth to syphilitic children, had a percentage of 71 reacting positively, whether they had symptoms of syphilis or not. The fathers of these same children reacted positively in 42 per cent. of cases. This is easily explainable, as the fathers know the disease they have contracted, and are treated, while the mothers are in entire ignorance of their condition. Leroux and L'Abbé⁹ conclude that maternal syphilis is often latent without any manifestations, and therefore more often virulent because unrecognized and untreated. Maternal syphilis, with a positive reaction, generally gives rise to outspoken symptoms in the child, sometimes to a latent syphilis with a positive reaction, and occasionally to healthy children. A large majority of children reacting positively have symptoms of syphilis, while with those persistently negative the child usually remains healthy. A positive reaction in a young child is an unfavorable prognostic sign.

SUMMARY

The Wassermann reaction is of great value in diagnosing syphilis in pregnant women in whom the condition is usually latent.

The diagnosis of this condition in mothers with the institution of proper treatment will prevent the increase of syphilitic children and those born can be properly treated as early as possible.

The majority of mothers having syphilis are ignorant of their condition and therefore improperly treated.

In a series of 160 pregnant women we found 11.3 per cent. positive Wassermanns.

In 116 married women 10.6 per cent. gave a positive reaction.

In forty-four single women 13.5 per cent. gave a positive reaction. White women were positive in 9.5 per cent. of cases; colored women in 28.5 per cent.

Only one of eighteen giving a positive reaction had a history of syphilis, six gave histories of previous abortions, three had severe complications of pregnancy, as eclampsia and mental psychoses.

ABSTRACT OF DISCUSSION

DR. EDWARD P. DAVIS, Philadelphia: This paper carries with it a warning and a most important suggestion: that the Abderhalden and the Wassermann tests are never entirely conclusive under all conditions of pregnancy; hence we must not rely exclusively on them. The Abderhalden test has failed in a very considerable number of cases; the Wasser-

22. Whitney: THE JOURNAL A. M. A., Dec. 4, 1915, p. 1986.
23. Kolmer: THE JOURNAL A. M. A., May 6, 1916, p. 1435.

24. Boas: Quoted by Kolmer, Infection, Immunity and Specific Therapy, p. 463.

ann test does not always detect latent syphilis. Both tests could be employed with great caution and we come back to the old principle that study of the individual patient and clinical observation should never be neglected for laboratory findings.

DR. J. R. LOSEE, New York: During the past two years at the New York Lying-in Hospital we have made routine Wassermann tests on 2,000 antepartum women; 3.05 per cent. were positive. Fildes, in the East End of London, observed 10 per cent. in 677 women. This work was undertaken with the intention of treating these syphilitic pregnant women, but it was found that without a proper sociologic organization it was impossible to carry it on, for these patients often failed to return for treatment. Observers have shown that from 10 to 50 per cent. of women who have given birth to repeated macerated fetuses are syphilitic, and in many other cases the story is doubtful. Of twenty-seven women who were delivered of macerated fetuses at the hospital, nine, or 37 per cent., gave a positive reaction. Syphilis has also been credited for the intrapartum death of the infant but at this stage the many other mechanical conditions which arise and cause the death must be considered. However, before we can obtain any degree of success in the care of these unfortunate women, prenatal clinics will have to be established and supplied with efficient nurses who will follow up these women in their homes.

DR. FREDERICK H. FALLS, Chicago: I agree with what Dr. Davis said about the results of the Abderhalden and Wassermann tests. We must be careful about interpreting any biologic test as being absolute evidence and negating all clinical evidence. However, in the hands of the best men, we find that the Wassermann reaction is to be relied on in a large percentage of cases, and my plea is that we use this valuable aid in these pregnant women in order to give them a better chance to combat the disease during and after pregnancy and the offspring a better chance of starting life without the handicap of syphilis in an outspoken degree. The value of the Abderhalden test is very questionable. Two years ago, at Atlantic City, I pointed out the number of cases in which fallacies arose when the Abderhalden test was performed on nonpregnant individuals. Many of these gave positive results. Its greatest value was shown to be in a negative reaction. When negative it ruled out the possibility of pregnancy; when positive, the woman might or might not be pregnant. The reason for bringing the Abderhalden test into this discussion is that according to the latest work, particularly that of Jobling and Petersen, the Abderhalden reaction is dependent largely on the production of antiferments in the blood which are lipoidal in character. The Wassermann test probably is dependent on the production of lipolytic ferments in the blood of syphilitics. If the blood serum in these two conditions contains these constituents you can see that it would be theoretically possible that pregnancy might throw off the Wassermann test. Apparently, from our study it does not. Dr. Losee with a large number of cases, larger than ours, found 3 per cent. positive. I think the average returns on Wassermann test as performed throughout the country will give a higher percentage. There may be some explanation for the apparent discrepancy in his series. The one thing I should mention also in regard to his statement about the death of the fetus being ascribed to syphilis and due to it, is that in any given case not only should a Wassermann be done, but the cord and placenta should also be examined for spirochetes. Dr. Slemmens of Yale occasionally gets positive demonstrations of spirochetes in the placenta or cord in the presence of a negative Wassermann in a known syphilitic mother. One cannot be too careful in making a search for the evidence of syphilis. The subject is one of great importance, for the mother, the baby, and for the physicians.

Cleanliness.—Long experience has taught the lesson that cleanliness offers a protection against disease; that clean surroundings are apt to be free of infection and that cleanliness is apt to be safe food.—Rosenau, Preventive Medicine.

A STUDY OF AN EPIDEMIC OF FOURTEEN CASES OF TRICHINOSIS WITH CURES BY SERUM THERAPY.

PRELIMINARY COMMUNICATION *

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The following observations were made in the course of a study of an epidemic of fourteen cases of trichinosis in which the patients were admitted to the wards of the St. Joseph's Hospital at Far Rockaway, N. Y. The laboratory studies were made partly in the laboratory of the hospital and partly in my home. Observations 1 to 6 inclusive represent confirmation or amplification of findings already made by other authors. All the other findings are new.

1. The Kernig reaction was present in all the cases.
2. Edema of the face occurred in all the cases.
3. Edema of the lower extremities occurred in six cases.
4. The reflexes in the lower extremities were abolished in all the cases and are still absent now (six months having elapsed since the cases first came under observation).
5. Trichinae were found in the blood in nine cases of the fourteen.
6. Trichinae were readily found in the cerebrospinal fluid in eight of the fourteen cases.
7. The diazo reaction was in direct proportion to the degree of eosinophilia.
8. Gangrene of one lower extremity was observed once.
9. The leukocytosis diminished as the eosinophilia increased. The blood coagulation time is markedly prolonged in trichinosis.
10. In one case trichinae were still found in the cerebrospinal fluid of a child 3 years of age three months after clinical recovery.
11. Trichinae were found in a pleural exudation once.
12. Trichinae were not found in the urine in any case.
13. Trichinae were not found in the uterus but were abundantly present in the placenta.
14. Trichinae were present in large numbers in the milk of a nursing woman and were found in the piece of excised mammary gland.
15. In one case complicated by furunculosis, trichinae were found in the pus of a furuncle of the external auditory canal. On inoculation into a rabbit, trichinosis was produced.
16. In two cases the duodenal tube was passed under control of the fluoroscope. In one of the two cases trichinae were abundantly found. This patient is now suffering from cholecystitis.
17. The feces were clay colored throughout the disease in every case, and have the same appearance in the five cases that have remained under observation. From experimental studies it appears probable that the color is due to the reduction of bilirubin by living trichinae.
18. In a cat which accidentally developed trichinosis after eating a rabbit in which trichinosis had

* Read by invitation at a meeting of the staff of the Pathological Laboratory, Mount Sinai Hospital, New York, July 12, 1916.

been experimentally produced, the stools were also found to be clay colored.

19. Trichinae were present in the stools of all the cases throughout the disease and in three cases in which studies in this direction were carried on after recovery. They are easily proved to be present by making the stools alkaline and allowing them to stand from twelve to twenty-four hours.

20. Trichinosis was produced by the injection of pleural fluid from a case of trichinosis.

21. Trichinosis was produced by feeding feces from cases of trichinosis to two dogs.

22. On feeding infected meat to animals the eosinophils appear usually within the first five days. In one case 10 per cent. of eosinophils were found after thirty-six hours. There was no leukocytosis when the eosinophilia first appeared.

23. The blood of a series of infected animals was examined for trichinae. After five days' examination it was negative in all. The first trichinae were found on the seventh day, two or three then being seen in each field. The temperature during the first five days remained from 100 to 101 F.

24. Trichinae were absent in the heart muscle, as was also the eosinophilia. Feeding of heart muscle to animals gave negative results.

25. Intraperitoneal injection of urine from cases of trichinosis caused no infection.

26. Trichinae occurred abundantly in the brain, and on injection of such tissue into animals the disease can be produced, the eosinophilia being more marked than any other form of production of the disease.

27. Trichinae were found abundantly in the pancreas.

28. As many as four coiled trichinae were found in muscle fibers.

29. Ascites occurred in the experimental disease in animals.

30. The use of serum from human patients who recovered removed the eosinophilia persisting after recovery in man or animals within forty-eight hours.

31. The injection of normal serum had no therapeutic value in trichinosis in man or animals. The same is true of salvarsanized serum and salt solution.

32. In animals the injection of convalescent serum gives an almost complete prophylactic result. Animals fed with infected meat within twenty-four hours after the administration of the serum may develop a mild form of trichinosis. Animals fed at a period later than that prove to be immune. All these experiments were controlled.

33. If immune serum is mixed with infected meat and then fed, the animals do not develop trichinosis, although the ingestion of the same meat without the serum is invariably followed by the appearance of the disease.

34. In two cases of trichinosis in the very active stage of the disease the use of immune serum proved to be of remarkable curative value. There was a decided drop in the temperature within six hours and the abnormal temperature was entirely gone within forty-eight hours. The eosinophilia showed a considerable drop within six hours; there was then a secondary rise and then a return to the figures found in normal blood within forty-eight hours.

35. In twenty-four rabbits suffering from the disease experimentally produced, the immune serum had a curative effect within twenty-four hours.

CARBON MONOXID POISONING

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In the course of investigations carried out for the United States Bureau of Mines on the efficiency of artificial respiration or "resuscitation" apparatus,¹ and on the mine rescue, or oxygen breathing, apparatus worn as a protection against asphyxiating gases,² my attention was called to the fact that there is a widespread misapprehension of some of the fundamental elements concerned in carbon monoxid poisoning. A brief statement of these facts, of the results obtained by investigators in the Bureau of Mines,³ and of some of my own experience may therefore be of use both to clinicians and to experimenters.

Carbon monoxid is the principal product of incomplete combustion of carbonaceous matter. It is responsible for more deaths than the total of all other gases. To carbon monoxid are chiefly due the poisonous effect of smoke in burning buildings, of fume around furnaces and from explosives, of the "after damp" of explosions of methane and coal dust in mines, and from mine fires of timber or coal. To it also are due the unfortunately large number of fatalities in American cities from the character of the illuminating gas supplied.⁴

Carbon monoxid is almost odorless, and has no irritating effect on the lungs. It appears, indeed, to be physically and in relation to the tissues of the body even including the nervous tissues, an entirely innocent and harmless gas except in a single respect—its avidity for hemoglobin, the red coloring matter of the blood. With this substance it forms exactly the same kind of combination as does oxygen, but with an attraction approximately 250 times as strong. Its poisonous effects appear to be wholly due to the resulting decrease in the oxygen carrying power of the blood.

The character of the combination of carbon monoxid with hemoglobin may be seen from the following simple experiment:

A drop of blood drawn from the finger is diluted with water, a drop of very dilute ammonia is added, and the resulting yellow solution is shaken with air. One third of this solution is poured off in a test tube, while the remaining two thirds are shaken with illuminating gas in another test tube. In the course of a few minutes this portion assumes the cherry red tint characteristic of carbon monoxid hemoglobin. It is no

1. For a statement of the results of these investigations see Henderson, Yandell: Resuscitation Apparatus, THE JOURNAL A. M. A., July 1, 1916, p. 1.

2. See a forthcoming Bulletin of the Bureau of Mines, by Yandell Henderson and J. W. Paul.

3. Burrell, G. A., and others: Technical Papers 11, 62, and 100, U. S. Bureau of Mines.

4. Illuminating gas is composed in varying amounts (depending chiefly on the price of petroleum) of "water gas," "coal gas," and vapor from superheated or "cracked" petroleum. So-called "water gas" contains about 30 per cent. of carbon monoxid. It is comparatively cheap to manufacture, and is produced by blowing live steam over coal with the general reaction $C + H_2O = CO + H_2$. The gas formed by the destructive dry distillation of coal, technically called "coal gas," contains only about 6 or 8 per cent. of carbon monoxid. It is therefore far less poisonous than "water gas." The hydrocarbons which it contains, which give the gas flame its luminosity, and which have been supplied to "water gas" from petroleum vapor, are toxicologically practically negligible. "Coal gas" is chiefly used in European cities, while "water gas" is the chief ingredient in America. Yet in many European cities, particularly in England, the price of gas to the consumer is only 50 or 60 per cent. of that usual in American cities. Owing to the greater proportion of "coal gas" and less "water gas," the leakage of the same amount into a bedroom in England will cause the occupant merely a bad headache, while in America death or serious injury results. There is an intimate causal connection between inflation, capitalization, a large proportion of water gas, and the high death rate from carbon monoxid poisoning in American cities. Few facts are more significant than this in indicating how deeply we must cut into our problems in order to apply preventive medicine.

vided into two parts, one of which is set aside in a third test tube, while the other is vigorously shaken with air. In a few minutes this sample has lost its cherry tint and has turned to the appearance of the normal blood set aside in the first test tube mentioned above. The mass action of the oxygen of the air has displaced the carbon monoxid from its combination with the hemoglobin. To all intents and purposes the condition of this blood is the same as if it had never been combined with carbon monoxid.

It is a complete misapprehension, therefore, to suppose that carbon monoxid forms a permanent compound with hemoglobin, or induces any lasting deterioration in its oxygen carrying power. When a man has been overcome by carbon monoxid, and is thereafter brought out of the bad atmosphere into fresh air, the combination of carbon monoxid with the hemoglobin of his blood immediately begins to break up. The higher the percentage of oxygen in the air inhaled, the sooner the carbon monoxid is displaced and the oxygen carrying capacity of the hemoglobin restored. For fifteen or twenty minutes after removal from the poisonous atmosphere (but not more than half an hour), it is beneficial to administer pure oxygen or air considerably enriched with oxygen by means of a tank, bag, and mask with valves which do not allow rebreathing. Even when only pure air is breathed, the mass action of its oxygen is usually sufficient to displace the greater part of the carbon monoxid in an hour or even less time, so that the oxygen carrying power of the hemoglobin is restored sufficiently to meet the patient's needs. Practically all of the carbon monoxid is thus eliminated, and the hemoglobin fully restored in three or four hours. This result is facilitated by the rapid breathing, usually from thirty-five to forty times a minute, which such patients, if not too profoundly asphyxiated, usually develop within half an hour after being removed to fresh air.

Very often the victim never recovers consciousness, and dies a day or two later. Many physicians still hold to the belief, now completely disproved, that the prolonged coma is due to retention of the carbon monoxid, and advocate bleeding and infusion of oxygenated saline solution, the transfusion of blood from some healthy person, and other active efforts at restoration. The minimum time within which it is possible to apply such measures is seldom less than two hours after the patient is brought into fresh air. None of them, nor any known procedure, aside from careful nursing and symptomatic treatment, has been conclusively demonstrated in practice to be of benefit, or has any distinct experimental support. Recovery, when it occurs, is not due to such procedures but occurs more or less in spite of them. There is no reason to expect them to be beneficial, since it is not retention of carbon monoxid, nor any direct action of the gas, but the results of the injury to the brain and other organs due to insufficient oxygen supplied by the blood while the patient was breathing the gas, which is responsible for the prolonged coma and subsequent death or incomplete recovery. There is no known method of restoring tissues to normality after parenchymatous degenerations have once been initiated. Left to itself, nature does all, so far as present knowledge goes, that can be done to stop the abnormal processes. The patient recovers completely if the asphyxia has not been too intense and prolonged, although in many cases men who have once been "gassed" exhibit a muscular weakness of the heart permanently thereafter. In more

severe cases, the patients recover only with the loss, partial or complete, of vision, power of speech, or with some other nervous defect.

To a great extent the severity of the immediate and after-effects of inhaling carbon monoxid depends on the following conditions: In a normal man at rest the tissues consume only a little over one third of the oxygen which the blood brings to them, while during muscular exertion nearly two thirds are utilized. Accordingly the blood of a man at rest may become nearly one third saturated with carbon monoxid without his realizing that anything is wrong. His judgment, temper and behavior, however, are often affected in ways similar to alcoholic intoxication. Such behavior is often seen in city firemen and in the men of a mine rescue crew after breathing smoke. Similar behavior occurs frequently among transient visitors to the summit of Pike's Peak, and is clearly due to deficiency of oxygen.

If a man in this condition tries to make any considerable exertion, the fraction of his hemoglobin uncombined with carbon monoxid may be insufficient to transport the oxygen needed, and he is liable to collapse. When more than half saturated, he is liable to collapse even at rest. If he remains for a considerable time in this condition, the delicate nerve cells of the brain, and less often also other organs, are injured by the insufficient supply of the oxygen which the blood is able to transport to them, and unconsciousness (coma) results. As a rough estimate, it may be stated that usually a man will die who has breathed 0.2 per cent. of carbon monoxid mixed with air which is in other respects normal, for four or five hours, or 0.4 per cent. for one hour. With from 2 to 5 per cent. of carbon monoxid, as after an explosion of coal dust, nearly all of the hemoglobin is combined by the first few breaths drawn, and death follows almost as quickly as in drowning. This is the case also when illuminating gas only slightly diluted with air is inhaled.

The percentage saturation finally reached in breathing any mixture of air and carbon monoxid depends on the relative amounts of the two gases present in the inspired air, multiplied by their relative affinities for hemoglobin. The rate at which the partitioning of the hemoglobin between the two gases proceeds toward the equilibrium point depends largely on the volume of the subject's breathing. A child having a relatively greater respiratory exchange for its size is overcome more quickly than an adult.

On this account small animals, as mice and birds, are overcome much more quickly than are men. Canaries are always carried by the rescue crews of the Bureau of Mines into mines in which there is reason to suspect the presence of carbon monoxid. After the bird has fallen from its perch the portable cage can be closed and oxygen run in from a small tank attached to it. Experience demonstrates that birds may be thus temporarily asphyxiated and revived repeatedly in the course of a few hours, or on many successive days, and be none the worse thereafter. This could scarcely be the case if carbon monoxid had any general poisonous action apart from its temporary combination with hemoglobin. Furthermore, the evidence available indicates that the mere breathing of inert gases deficient in oxygen but containing no poisonous element produces symptoms, degenerations and subsequent death in all respects like those resulting from carbon monoxid poisoning.

The foregoing statements regarding the effects of carbon monoxid are based principally on the classic work of Haldane,⁵ which the experience of the Bureau of Mines has confirmed in all principal features.

As further evidence that carbon monoxid is not in even the smallest degree a protoplasmic poison, the experience of the Pike's Peak expedition, of which I was a member, is of value. Both at ordinary altitudes and at the summit of the peak, the carbon monoxid method of determining the blood volume was repeatedly employed on every member of the party. This method involved the subject's inhaling a measured volume of the gas sufficient to combine with approximately 20 per cent. of his hemoglobin. No vigorous exertion was made for an hour or two after the inhalation, and no considerable ill effects were experienced. Within two or three hours practically all of the carbon monoxid had been eliminated, and the subject was usually as fit for vigorous exertion as before. In fact, he usually went for a hard tramp or climb in the afternoon of the same day. This, of course, would not have been possible, especially in the thin air of a great altitude, if any lasting deterioration in the hemoglobin of the blood or combination of carbon monoxid in the nervous system had been produced.

In contrast with this experience may be placed the fact that in cases of illuminating gas poisoning, the patients are usually completely comatose long after the carbon monoxid in the blood has fallen much below 20 per cent. I have repeatedly examined such cases in New Haven, Conn., both suicides and innocent victims of the deadly "quarter meter." In six successive cases in which a sample of blood was taken for examination in from one to two hours after the patient had been removed to fresh air from the room in which the "gassing" had occurred, the elimination of carbon monoxid was found to have been so rapid that in only two cases was the presence in the blood of from 15 to 20 per cent. demonstrable. All of these cases had probably been saturated up nearly to or beyond the danger point of 60 per cent. Yet from one to two hours in fresh air had served to eliminate the carbon monoxid in every case down to less than 20 per cent., the amount which the small pocket spectroscope employed was easily capable of distinguishing. From three to four hours after removal to fresh air, the blood contained only undetectable traces. Four of these patients died within from twenty-four to sixty hours after the asphyxiation; one recovered completely; another still exhibited a month later a profound nervous impairment.

These observations are sufficient to demonstrate the unwisdom of bleeding patients who have been poisoned with carbon monoxid, as is sometimes done in order to stimulate the formation of new red blood cells. Such a formation requires many days to become fully effective. In the majority of cases the patient's blood is practically free from carbon monoxid before the bleeding is performed. Carbon monoxid poisoning occurs with such variations of circumstance, as size of room, flow of gas, duration of exposure, etc., and the cases exhibit such wide variations in the severeness of the initial symptoms, in the length of time required for recovery, and the completeness of restoration, that it

is difficult to establish conclusions regarding them from merely clinical or even statistical evidence. From the experimental side, however, there is nothing which would seem more likely to diminish a patient's chance of recovery than treatment by bleeding.

The most exacting requirements for experimental evidence are met by the following cases:

Three men, all members of a Filipino band of approximately the same age, weight and physique, were overcome by illuminating gas while sleeping in a room together. One was treated during the following day by withdrawing blood and injecting saline solution saturated with oxygen. For a second a transfusion of blood from another and unpoisoned member of the Filipino band was performed. It was done late in the day and probably after all of the carbon monoxid had been eliminated. For the third nothing was done beyond the ordinary procedures of good nursing. The first two died in the course of the two or three days following the asphyxiation. The third survived, but when seen three weeks later, had recovered only sufficiently to answer the simplest questions as to his name and where he came from.

Thus it appears that about all that can be done in cases of carbon monoxid poisoning is to administer artificial respiration when the patients' own breathing has failed or is feeble, to administer oxygen for half an hour (longer is useless), to keep them warm if their temperature has fallen, to supply water to the system preferably by a Murphy drip, and otherwise to give them good nursing and such symptomatic treatment as may be called for.

To these rather negative suggestions there is, however, one of an experimental character which may be added. It arises from the fact that the coma following asphyxiation has many points of resemblance to diabetic coma. The symptoms of asphyxial coma, especially the character of the breathing and the reaction and contents of the urine, indicate an intense acidosis. Accordingly in two cases I have administered a 3 per cent. solution of sodium bicarbonate intravenously. In one case a total of 2 quarts was given at intervals in two hours, and in the other a total of 4 quarts in six hours. The rate of inflow was regulated to avoid overloading the heart by noting the extent of distention of the veins of the neck and of the back of the hand. It was found that in spite of the very considerable supply of alkali to the system, the urine continued to show a strongly acid reaction, and no appreciable amelioration of symptoms resulted.

As my opportunities in such matters are of quite irregular occurrence, I would suggest that others with more frequent cases try out the possibilities of this line of treatment. In view, however, of the fact that in diabetes the administration of alkalies after the development of coma is of only temporary benefit, the probabilities are rather against permanent relief by this treatment of cases of asphyxia. As with all treatments of gas poisoning, there may be brilliant recoveries in apparently desperate cases—I have one such in my own experience—in which, when all the evidence is taken into account, it becomes apparent that nature alone deserves the credit.

CONCLUSIONS

1. Carbon monoxid is a physiologically harmless gas, except in its affinity for hemoglobin. Its toxic effects are wholly due to the inability of the blood combined with carbon monoxid to transport oxygen to the tissues.

2. Carbon monoxid does not form a permanent compound with hemoglobin. In the presence of exce

5. Haldane, J. S.: *Jour. Physiol.*, 1895, xviii, 200, 430 and 463. For a summary of Dr. Haldane's observations, both on the scientific side and in the laboratory and in practical work after mine explosions in England, see Report to the Secretary of State for the Home Department on the Causes of Death in Colliery Explosions and Underground Fires, London, 1896.

oxygen, or even of pure air, carbon monoxid is rapidly given off and the oxygen carrying power of the hemoglobin is restored.

3. The continuance of coma, the subsequent tissue degenerations, and death after several days, resulting from carbon monoxid poisoning, are not due to retention of the gas, but are the results of injury to the brain and other organs by the insufficiency of oxygen supplied to them by the blood while the patient was breathing the gas.

4. There is no reason to believe that either bleeding or transfusion of blood is beneficial. They are more likely to be harmful.

5. Fresh air—with oxygen inhalation for a short time as early as possible—symptomatic treatment, and good nursing are the only measures to be recommended. Practically the die is already cast for death, permanent defects, or complete recovery at the moment when the patient is brought out of the asphyxial atmosphere.

6. It is just possible theoretically that alkali therapy may be beneficial in combating the acidosis induced by asphyxia.

NOTE ON THE SERUM TREATMENT OF POLIOMYELITIS (INFANTILE PARALYSIS) *

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The epidemic of poliomyelitis that is prevailing at the present time so extensively in New York and in some degree widely throughout the United States has led to many inquiries being made regarding the serum treatment of the disease, and particularly of the stage in which the treatment has advanced. This brief paper is intended not only to answer such inquiries, but also to provide a basis for the wider employment of the treatment where the difficult conditions surrounding the obtaining of immune human serum can be surmounted.

It was demonstrated by Flexner and Lewis,¹ and afterward confirmed by several investigators, that monkeys which had recovered from an attack of poliomyelitis induced experimentally were not subject to successful reinoculation with the virus of the disease. This was followed by the detection by Römer and Joseph² and later by others in the blood of such resistant or protected monkeys, and then by Levaditi and Netter,³ and by Flexner and Lewis in the blood of human beings who had recovered from acute poliomyelitis, of immunity substances which possessed the power of neutralizing the virus of poliomyelitis when the serum and the virus were brought together in the test tube. Flexner and Lewis ascertained also that the serum of monkeys actively immunized⁴ with the virus, under conditions in which all symptoms of the disease were avoided, contained similar immunity bodies.

EXPERIMENTAL SERUM THERAPY

The next step taken was the determination by Flexner and Lewis that both the immune monkey⁵ and the immune human serum⁴ which exhibited the neutralizing power for the virus possessed also therapeutic properties for monkeys inoculated with the potent virus of poliomyelitis in contradistinction to the normal serum from the same animal sources which was devoid of those properties.

The experimental demonstration of the therapeutic activity of the immune serums was made in the following manner: Rhesus monkeys were inoculated (a) intracerebrally and (b) intranasally with a virus which had become adapted to the monkey and was highly potent. The effective intracerebral dose of a Berkefeld filtrate of a 5 per cent. emulsion of the spinal cord of an infected monkey was less than 0.01 c.c. Hence the quantity of the filtrate injected into the brain of the etherized monkeys varied from 0.01 to 0.1 c.c. The inoculations were made in the afternoon, and the therapeutic treatment was begun the next day or from eighteen to twenty-four hours later. When the virus was introduced by the nasal route the filtrate was not employed, but an emulsion of the spinal cord was rubbed on the upper nasal mucosa.

The immune serums were applied by intraspinal or subdural injection. The usual method was to inject from 2 to 3 c.c. of the immune serums through the lumbar puncture needle daily for several days or daily for three injections, followed by an interval of three days, when the three injections were repeated. The conclusions reached from these experiments were in substance that if the quantity of virus is not in excess of a given dose, the infection can be either wholly prevented or the onset of the paralysis much delayed. In other words, when dealing with the virus adapted to the monkey which induces poliomyelitis almost without exception and in which the symptoms are far more severe and the mortality far greater than occur in the disease in human beings, the immune monkey and human serums are capable of preventing in all but a few instances the development of the virus even when inoculated intracerebrally, and in the exceptional instances in which the development is not wholly prevented, the onset of the disease is much delayed. The power, therefore, to neutralize the virus possessed by the immune serums is exercised in vivo under severe experimental conditions almost as constantly as in vitro under relatively favorable ones.

In order that maximal effect of the immune serums may be secured, it is necessary that the injections be made into the subdural space, which can be readily and safely accomplished by means of lumbar puncture. The reason for this mode of application of the serum depends on the facts that it is the most direct route to the central nervous tissues, and however the virus is introduced into the body, it establishes itself in the cerebrospinal meninges.⁶ It is logical, therefore, to endeavor to bring the immune serum, in as high a concentration as possible, into immediate relation with the seat of disease.

The power of immune serum, when injected subdurally, to prevent the development of experimentally

* From the Rockefeller Institute for Medical Research.

1. Flexner, Simon, and Lewis, P. A.: Epidemic Poliomyelitis in Monkeys (Fourth Note), *THE JOURNAL A. M. A.*, Jan. 1, 1910, p. 45.

2. Römer, P. H., and Joseph, K.: *München. med. Wchnschr.*, 1910, i, 568. Levaditi, and Landsteiner: *Compt. rend. Soc. de biol.*, 1910, iii, 311. Flexner, Simon, and Lewis, P. A.: Experimental Poliomyelitis in Monkeys, Seventh Note, *THE JOURNAL A. M. A.*, May 28, 1910, p. 1780.

3. Levaditi and Netter: *Presse méd.*, 1910, xviii, 268. Flexner, Simon, and Lewis, P. A.: Seventh Note (Footnote 2).

4. Flexner, Simon, and Lewis, P. A.: Experimental Poliomyelitis in Monkeys, Eighth Note, *THE JOURNAL A. M. A.*, Aug. 20, 1910, p. 662.

5. Flexner, Simon, and Lewis, P. A.: Seventh Note (Footnote 2).

6. Flexner, Simon, and Lewis, P. A.: Seventh Note (Footnote 2). Flexner, Simon, The Contribution of Experimental to Human Poliomyelitis, *THE JOURNAL A. M. A.*, Sept. 24, 1910, p. 1105. Flexner, Simon, and Amoss, H. L.: Penetration of the Virus of Poliomyelitis from the Blood into the Cerebrospinal Fluid, *Jour. Exper. Med.*, 1914, xix, 411.

induced poliomyelitis in the monkey, is further indicated by experiments⁷ in which, on the one hand, the virus has been injected into the blood under conditions insuring its escape into the meninges and, on the other, when an emulsion of the virus has been introduced directly into the meninges and followed later by the serum injection.

SERUM THERAPY IN MAN

This aspect of the subject has been imperfectly developed up to the present time. Netter⁸ was the first to apply the data obtained by experiments on monkeys to the treatment of cases of epidemic poliomyelitis in man. He has published the results obtained in a small series of thirty-five cases which he regarded as highly favorable to the method. He employed the serum from cases of poliomyelitis in which complete recovery from the acute condition has taken place some time — even as long as thirty years — previously. The serum injections were given subdurally as early after the appearance and recognition of the symptoms of poliomyelitis as possible. The dose of the serum, which must, of course, be sterile but need not be inactivated, should be determined by the age of the patient and will, in part, be determined by the quantity of serum available. Probably doses ranging from 5 to 20 c.c. will be found suitable, the injection to be repeated several times at twenty-four hour intervals according to clinical conditions and indications. The effects of the immune serum should be sought in the checking of the progress of the disease, namely, the prevention or minimization of the paralysis when employed in the preparalytic stages, and the arrest of its extension when used in progressing paralytic conditions. Since the immunity substances have been determined by neutralization tests to persist in the blood for many years, it is probable, as Netter has indicated, that persons who have passed through an attack of poliomyelitis many years earlier may be utilized as sources of the serum;⁹ reasoning from analogy it would probably be advantageous to prefer persons whose attack was less remote so as to insure as high concentration of the immunity bodies as possible. The conditions surrounding the injection of the serum into the meninges are identical with those observed in the analogous case of epidemic meningitis. Before each dose of serum is injected a suitable quantity of the cerebrospinal fluid is to be withdrawn, and the injections should be made slowly. In choosing the person who is to serve as the source of the blood from which the immune serum is to be derived precaution should of course be taken to secure a healthy donor; it would be advisable to fortify the usual clinical examination by a Wassermann test.

7. Flexner, Simon, and Amoss, H. L.: Localization of the Virus and Pathogenesis of Epidemic Poliomyelitis, *Jour. Exper. Med.*, 1914, xx, 249.

8. Netter, A.: Sérothérapie de la poliomyélite nos résultats chez trente-deux malades: Indications, technique — incidents possibles, *Bull. de l'Acad. de méd.*, Oct. 12, 1915. Netter, A., and Salanier, M.: Deux nouveaux cas de poliomyélite à début méninge guéris par les injections intrarachidiennes de sérum d'anciens malades, *Bull. et mém. Soc. méd. d. hôp. de Paris*, March 10, 1916.

9. Flexner, Simon: The Contribution of Experimental to Human Poliomyelitis, *THE JOURNAL A. M. A.*, Sept. 24, 1910, p. 1105.

The Prevention of Tuberculosis.—When mankind fully appreciates the fact that three out of probably every four of the so-called delicate people we know are delicate because they have tubercle bacilli, active or inactive, latent or concealed, in open or closed tissues, though most often unknown to themselves, then we may, and doubtless will, begin to arrive in perceptive visibility of the, as yet, delayed solution of the tuberculosis problem.—Way.

Therapeutics

BLOOD PRESSURE

(Continued from page 511)

THE EFFECT OF DRUGS ON BLOOD PRESSURE

Free catharsis is a well established and valuable method of relieving the heart in many cases of broken compensation, and in cases with high blood pressure even while compensation is still good, salines administered once or twice a week assist in elimination, and in the reduction of blood pressure.

However, profuse purging in heart disease may be followed by unfavorable symptoms, especially when the systolic blood pressure is low. When there is hypotension, or when the diastolic pressure is high and the venous pressure is high, and when there is edema or effusion, watery catharsis should be caused only after due consideration, and always with a careful watching of the effect on the heart and blood pressure. The blood pressure is lowered by such catharsis, and the heart is often slowed. Neilson and Hyland⁴⁵ studied the effect of purging on the heart and blood pressure, and were inclined to the view that in serious heart conditions brisk purging should not be done. They think that the slowing of the heart after such purging may be due to an increased viscosity of the blood, or perhaps to a reflex irritation from the purgative on the intestinal canal.

Pilcher and Sollmann⁴⁶ have shown that the fall of blood pressure after the administration of nitrites is mostly due to the action of these drugs on the peripheral vessels. Chloroform, of course, depressed the vasomotor center, but ether had no effect on this center, or slightly stimulated it. Such stimulation, however, Pilcher and Sollmann believe may be secondary to asphyxia. Nicotin they found to cause intense stimulation of the vasomotor center. Ergot and hydrastis and its alkaloids seem to have no effect on the vasomotor center. Strophanthus acted on this center only moderately, and digitalis very slightly, if at all. Camphor in doses large enough to cause convulsions stimulated the vasomotor center. In smaller doses it generally stimulated the center moderately, but not always. Even when this center was stimulated, however, the camphor did not necessarily increase the blood pressure. The rise in blood pressure from epinephrin is due entirely to its action on the peripheral blood vessels and the heart. It has no action on the vasomotor center. They found that strychnin in large doses may stimulate the vasomotor center moderately but usually it did not act on this center unless the patient was asphyxiated; then it acted intensely. The conclusion to be drawn from their experiments is that when there is asphyxia, increased venous pressure, and also a rising blood pressure from the stimulation of carbon dioxid, strychnin is contraindicated.

It should be recognized that digitalis very frequently not only does not raise blood pressure, but also may lower it, especially in aortic insufficiency and when there is cyanosis. Even with some forms of angina pectoris, digitalis in small doses may reduce the frequency of the pain. This decrease of pain following the use of digitalis has in some cases been ascribed to the improvement of coronary circulation and result-

45. Neilson, C. H., and Hyland, R. F.: The Effect of Strong Purgatives on Blood Pressure and the Heart, *THE JOURNAL A. M. A.*, Feb. 8, 1916, p. 436.

46. Pilcher and Sollmann: *Jour. Pharmacol. and Exper. Therap.*, 1916, vi, 323.

ing better nutrition of heart muscle. Of course under these conditions the action of digitalis must be carefully watched, and it should not be given too long.

Although sodium nitrite and nitroglycerin have but a short period of action, in laboratory experimentation, in lowering the blood pressure, when given repeatedly four or five times a day the blood pressure is lowered in very many instances by these drugs. Sometimes when the blood pressure is not lowered, there is relief of tension in the head from high pressure, and the patient feels better. There is also relief of the heart when it is laboring to overcome a high resistance. One drop of the official spirit of nitroglycerin on the tongue will cause a lowering in the peripheral pressure pulse, the radial pulse becoming larger and fuller. This effect begins in three minutes or less, reaches its maximum in about five minutes, and the effect passes off in fifteen minutes or more.⁴⁷

It has been stated that iodids are of no value except in syphilitic arteriosclerosis, but iodids in small doses are stimulant to the thyroid gland, and the thyroid secretes a vasodilating substance. Therefore, the use of either iodids or thyroid would seem to be justified in many instances of high blood pressure.

Fairlee⁴⁸ has studied the effect of chloroform and ether on blood pressure, and finds that there is a fall of pressure throughout the administration of chloroform, and but little alteration of the blood pressure during the administration of ether. It may cause a slight rise, or it may cause a slight fall, but changes in pressure with ether are not marked. When there is slight surgical shock present, as from some injury, they found that chloroform would lower the pressure considerably. Hence it would seem that chloroform should not be used as an anesthetic after serious injuries.

THE EFFECT OF DRUGS ON VENOUS BLOOD PRESSURE

Capps and Matthews⁴⁹ have shown that even with the best class preparations of digitalis, there may be only a moderate gradual rise in arterial pressure, but not much change in venous pressure. Venous pressure is as not much affected by small doses of epinephrin, but with large doses it rose from 10 to 80 mm. Pituitary extract acts somewhat similarly to epinephrin. Caffein, though raising the arterial pressure, did not influence the venous pressure. Strychnin did not raise either pressure until the dose was sufficient to cause muscular contractions. They found that the nitrites caused a fall in venous pressure as well as arterial pressure, although the heart might be accelerated and more regular. They think that the nitrites act by depressing the nerve endings in the veins as well as the arteries. Morphin they found did not act on the venous pressure, although it lowered arterial tension, in ordinary doses of $\frac{1}{8}$ or $\frac{1}{6}$ grain; but with doses from $\frac{1}{4}$ to $\frac{1}{2}$ grain, both arterial and venous pressures were lowered. They found that alcohol in ordinary doses did not influence the venous pressure, though it lowered the arterial pressure; but very large doses lowered the arterial and raised the venous pressure. They think that when the venous pressure is increased only by large doses of epinephrin, pituitary extract and alcohol, the effect is due to failure of the heart, although it may be due to an increase of carbon dioxid in the blood, in other words, to asphyxia.

HYPERTENSION

Arterial hypertension may be divided into stages. In the first stage the arteries are healthy, but the tone, owing to contraction of the muscular walls, is too great. This condition or stage has been termed "chronic arterial hypertension." This condition may be due to irritants circulating in the blood, to nervous tension, to incipient chronic interstitial nephritis, or may be the first stage of sclerosis of the arteries. If from any cause this hypertension persists, the muscular coats of the arteries will become more or less hypertrophied, and sooner or later degenerative changes begin in the intima, and finally fibrosis occurs in the external coat of the arteries; in other words, arteriosclerosis is in evidence. If the patient lives with this arteriosclerosis, a later stage of the arterial disease may occur which has been termed atheroma, with thickening, and possibly calcareous deposits in some parts of the walls of the vessels, while in other parts the coats become thinner and insufficient. At this stage the heart, which has already shown some trouble, becomes unable to force the blood properly against this enormous resistance of inelastic vessels and the blood pressure begins to fail as the left ventricle weakens. Edema, failing heart, perhaps aneurysms, peripheral obstruction, or hemorrhages are the final conditions in this chronic disease of arteriosclerosis.

Riesman⁵⁰ divides hypertension into four classes: hypertension without apparent nephritis or arterial disease; hypertension with arteriosclerosis; hypertension with nephritis, and hypertension with both arteriosclerosis and nephritis. These classes are given here in the order of the seriousness of the prognosis.

ETIOLOGY

One of the most common causes of hypertension is due to excess of eating and drinking. The products caused by maldigestion of proteins, and the toxins formed and absorbed especially from meat proteins, particularly when the excretions are insufficient, are the most frequent causes of hypertension. Whatever other element or condition may have caused increased blood pressure, the first step toward improving and lowering this pressure is to diminish the amount of meat eaten or to remove it entirely from the diet. In pregnancy where there is increased metabolic change, when the proteins are not well or properly cared for in gout, and when there is intestinal fermentation or putrefaction, hypertension is likely to occur. The increased blood pressure in these cases is directly due to irritation of the toxins on the blood vessel walls.

While alcohol does not tend to raise arterial blood pressure, in large amounts it may raise the venous pressure. Also, by causing an abundant appetite and thus increasing the amount of food taken, by interfering with the activity of the liver, and by impairing the intestinal digestion, it can indirectly disturb the metabolism and cause enough toxin to be produced to raise the blood pressure.

Any drug or substance that raises the blood pressure by stimulating the vasomotor center or the arterioles, when constantly repeated, will be a cause of hypertension. This is particularly true of caffein and nicotin. Also, anything that might stimulate, or that does stimulate, the suprarenal glands will cause a continued high blood pressure. It is quite probable that in many cases of gout the suprarenals are hypersecreting and

47. Hewlett, A. W., and Zwaluwenburg, J. G. Van: The Pulse Flow in the Brachial Artery, Arch. Int. Med., July, 1913, p. 1.

48. Fairlee: Lancet, London, Feb. 28, 1914.

49. Capps, J. A., and Matthews, S. A.: Venous Blood Pressure as Influenced by the Drugs Employed in Cardiovascular Therapy, THE JOURNAL A. M. A., Aug. 9, 1913, p. 388.

50. Riesman: Pennsylvania Med. Jour., December, 1914, p. 193.

it has been shown by Cannon, Aub and Binger⁵¹ that nicotin in small doses increases the suprarenal secretion. Therefore, nicotin becomes a decided cause of hypertension and arteriosclerosis.

Thayer found that heavy work is the cause of about two thirds of all cases of arteriosclerosis, and one of the functions of the suprarenals is to destroy the waste products of muscular activity; hence these glands, in these cases, are hypersecreting. Furthermore, the reason that many infections are followed later by arteriosclerosis may be the fact that the suprarenals have been stimulated to hypertrophy and hypersecrete.

Many persons in middle life, and especially women at the time of the menopause, show hypertension without arterial or kidney reason. At this time of life the thyroid is disturbed, and often, especially if weight is added, it is not secreting sufficiently. Whether, with the polyglandular disturbance of the menopause the suprarenals are excited and hypersecreting, or whether they are simply relatively secreting more vasopressor substance than is combated by the vasodilator substance from the thyroid, cannot be determined. These women are energetic, and look full of health and full of strength, but their faces frequently flush, sometimes they are dizzy, and the systolic blood pressure is too high. Reisman has pointed out that these patients are likely to have very large breasts, and there is reason to believe that we must begin to study more carefully the effect of large breasts on the metabolism of girls and women. There certainly is an internal secretion of some importance furnished by these glands.

In hyperthyroidism at first the blood pressure may be lowered on account of the increased physiologic secretion of the thyroid gland. Later the blood pressure may be raised by stimulation of the suprarenals, or it may become raised from the irritated and stimulated heart becoming hypertrophied. If the heart is normal the ventricles should hypertrophy with the increased work that they are under; and the blood pressure could increase for this reason. Later in exophthalmic goiter the heart muscle may become degenerated, a chronic myocarditis, and the ventricles may slightly dilate. At this time the blood pressure is lowered. When such a condition has occurred, the heart bears thyroidectomy badly; hence an operation on this gland should, if possible, be performed before the heart muscle has become injured. If the heart shows signs of loss of power, minor operations to cut off the blood supply of the thyroid should first be done, and the patient's heart allowed to improve before a thyroidectomy is performed.

Men with hypertension without kidney or arterial excuse are likely to have been athletes, or to have done some severe competitive work, or, as above stated, to have labored hard, or to have worked at high tension, or in great excitement, or with mental worry, all of which tend, as long as there is health, to increase the blood pressure. These men may add weight from the age of 40 on, or they may be thin and wiry. Besides the hypertension there is likely to be a too sturdily acting heart, which is often hypertrophied, and there is an accentuated closure of the aortic valve. There may be dizziness, or no head symptoms at all. Nicotin is likely to be an etiologic factor in this class.

These women and these men may all be improved by proper treatment, and the condition may not develop into arteriosclerosis or nephritis.

Neurotic conditions, and in some instances neurasthenic conditions, may show a blood pressure higher than normal. Lead may be a cause of increased blood pressure, and diabetics occasionally have a high pressure, although more frequently there is a lowering of blood pressure in diabetes.

Riesman believes that syphilis is the most common cause of hypertension and arteriosclerosis without renal disease. When arteriosclerosis and renal disease are combined, of course the highest systolic readings occur. He thinks that when high tension occurs under 40 years of age, kidney disease is generally the cause. Of course it may be the only cause later in life.

High blood pressure due to syphilitic conditions may be greatly improved by the proper treatment, although some one or more blood vessels are likely to have been seriously damaged. Although these patients may live for many years, they are likely to have an apoplexy, cerebral disease or an aneurysm.

While hypertension is not a disease, and while it often should not be combated, still, as it is always the forerunner of more serious trouble, there can be no excuse for not most seriously considering it and generally attempting its reduction. At the moment high tension is discovered, there may be no special symptoms; but troublesome symptoms are always pending and while the patient need not be unduly alarmed, there is no excuse for not rearranging the individual's life so as to prolong it. This is not to state that every high tension must be lowered, but every hypertension must be studied and a safer systolic pressure caused if it is possible without interfering with the person's efficiency. A high diastolic pressure, one above 105, certainly must receive immediate attention, and a diastolic pressure of 110 must be lowered, if possible. On the other hand, a high systolic pressure without a high diastolic pressure should not be rapidly lowered, else depression will be caused.

(To be continued)

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY THE COUNCIL UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATERIAL BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY

ARBUTIN-ABBOTT.—A non-proprietary brand complying with the standards for arbutin (see N. N. R., 1916, p. 40). Manufactured by the Abbott Laboratories, Chicago.

AMPULS MERCURY IODIDE RED, 1 PER CENT. I OIL-SQUIBB.

This dosage form of mercuric iodide, U. S. P., has been accepted:

Each ampule contains 1 Cc. of a solution of red mercuric iodide and anesthesin, each 0.01 Gm. (1/6 grain) in a neutral fatty oil. Prepared by E. R. Squibb & Sons, New York.

51. Cannon, Aub and Binger: Jour. Pharmacol. and Exper. Therap., March, 1912.

MEDICAL EDUCATION IN THE UNITED STATES

ANNUAL PRESENTATION OF EDUCATIONAL DATA FOR 1916 BY THE COUNCIL ON MEDICAL EDUCATION

The tabulated statistics herewith presented are for the year ending June 30, 1916, and are based on reports received from the medical colleges or from other reliable sources. We take pleasure in acknowledging here the courtesy and cooperation of the officers of the colleges who have made the compilation of these complete statistics possible.

STATISTICS OF COLLEGES

Table 1 (pages 588-590) gives the colleges in session during 1915-1916; the population of the city; the rating given to the college in the latest classification of the Council on Medical Education; the number of students, men and women, registered during the year; the number of 1916 graduates, men and women; the number of graduates holding collegiate degrees; the number of teachers for each college; the number of weeks of actual work in the college year; the total fees for each year; the executive officer of the college, and the dates of beginning and ending of the next session. The figures in heavy-faced type show the totals by states. Beginning on page 609 are given essential facts concerning all medical colleges arranged by states.

HOME STATES OF MEDICAL STUDENTS

Table 2, on pages 592-593, shows from what states the students came who were in attendance at each medical college during the session of 1915-1916. The influence of the proximity of the medical school is shown in the fact that states having medical colleges contribute more students in proportion to the population than those which have no colleges. This is shown by the dark zone of figures running diagonally down the page. A comparison of this table with the large tables based on state board examinations,¹ which show the distribution of the alumni of each college, is interesting. The college which has widely distributed alumni usually has a student body from an equally large number of states.

The state furnishing the largest number of students this year was New York, with 2,030. Illinois contributed 1,177 and Pennsylvania, 1,099. The next states, in the order of the number of students contributed, were: Ohio, 683; Massachusetts, 601; Missouri, 510; Texas, 489; North Carolina, 420, and Michigan, 416. Four states had less than 20 each, these being Arizona, New Mexico, 11; Wyoming, 6, and Nevada, 3. There were 95 students from Hawaii, Porto Rico and Philippine Islands, and 400 students from foreign countries.

In Table 3, on page 596, the students enrolled in each college are shown by classes. This permits one

to see whether the attendance at each college is increasing or decreasing. The total attendance for the first year was 3,582 as compared with 3,373 freshmen last year. The second year attendance was 3,094 as compared with 3,919 last year. The enrolments for the third and fourth years, respectively, were 3,559 and 3,727 as compared with 3,675 and 3,864 last year. The freshman class enrolment is the only one, therefore, which shows an increase over that of last year.

MEDICAL SCHOOL ENROLMENT FOR TWELVE YEARS

Table 4 has been added this year to show the enrolments of medical students for the last twelve years in the medical schools still existing. This is interesting since it shows the effect of the higher entrance standards. The care with which the higher requirement was enforced is suggested by the fact that in some the falling off was very marked while in others there was scarcely any change. It is noteworthy that within a few years after the beginning of the higher requirement almost invariably the enrolments are again increased. It is quite probable that the total enrolment of students in all medical colleges has reached its lowest point and that within a year or two there will be an increase.

NUMBER OF MEDICAL STUDENTS

The total number of medical students (matriculants) in the United States for the year ending June 30, 1916, excluding premedical, special and postgraduate

TABLE 5.—MEDICAL COLLEGE ATTENDANCE

Year.	Non-sectarian.	Homeopathic.	Eclectic.	Physio-Med.	Non-descript.	Total.
1880.....	9,776	1,220	830	...	...	11,826
1890.....	13,521	1,164	719	...	...	15,404
1900.....	22,710	1,909	522	...	...	25,171
1901.....	23,846	1,683	664	80	144	26,417
1902.....	24,878	1,617	765	91	150	27,501
1903.....	24,930	1,498	848	149	190	27,615
1904.....	23,662	1,309	1,014	123	234	28,142
1905.....	24,119	1,104	578	114	232	26,147
1906.....	23,116	1,085	644	110	249	25,204
1907.....	22,303	1,039	545	97	292	24,276
1908.....	20,936	891	479	90	206	22,602
1909.....	20,554	899	413	52	227	22,145
1910.....	20,136	867	455	49	19	21,526
1911.....	18,414	890	433	49	...	19,786
1912.....	17,277	827	308	...	...	18,412
1913.....	15,919	850	256	...	...	17,015
1914.....	15,438	794	270	...	...	16,502
1915.....	13,914	736	241	...	...	14,891
1916.....	13,121	638	263	...	...	14,022

students, was 14,022, a decrease of 869 below last year, a decrease of 2,480 below 1914 and a decrease of 3,003 below 1913, and a decrease of 14,120 (50.2 per cent.) below 1904, when 28,142, the highest number of students, were enrolled. (See Table 4.) Of the total number of students, 13,121 were in attendance at the nonsectarian (regular) colleges, 638 at the homeopathic and 263 at the eclectic colleges. The attendance

(Continued on page 591)

¹ THE JOURNAL, State Board Number, April 8, 1916, Table A, pages 1199, inclusive.

TABLE 1.—STATISTICS OF MEDICAL COLLEGES IN THE UNITED STATES AND CANADA

Marginal Number	NAME AND LOCATION OF COLLEGE	Population of City where College is Located. (Census of 1915)	Classification by Council on Medical Education	No. of Students Registered 1915-16		Graduates 1916		Grads. with A.B., B.S., or Ph.D.	Number of Teachers	Weeks in College Year	Total Fees (Dollars)				Executive Officer	Session of 1916-17		Marginal Number
				Men	Women	Men	Women				1st year	2d year	3d year	4th year		Begins 1916	Ends 1917	
1	ALABAMA University of Alabama School of Medicine, Mobile.....	56,536	A	56	...	18	...	6	42	32	160	155	155	175	T. H. Fraser, M.D., Dean.....	Oct. 5	June 5	1
2	ARKANSAS University of Arkansas Medical Department, Little Rock.....	55,158	B	55	1	15	1	...	62	33	125	125	125	150	Morgan Smith, M.D., Dean.....	Sept. 18	May 31	2
3	CALIFORNIA College of Medical Evangelists, Loma Linda.....	125	C	458	75	92	17	53	55	35	141	136	136	146	Newton Evans, M.D., Dean.....	Sept. 11	May 31	3
4	College of Physicians and Surgeons, Los Angeles.....	465,367	B	132	11	21	2	...	96	36	220	217	202	227	Charles W. Bryson, M.D., Dean.....	Sept. 5	June 7	4
5	Oakland College of Medicine and Surgery, Oakland.....	190,803	B	16	3	2	...	1	40	33	195	196	150	150	Edward N. Ewer, M.D., Registrar.....	Aug. 21	June 1	5
6	College of Physicians and Surgeons of San Francisco.....	448,502	C	57	6	8	...	1	28	36	163	160	160	185	C. O. Southard, M.D., Secretary.....	Sept. 4	June 7	6
7	Hahnemann Medical College of the Pacific, San Francisco.—H.1.....	448,502	B	35	8	10	3	...	47	36	...	155	105	136	James W. Ward, M.D., Dean.....	Aug. 16	May 17	7
8	Leland Stanford Junior University School of Med., San Francisco.....	448,502	A	77	19	21	3	23	98	34	166	155	150	150	Wm. Ophüls, M.D., Dean.....	Aug. 30	May 16	8
9	University of California Medical School, San Francisco.....	448,502	A	105	19	24	5	23	104	26	190	175	166	160	L. S. Schmitt, M.D., Secretary.....	Aug. 19	May 16	9
10	COLORADO University of Colorado School of Medicine, Denver.....	253,161	A	75	4	13	...	8	86	35	85	85	75	75	Charles N. Meader, M.D., Dean.....	Sept. 11	June 6	10
11	CONNECTICUT Yale University School of Medicine, New Haven.....	147,095	A	58	...	6	...	6	76	35	200	170	153	163	George Blumer, M.D., Dean.....	Sept. 28	June 20	11
12	DISTRICT OF COLUMBIA Georgetown University School of Medicine, Washington.....	358,679	A	286	8	48	1	12	91	34	165	150	150	160	George M. Kober, M.D., Dean.....	Sept. 24	June 13	12
13	George Washington University Medical School, Washington.....	358,679	A	134	7	26	1	2	85	33	168	169	163	163	W. C. Borden, M.D., Dean.....	Sept. 27	June 6	13
14	Howard University School of Medicine, Washington.....	358,679	A	99	1	15	...	7	39	32	137	127	127	134	Edward A. Balloch, M.D., Dean.....	Oct. 2	June 6	14
15	GEORGIA Atlanta Medical College, Atlanta.....	184,873	A	315	...	140	...	5	101	32	172	160	155	180	W. S. Elkin, M.D., Dean.....	Sept. 25	May 29	15
16	Georgia College of Eclectic Medicine and Surgery, Atlanta.—E.2.....	184,873	C	29	...	29	...	...	...	...	...	...	...	...	William H. Doughty, Jr., M.D., Dean.....	.....	.....	16
17	University of Georgia Medical Department, Augusta.....	49,848	A	54	...	10	...	...	49	34	155	150	150	150	.....	Sept. 13	May 20	17
18	ILLINOIS Chicago College of Medicine and Surgery, Chicago.....	2,447,045	B	1375	115	602	25	118	167	32	155	155	155	155	G. E. Wyneken, M.D., Secretary.....	Sept. 26	May 27	18
19	Chicago Hospital College of Medicine, Chicago.....	2,447,045	C	466	22	190	1	4	...	...	...	...	...	...	.....	.....	.....	19
20	Hahnemann Medical College and Hospital of Chicago.—H.....	2,447,045	B	...	66	...	...	...	...	...	...	...	...	...	Joseph P. Cobb, M.D., Dean.....	Sept. 25	June 7	20
21	Jenner Medical College, Chicago.....	2,447,045	C	88	10	14	...	1	...	...	...	...	...	...	.....	.....	.....	21
22	Loyola University School of Medicine, Chicago.....	2,447,045	B	294	14	136	6	4	...	...	140	140	140	140	Alfred de Roulet, M.D., Secretary.....	Sept. 25	June 18	22
23	Northwestern University Medical School, Chicago.....	2,447,045	A	236	...	42	...	19	124	32	190	195	190	203	Arthur R. Edwards, M.D., Dean.....	Oct. 3	June 2	23
24	Rush Medical College (University of Chicago).....	2,447,045	A	450	38	92	5	84	201	34	185	186	180	195	John M. Dodson, M.D., Dean.....	Oct. 2	June 13	24
25	University of Illinois College of Medicine, Chicago.....	2,447,045	A	204	23	103	7	6	145	34	155	150	150	165	William H. Browne, Secretary.....	Sept. 28	June 13	25
26	INDIANA Indiana University School of Medicine, Indianapolis.....	265,578	A	156	...	34	...	28	136	34	100	100	130	130	Charles P. Emerson, M.D., Dean.....	Sept. 19	June 9	26
27	IOWA State University of Iowa College of Medicine, Iowa City.....	10,987	A	158	3	29	...	10	54	35	85	85	85	85	Lee Wallace Dean, M.D., Dean.....	Sept. 18	June 13	27
28	State University of Iowa College of Homeo. Med., Iowa City.—H.....	10,987	A	149	2	29	...	10	27	34	85	85	85	85	George Royal, M.D., Dean.....	Sept. 18	June 8	28
29	KANSAS University of Kansas School of Medicine, Rosedale.....	392,493	A	99	6	10	1	9	...	35	30	30	105	105	M. T. Sudler, M.D., Asso. Dean.....	Sept. 13	June 6	29
30	KENTUCKY University of Louisville Medical Department, Louisville.....	237,012	A	149	...	54	...	5	101	33	175	176	179	182	Henry E. Tuley, M.D., Dean.....	Sept. 26	June 7	30
31	LOUISIANA Tulane University of Louisiana School of Medicine, New Orleans.....	366,484	A	284	1	75	...	9	116	33	190	190	185	215	Isadore Dyer, M.D., Dean.....	Sept. 27	June 6	31
32	MAINE Adelphi S. Thayer, M.D., Dean.....	...	...	60	...	16	...	6	61	33	115	115	115	115	Adelphi S. Thayer, M.D., Dean.....	Oct. 12	June 21	32

TABLE I.—STATISTICS OF MEDICAL COLLEGES IN THE UNITED STATES AND CANADA—(Concluded)

Marginal Number	NAME AND LOCATION OF COLLEGE	Population of City where College is located (Census Bureau Estimate of 1915)	Classification by Council on Medical Education	No. of Students Registered 1915-16		Graduates 1916		Grads. with A.B., B.S. or Ph.B.	Number of Teachers	Weeks in College Year	Total Fees (Dollars)				Executive Officer		Session of 1916-17		Marginal Number
				Men	Women	Men	Women				1st year	2d year	3d year	4th year			Begins 1916	Ends 1917	
76	PENNSYLVANIA																		76
77	Hahnemann Medical College and Hospital of Philadelphia.—H.	1,683,664	A	1404	67	372	19	93	89	32	180	180	180	180	Wm. A. Pearson, M.D., Dean.		Oct. 1	May 31	77
78	Jefferson Medical College of Philadelphia.	1,683,664	A	538	...	20	...	5	148	33	200	200	200	200	Ross V. Patterson, M.D., Dean.		Sept. 25	June 2	78
79	Medico-Chirurgical College of Philadelphia.	1,683,664	A	306	...	83	...	20	...	...	...	...	...	...	...		...	...	79
80	Temple University Department of Medicine, Philadelphia.	1,683,664	B	41	5	11	2	2	85	30	176	171	161	171	H. T. Williams, M.D., Registrar.		Oct. 18	June 9	80
81	University of Pennsylvania School of Medicine, Philadelphia.	1,683,664	A	317	55	74	17	50	179	34	233	210	210	214	William Pepper, M.D., Dean.		Sept. 29	June 20	81
82	Woman's Medical College of Pennsylvania, Philadelphia.	1,683,664	A	...	...	...	...	...	...	...	192	176	183	179	Clara Marshall, M.D., Dean.		Sept. 20	June 6	82
83	University of Pittsburgh School of Medicine, Pittsburgh.	571,984	A	104	7	22	...	10	108	34	265	250	250	255	Thomas S. Arbuthnot, M.D., Dean.		Sept. 25	June 13	83
84	SOUTH CAROLINA																		84
85	Medical College of the State of South Carolina, Charleston.	60,427	A	61	...	16	...	5	60	32	140	140	140	140	Robert Wilson, Jr., M.D., Dean.		Oct. 2	June 7	85
86	University of South Dakota College of Medicine, Vermilion.*	2,187	A	12	...	...	...	...	10	35	60	60	...	...	Christian P. Lommen, B.S., Dean.		Sept. 19	June 14	86
87	University of Tennessee Medical Department, Knoxville. ¹²	38,800	B	711	9	262	4	39	...	...	...	...	...	...	...		...	...	87
88	Lincoln Memorial University Medical Department, Memphis.	146,113	A	21	...	14	...	...	...	...	...	...	...	...	H. T. Brooks, M.D., Dean.		Sept. 21	June 6	88
89	University of Tennessee College of Medicine, Memphis.	146,113	A	156	3	59	1	7	110	34	105	100	100	125	M. V. Lynk, M.D., Dean.		Sept. 14	May 3	89
90	University of West Tennessee College of Med. and Surg., Memphis. ¹³	115,978	C	27	...	9	...	2	22	30	55	55	55	65	George W. Hubbard, M.D., Dean.		Sept. 19	May 3	90
91	McHerry Medical College, Nashville.	115,978	B	295	6	90	3	9	25	30	70	70	70	80	Ludius E. Bureh, M.D., Dean.		Oct. 2	June 13	91
92	Vanderbilt University Medical Department, Nashville.	115,978	A	212	...	66	...	16	84	33	165	160	160	185	Edward H. Cary, M.D., Dean.		Oct. 2	May 31	92
93	TEXAS																		93
94	Baylor University College of Medicine, Dallas.	118,482	A	58	1	25	...	3	53	32	120	115	115	125	Samuel A. Woodward, M.D., Dean.		Oct. 18	June 7	94
95	Fort Worth School of Medicine, Fort Worth.	94,494	B	50	...	7	...	2	73	34	114	113	108	125	William S. Carter, M.D., Dean.		Oct. 1	May 31	95
96	University of Texas Department of Medicine, Galveston.	41,076	A	204	11	34	1	11	32	32	60	25	15	10	Perry G. Snow, M.D., Dean.		Sept. 18	June 7	96
97	UTAH																		97
98	University of Utah School of Medicine, Salt Lake City.*	113,567	A	23	...	...	...	...	22	34	74	79	...	...	H. C. Tinkham, M.D., Dean.		Sept. 27	June 27	98
99	VERMONT																		99
100	University of Vermont College of Medicine, Burlington.	21,247	A	76	...	13	...	1	45	36	145	145	145	170	Stuart McGuire, M.D., Dean.		Sept. 20	June 5	100
101	MEDICAL COLLEGE OF VIRGINIA, Richmond.	154,674	A	320	...	104	...	19	132	34	164	164	164	164	Theodore Hough, M.D., Dean.		Sept. 14	June 13	101
102	University of Virginia Department of Medicine, Charlottesville.	6,765	A	266	...	83	...	8	25	36	150	140	140	140	John N. Simpson, M.D., Dean.		Sept. 18	June 18	102
103	WEST VIRGINIA																		103
104	West Virginia University School of Medicine, Morgantown.*	12,239	B	17	...	...	...	...	11	35	33	10	...	...	Charles R. Bardeen, M.D., Asso. Dean.		Sept. 18	June 20	104
105	WISCONSIN																		105
106	University of Wisconsin Medical School, Madison.*	30,084	A	91	10	...	...	...	20	36	70	70	...	...	J. Van de Erve, M.D., Asso. Dean.		Sept. 18	June 14	106
107	Marquette University School of Medicine, Milwaukee.	428,002	A	86	1	45	1	3	105	36	175	170	170	195	Cecil E. Race, A.B., Registrar.		Oct. 2	May 16	107
108	CANADA																		108
109	University of Alberta Faculty of Medicine, Edmonton, Alta. [†]	60,000	...	39	47	...	...	39	15	30	60	85	85	...	D. Fraser Harris, M.D., Secretary.		Sept. 13	May 10	109
110	Dalhousie University Faculty of Medicine, Halifax, N. S.	46,619	B	62	6	11	1	...	38	32	110	110	110	110	J. C. Connell, M.D., Dean.		Sept. 13	April 25	110
111	Queen's University Faculty of Medicine, Kingston, Ont.	18,874	C	204	...	11	...	4	39	30	105	105	105	105	A. Primrose, M.D., Dean.		Sept. 26	May 26	111
112	University of Toronto Faculty of Medicine, Toronto, Ont.	376,538	A	491	36	90	3	13	185	32	150	150	150	150	John W. Seane, M.D., Registrar.		Oct. 1	June 6	112
113	Western University Faculty of Medicine, London, Ont.	46,300	C	68	...	16	...	8	59	30	120	115	115	115	L. D. Mignault, Registrar.		Oct. 1	June 30	113
114	McGill University Faculty of Medicine, Montreal, Que.	473,712	A	317	...	28	...	6	131	32	174	174	181	174	Edwin Tureot, M.D., Dean.		Sept. 12	June 1	114
115	Montreal School of Medicine and Surgery, Montreal, Que.	473,712	B	173	...	17	...	...	75	36	110	118	126	138	H. H. Chown, M.D., Dean.		Sept. 27	May 1	115
116	Laval University Faculty of Medicine, Quebec, Que.	78,190	B	81	...	10	...	8	24	34	60	60	60	60					116
117	University of Manitoba, Manitoba Medical College, Winnipeg.	200,000	B	132	...	19	...	5	58	28	155	150	150	150					117

H.—Homeopathic; E.—Eclectic.

† Gives the first three years of the five-year medical course.

1. Has merged with the University of California Medical School, but is continuing until the three remaining classes have been graduated.

2. This college is reported to have been closed and its building has been leased for other purposes.

3. No reports obtained. Figures are for session of 1914-1915. It is not known whether the college will reopen. Official reports show this college is not recognized by the licensing boards of thirty-two states.

4. A night school advertising as an "accredited" institution. Official reports show it is not recognized by the licensing boards of thirty-two states.

5. Heretofore known as the Bennett Medical College.

6. Official reports show this college is not recognized by the licensing boards of thirty-three states.

7. This is an offshoot from the Eclectic Medical University and apparently took all the students, since neither students nor graduates are reported for the latter.

8. This is the successor to the Kansas City Hahnemann Medical College and occupies the same building. It has not been learned whether the school will reopen. It is reported as not in good standing with the Missouri State Board of Health.

9. It has not been learned whether this college will reopen. Reported not recognized by the licensing boards of twenty-nine states.

10. Merged in 1914 with the Medical College of Virginia, but retains a nominal existence until 1917, when its last class will graduate.

11. Has been merged with the University of Pennsylvania Medical School. Will hereafter be known as the "Medico-Chirurgical College and Hospital, Graduate School of Medicine of the University of Pennsylvania."

12. Merged in 1914 with the University of Tennessee College of Medicine, but retains a nominal existence until 1917, when its last class will graduate.

13. A school for the colored race. It has been reported as not recognized by the licensing boards of thirty-four states.

(Continued from page 587)

the nonsectarian colleges shows a decrease of 793 below that of last year, a decrease of 2,317 below 1914, and a decrease of 11,809 (47.4 per cent.) below 1903, when 24,930, the largest number of nonsectarian students, were enrolled. In the homeopathic colleges there was a decrease of 98 below the attendance of last year, a decrease of 156 below 1914 and a decrease of 271 (66.6 per cent.) below 1900, when 1,909, the largest number of homeopathic students, were enrolled. The eclectic colleges show an increase of 22 over the registration of last year, a decrease of 7 below 1914, and a decrease of 751 (74.1 per cent.) below 1904, when 1,014, the largest number of eclectic students, were enrolled.

NUMBER OF MEDICAL GRADUATES

The total number of graduates for the year ending June 30, 1916, was 3,518, a decrease of only 18 below 1915, a decrease of 76 below 1914, and a decrease of 63 below 1913. The total this year is 2,229 (38.8 per cent.) less than in 1904, when 5,747, the largest number, were graduated.

TABLE 6.—MEDICAL COLLEGE GRADUATES

Year.	Non-sectarian.	Homeopathic.	Eclectic.	Physio-Med.	Non-descript.	Total.
1900.....	2,673	380	188	..	..	3,241
1901.....	3,853	329	221	..	..	4,403
1902.....	4,715	413	86	..	..	5,214
1903.....	4,879	387	148	18	12	5,444
1904.....	4,508	336	138	16	11	5,009
1905.....	5,088	420	149	24	17	5,698
1906.....	5,190	371	146	20	20	5,747
1907.....	5,126	276	153	22	23	5,600
1908.....	4,841	286	186	22	29	5,364
1909.....	4,591	225	121	11	32	4,980
1910.....	4,370	215	116	12	28	4,741
1911.....	4,163	209	84	15	44	4,515
1912.....	4,113	183	114	16	14	4,440
1913.....	4,006	152	110	5	..	4,273
1914.....	4,206	185	92	..	..	4,483
1915.....	3,679	209	93	..	..	3,981
1916.....	3,370	154	70	..	..	3,594
1917.....	3,286	195	55	..	..	3,536
1918.....	3,274	166	78	..	..	3,518

The number of graduates from the nonsectarian colleges was 3,274, or 12 less than last year, 96 less than in 1914, and 405 less than in 1913. It is a decrease of 1,916 (36.9 per cent.) below 1904, when 5,190, the largest number, were graduated from nonsectarian colleges. From the homeopathic colleges there were 166 graduates, or 29 less than in 1915, and 8 less than in 1913. It is a decrease of 254 (60.5 per cent.) below 1903, when 420, the largest number of homeopathic physicians, were graduated. The eclectic colleges graduated 78, or 23 more than last year. It is a decrease of 143 (65 per cent.) below 1890, when 221, the largest number of eclectic physicians, were graduated.

GRADUATES HOLDING DEGREES IN ARTS

Of the 3,518 medical graduates, 948, or 26.9 per cent., were reported to hold also degrees in arts or science. This total includes those taking the combined courses in arts or science and medicine. Last year 24.3 per cent. held these degrees, 22.5 in 1914, and 15.3 per

cent. in 1910. Of the 3,274 nonsectarian school graduates, 928, or 28.3 per cent., were reported to have baccalaureate degrees, while of the homeopathic graduates, 20, or 12 per cent., were so reported, and of the eclectic graduates, not one was reported as holding degrees from colleges of liberal arts. As will be noted

TABLE 7.—MEDICAL GRADUATES WITH LIBERAL ARTS DEGREES

Year	Non-sectarian			Homeopathic			Eclectic			Totals		
	Graduates.	A.B., B.S.	Per cent.	Graduates.	A.B., B.S.	Per cent.	Graduates.	A.B., B.S.	Per cent.	Graduates.	A.B., B.S.	Per cent.
1910.....	4,113	664	16.1	183	13	7.1	114	3	2.6	4,440	680	15.3
1911.....	4,006	683	17.0	152	18	11.8	110	4	3.6	4,273	705	16.5
1912.....	4,206	744	17.7	185	15	8.1	92	4	4.3	4,483	763	17.0
1913.....	3,679	732	19.9	209	20	9.6	93	1	1.1	3,981	753	18.9
1914.....	3,370	794	23.5	154	7	4.5	70	6	8.6	3,594	807	22.5
1915.....	3,286	839	25.5	195	16	8.2	55	3	5.5	3,536	858	24.3
1916.....	3,274	928	28.3	166	20	12.0	78	0	0.0	3,518	948	26.9

by referring to Table 14, of the 948 graduates holding baccalaureate degrees, 120—the largest number—came from the New York colleges. Heretofore the Illinois colleges have furnished the largest number. Illinois comes second with 118, followed by 95 from Maryland, 93 from Pennsylvania, and 80 from Massachusetts. The percentage of graduates holding collegiate degrees is gradually increasing and will continue to increase, particularly in the nonsectarian colleges, because so many of them are now requiring two years of college work for admission, which bring the students nearer to the requirements for the combined course for the B.S. and M.D. degrees.

During the past year there were 566 women studying medicine, or 26 less than last year, 65 less than in 1914, and 563 (49.9 per cent.) less than in 1904, when

TABLE 8.—WOMEN IN MEDICINE

Year.	Total women students.	Percentage of all students, both sexes.	Total women graduates.	Percentage of graduates, both sexes.	Women's colleges.	Students.	Percentage of all women students.	Graduates.	Percentage of all women graduates.	Co-ed. schools.	Students.	Percentage of all women students.	Graduates.	Percentage of all women graduates.
1904	1,129	4.3	244	4.0	3	183	16.2	56	23.0	97	946	83.8	198	77.0
1905	1,073	4.1	219	4.0	3	221	20.6	54	24.5	96	852	79.4	165	75.5
1906	895	3.5	233	4.3	3	189	21.0	33	14.1	90	706	79.0	200	85.9
1907	928	3.8	211	4.2	3	210	22.6	39	18.5	86	718	77.4	172	81.5
1908	835	3.7	185	3.9	3	186	22.3	46	24.9	88	649	77.7	139	75.1
1909	921	4.2	162	3.7	3	169	18.4	33	20.3	91	752	81.6	129	79.7
1910	907	4.2	157	3.5	3	155	17.1	41	26.1	82	752	82.9	116	73.9
1911	680	3.4	159	3.7	2	134	19.7	36	22.6	74	546	80.3	123	77.4
1912	679	3.2	142	3.2	2	143	21.1	32	22.5	64	536	78.9	110	77.5
1913	640	3.8	154	3.8	2	138	21.6	33	21.4	55	502	78.6	121	78.6
1914	631	3.8	121	3.4	2	135	21.4	25	20.7	54	496	78.6	96	79.3
1915	592	4.0	130	3.7	2	116	19.6	38	29.2	53	462	80.4	92	70.8
1916	566	4.0	134	3.8	2	102	18.0	28	23.0	51	464	82.0	106	80.0

1,129 women students, the largest number, were reported. The percentage of all medical students remains approximately the same as it has been since 1904. There were 134 women graduates this year, 4 more than last year and 13 more than in 1914. Of all

(Continued on page 594)

Marginal Number	NAME OF COLLEGE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Marginal Number
		Alabama.....210	Arizona.....12	Arkansas.....97	California.....342	Colorado.....107	Connecticut.....208	Delaware.....24	Dist. of Col.....91	Florida.....83	Georgia.....325	Idaho.....33	Illinois.....1,177	Indiana.....305	Iowa.....341	Kansas.....226	Kentucky.....138	Louisiana.....172	Maine.....57	Maryland.....215	Massachusetts.....61	
1	University of Alabama School of Medicine, Mobile...	51																2				1
2	University of Arkansas Medical Dept., Little Rock...	1		39													2	4				2
3	College of Medical Evangelists, Loma Linda.....		12							1												3
4	College of Physicians and Surgeons, Los Angeles...		29							1			12	2								4
5	Oakland College of Medicine and Surgery, Oakland...		13																			5
6	College of Physicians and Surgeons, San Francisco...		28	1									2		1		1					6
7	Hahnemann Medical College of the Pacific.—H.*.....		14										3		1				1			7
8	Leland Stanford Junior University School of Med. ...		77	3										1								8
9	Univ. of California Medical School, San Francisco...		108											1								9
10	Univ. of Colorado School of Med., Boulder-Denver...					62							2		2							10
11	Yale University School of Medicine, New Haven.....		1				38						4									11
12	Georgetown University School of Medicine.....						5		13						1							12
13	George Washington University Medical School.....				2		6		45	1	1		4	1			1			2		13
14	Howard University School of Medicine.....	1		2				1	14	3	2		3		1		3			5		14
15	Atlanta Medical College.....	81								11	140			1			1					15
16	Georgia College of Eclectic Med. and Surg.—E.*.....										29											16
17	University of Georgia Medical Dept., Augusta.....									1	47		214	19								17
18	Chicago College of Medicine and Surgery, Chicago...	2	2		1		2			4	5		60	19	18	5	7	2	2	1	5	18
19	Chicago Hospital College of Medicine, Chicago.....												30	12	9	5						19
20	Hahnemann Med. College and Hosp. of Chicago.—H. ...						1						98						1			20
21	Jenner Medical College, Chicago.....																					21
22	Loyola University School of Medicine, Chicago.....	2		2	4	1	2				1		170	8	3	3	1		2		3	22
23	Northwestern University Medical School, Chicago...			1	2	5				1			96	10	14	12	1					23
24	Rush Medical College (University of Chicago).....	1	1	2	8	4						3	182	18	34	20	5	1			1	24
25	University of Illinois College of Medicine, Chicago...	2				1					1	11	107	5	17	6			1			25
26	Indiana University School of Medicine, Indianapolis...	1												148			1					26
27	State Univ. of Iowa College of Med., Iowa City.....				1	1	1			1		1	5		123	2	1	1				27
28	State Univ. of Iowa Coll. of Homeo. Med.—H.														10							28
29	Univ. of Kansas School of Med., Lawrence-Rosedale...															99						29
30	Univ. of Louisville Medical Dept., Louisville.....	3	1	2	1								13	23	2	1	61	1				30
31	Tulane University of Louisiana School of Medicine...	27		12						10	7					2		119				31
32	Bowdoin Medical School, Brunswick-Portland.....						1								1			42			8	32
33	Johns Hopkins University Medical Dept., Baltimore...	9		1	9	2	7	2	3	1	14		8	7	5	1	5	2	1	65	13	33
34	Univ. of Maryland School of Med. & Coll. of P. & S ...	1	1	1	2		19	1	3	6	2		1	1					3	103	17	34
35	Boston University School of Medicine.—H.										1		1			1						35
36	College of Physicians and Surgeons, Boston*.....																					36
37	Medical School of Harvard University, Boston.....				7	9	8	1	2	2	5		7	6	6	2		1	11	2	133	37
38	Tufts College Medical School, Boston.....	1					13				2		12	10	4	5	4		15		263	38
39	University of Michigan Medical School.....	1					1		2		5	2	12	10	4	5	4			1	2	39
40	University of Michigan Homeo. Med. School.—H.				1								1	3	3	1	1					40
41	Detroit College of Medicine and Surgery, Detroit...												2	3		1						41
42	University of Minnesota Medical School.....				2								2	2	1	11				1		42
43	University of Mississippi Dept. of Med., Oxford.....									1							1					43
44	University of Missouri School of Med., Columbia...				1								2				1	1				44
45	Kansas City College of Med. and Surg.—E.																					45
46	National Univ. of Arts & Sci. Med. Dept., St. Louis	1		2							1	1	36		2	5	2					46
47	Southwest Coll. of Med. and Hosp., Kansas City.—H																3					47
48	St. Louis University School of Medicine.....	1		1	1	1							42	6	19	14		1			1	48
49	Washington University Medical School, St. Louis...			3									12			10						49
50	Lincoln Medical College, Lincoln.—E.															1						50
51	John A. Creighton Medical College, Omaha.....		1										1		21	6						51
52	University of Nebraska College of Medicine, Omaha...			1	1	1									14	3						52
53	Dartmouth Medical School, Hanover.....						1						1						1			53
54	Albany Medical College, Albany.....						1														2	54
55	University of Buffalo Dept. of Medicine, Buffalo...				2											1					1	55
56	Columbia University College of Phys. and Surgs. ...	1				3	18				10	2	2	2	1	1	2			1	3	56
57	Cornell University Medical College, New York City...						9		1												3	57
58	Fordham Univ. School of Medicine, New York City...						17													9		58
59	Long Island College Hospital, Brooklyn.....						2														2	59
60	New York Homeo. Med. Coll. and Flower Hosp.—H. ...				1		5												1			60
61	New York Med. Coll. and Hosp. for Women.—H.																					61
62	Univ. and Bellevue Hosp. Med. Coll., N. Y. City...				1		12				1				1	1					1	62
63	Syracuse University College of Medicine, Syracuse...																					63
64	Univ. of N. Carolina School of Med., Chapel Hill...									1												64
65	North Carolina Medical College, Charlotte.....									1												65
66	Leonard Medical School, Raleigh.....																					66
67	Wake Forest College School of Med., Wake Forest...																					67
68	University of North Dakota School of Medicine.....																				1	68
69	Eclectic Medical College, Cincinnati.—E.				2								5	2	1	1	9					69
70	University of Cincinnati College of Medicine.....				1									4			7					70
71	Western Reserve University School of Medicine.....					1				1		2	2	1	1		1					71
72	Ohio State University College of Medicine, Columbus																2					72
73	Ohio State Univ. Coll. Homeo. Med., Columbus.—E. ...													1								73
74	Univ. of Okla. Sch. of Med., Norman-Oklahoma City	3														3						74
75	University of Oregon Dept. of Medicine, Portland...											1										75
76	Hahnemann Med. Coll. and Hosp., Philadelphia.—H. ...						1	2	2												1	76
77	Jefferson Medical College of Philadelphia.....	4	1	1	6		14	7		3	3	3	5			2	1	1	4	4	7	77
78	Medico-Chirurgical College of Philadelphia.....				1		4	4	1		1			2		1		1	2	2	3	78
79	Temple University Dept. of Medicine, Philadelphia...						1	1														79
80	University of Pennsylvania School of Medicine.....	2			4	1	1	4			2	1	6	2	3	1	1	1		5	3	80
81	Woman's Medical College of Pennsylvania.....			1			1								2					1	3	81
82	Univ. of Pittsburgh School of Med., Pittsburgh...																					82
83	Medical College of the State of South Carolina...	1								3	2											83
84	University of South Dakota College of Medicine...																					84
85	Lincoln Memorial Univ. Med. Dept., Knoxville...									1							4					85
86	University of Tennessee Coll. of Med., Memphis...	8		9		1				1			1				2	7				86
87	Univ. of West Tenn. Coll. of Med. & Surg., Memphis	3										3										87
88	Meharry Medical College, Nashville.....	25		8					2	13	27		7			1	12	12		1		88
89	Vanderbilt University Medical Dept., Nashville...	23		6	1	2				13	6		8		1		11	8				89
90	Baylor University College of Medicine, Dallas.....										1		1			1						90
91	Fort Worth School of Medicine, Fort Worth.....					1											1	2				91
92	University of Texas Dept. of Medicine, Galveston...	1	1	2						1	1	1		1				2	1			92
93	Univ. of Utah School of Medicine, Salt Lake City...																					93
94	Univ. of Vermont College of Medicine, Burlington...						7												6		7	94

Marginal Number	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	Marginal Number			
	Michigan.....416	Minnesota.....345	Mississippi.....184	Missouri.....510	Montana.....27	Nebraska.....251	Nevada.....3	New Hampshire..46	New Jersey.....350	New Mexico.....11	New York.....2,030	North Carolina 420	North Dakota...34	Ohio.....688	Oklahoma.....130	Oregon.....92	Pennsylvania..1,059	Rhode Island....64	South Carolina 161	South Dakota...51	Tennessee.....238	Texas.....489	Utah.....86	Vermont.....59	Virginia.....334	Washington....110	West Virginia...141	Wisconsin.....333	Wyoming.....6	Philippines, etc..95	Foreign.....400	Totals.....14,022				
1			3						1		1				1		1				2										56	1				
2			2																		4										56	2				
3	2	1		1		3			1	2	5		1	7	1	1	7			2	1	2				5					10	3				
4	5	4		4	1	10															4	3	1					1			51	4				
5																																143	5			
6	1			1							4			2		2																13	6			
7	3			2							2			2			2															63	7			
8		2		1							1					1						3	1									43	8			
9						1	2			1						1						2	1			3						96	9			
10	1	1		1					1					2							1					2						124	10			
11	1			1						1	7			1	1						1				1							58	11			
12	1								2		7			2	2		6					1			1							53	12			
13		1						1	3	1	14	1		2	1	1	7	2		4	1				11	1	3					141	13			
14				2					4		2	11		1	1		6		7		2	10			10							9	100	14		
15			6								1	12							10		4	4			4		1					232	15			
16																																29	16			
17											1	1							3													54	17			
18	24	19	3	4	2	3			4		16	2	3	22	2		14			3	1		2	1	1		14	28			16	488	18			
19													1	7			1															60	19			
20	3	3																			1				1							85	20			
21																																	98	21		
22	9	6	3	5		3					9			4	2		7		1	1	4		1	3								308	22			
23	7	13	2	4	2	3				1	1		6	6	2	2	2		5	1	2	2			7		4	13				236	23			
24	12	17		13	7	18				1	4		7	16	3	1	5		1	10	5	9	20		1	9		41				488	24			
25	7	13		6							2			5	3		2			5			1			4		15				227	25			
26		1					1		1					1							1											156	26			
27		2		2							1									1						1						7	151	27		
28																																	10	28		
29			4												1						1												105	29		
30			2	2								2		2	4		6				2	3			2	2	9					2	149	30		
31		1	19	5					1			4			1	1	1		3		1	36			1			1				13	265	31		
32								3			2																						2	60	32	
33	5	3	1	8	1	2			12		23	9	5	24	1	4	35	2	7		5	4			29	4	5	3				4	353	33		
34				1				3	14		29	36		5	1		28	4	11				3		13		25					19	368	34		
35			1					1			4	1		1	1		3	1	1					2	1							13	75	35		
36																																	47	36		
37	2	4		6				5	4	1	25	8		12	2		10	14	3	1		5	4	3		2	1	3				10	334	37		
38											15			2			5	28															10	380	38	
39	158	4		3		2		1	2		24	1		20	1	2	16			1	2		1	1		10	1	5				14	324	39		
40	15	4						2			6			3	1	1	2																44	40		
41	138	2									3		8	9			1			2	1											18	180	41		
42		205		2	2	1																				8							1	253	42	
43			50																		1												2	55	43	
44																																		74	44	
45				108																														108	45	
46			1	86		1						1			5						1	1											1	149	46	
47				13		1									1																		1	20	47	
48	9	7		80		3					1			17	3	2				1	1	3				8		5				3	231	48		
49				46		2					1	2								1	1	1	1		1			9				3	92	49		
50			1			23																											25	50		
51		8		5	8	66					1			1		1				2			1			4							128	51		
52		2		2		90								1						1													5	123	52	
53						1		10	4		3													1									2	33	53	
54									3		140			1										1										148	54	
55				1							172						4																	181	55	
56	4	1		3		1		1	38	1	284	4		2	2	2	8	1	1		1	2	4	1	4	2	1	1					4	419	56	
57						2			9		109	1		1	1		6	2					1	2	2		1						1	151	57	
58									15		207						5																	1	256	58
59									12		246	1						1																7	272	59
60	1								30		131						3					1		1									3	177	60	
61									11		36																							47	61	
62	1			1		1			71		285	5		3	1			3			1	1	1	1									2	395	62	
63				1							104																							3	115	63
64												68																							77	64
65												27																						30	65	
66											1	2																						1	5	66
67												28																							34	67
68		1										21																							23	68
69				1		6					3			58	1		2																			

TABLE 2.—DISTRIBUTION OF

Marginal Number	NAME OF COLLEGE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Marginal Number
		Alabama.....219	Arizona.....12	Arkansas.....97	California.....342	Colorado.....107	Connecticut.....503	Delaware.....24	Dist. of Col.....91	Florida.....83	Georgia.....325	Idaho.....83	Illinois.....1,177	Indiana.....305	Iowa.....37	Kansas.....266	Kentucky.....158	Louisiana.....172	Maine.....97	Maryland.....215	Massachusetts.....601	
95	Medical College of Virginia, Richmond.....	2					2			1	2									4		95
96	Univ. of Virginia Dept. of Medicine, Charlottesville..						2	1	3		2			1			2	1		4		96
97	West Virginia Univ. School of Med., Morgantown....																					97
98	University of Wisconsin Medical School, Madison....												5	1						2		98
99	Marquette University School of Medicine, Milwaukee..					1							1		1							99
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

H.—Homeopathic; E.—Eclectic. * Exact distribution not given. † Distribution based on that of 1914-15.

(Continued from page 591)

the women matriculants, 102 (18 per cent.) were in attendance at the two medical colleges for women, while the remaining 464 (82 per cent.) were matriculated in the 51 coeducational colleges. From the two women's colleges there were 28 graduates, while 105 secured their degrees from coeducational colleges.

Since June 30, 1915, two new colleges were organized and two colleges (mentioned on page 599) were suspended or merged with others. The Hahnemann Medical College of the Pacific, which was omitted last year because of its merger with the University of California, is to continue as a teaching institution until 1918, when its last class will have graduated. There are now 95 medical colleges still existing. The number of colleges is the smallest since 1880, at which time began the rapid movement toward creating medical colleges, many of which were conducted for profit. The rapid increase in the number of colleges between 1880 and 1904 has been paralleled only by the rapid decrease since 1904. Ninety-four colleges have been closed by merger or otherwise since 1904, but in the

became extinct; 49 were rated by the Council on Medical Education in Classes A and B, and 45 in Class C. Note also that 44, or 95.5 per cent., of the closures of the medical colleges in Classes A and B were through merger with other colleges, while of the 45 Class C colleges which closed, only 9 (20 per cent.) were

TABLE 10.—COLLEGES CLOSED SINCE 1904

Year	Class A*		Class B		Class C		Totals		Total Closed
	Mgd.	Ext.	Mgd.	Ext.	Mgd.	Ext.	Mgd.	Ext.	
1905.....	8	1	..	..	..	..	8	1	9
1906.....	..	..	..	..	..	..	..	..	..
1907.....	3	..	3	1	..	3	6	4	10
1908.....	2	..	2	..	1	4	5	4	9
1909.....	3	..	2	..	..	7	5	7	12
1910.....	1	..	3	..	3	6	7	6	13
1911.....	..	..	3	..	1	3	4	3	7
1912.....	2	..	..	..	..	3	2	3	5
1913.....	3	..	6	1	1	3	10	4	14
1914.....	..	..	..	..	2	3	2	3	5
1915.....	1	..	1	2	1	3	3	5	3
1916.....	1	..	..	..	..	1	1	1	2
Totals...	24	7	20	4	9	36	53	41	94

* Based on the classifications of medical colleges prepared by the Council on Medical Education.

through merger with other colleges. In other words, all but five of the colleges which became extinct had been rated in Class C by the Council on Medical Education.

While the total number of colleges is growing smaller, the number of high-grade, stronger medical colleges is constantly increasing. In 1904, only 4, or 2.5 per cent. of all medical colleges, were requiring any preliminary education in advance of the usual high school education, now 84² (88.4 per cent.) are requiring one or more years of advance college work. Of these 84 colleges there are 46 which are requiring two years or more of collegiate work for admission and 15 others have adopted the higher requirement to go into effect in the next one or two years. In 1904 very little was known about the practice of colleges in the administration of entrance standards, as at that time no systematic check was kept on the methods used; now, through the Students' Register which, with the splendid cooperation of medical school officers, was started in 1910, the standards actually enforced by each college are known, faulty methods or "paper standards" are discovered and corrected or exposed, and instead of being

TABLE 9.—MEDICAL COLLEGES						
Year.	Non-sectarian.	Homeopathic.	Eclectic.	Physio-Med.	Non-descript.	Total.
1850.....	44	3	4	1	..	52
1860.....	53	6	4	2	..	65
1870.....	60	8	5	2	..	75
1880.....	76	14	8	2	..	100
1890.....	106	16	9	2	..	133
1900.....	126	22	9	2	1	160
1901.....	125	22	10	2	1	160
1902.....	126	20	9	3	2	160
1903.....	126	20	9	3	2	160
1904.....	127	19	9	3	2	160
1905.....	125	19	9	3	2	158
1906.....	130	19	8	3	2	162
1907.....	127	18	9	3	2	159
1908.....	120	18	9	2	2	151
1909.....	115	15	8	1	1	140
1910.....	109	12	8	1	1	131
1911.....	103	12	7	..	..	122
1912.....	101	11	6	..	..	118
1913.....	92	10	5	..	..	107
1914.....	87	10	5	..	..	102
1915.....	83	9	4	..	..	96
1916.....	82	10	3	..	..	95

same time twenty-seven new colleges were organized, leaving 95 medical colleges which still exist. The net reduction since 1906 has been 67 colleges, or 41.4 per cent.

FEWER BUT BETTER COLLEGES

Of the 94 medical colleges which have ceased to exist since 1904, 53 were closed by merger and 41

2. See list on page 605.

	Marginal Number																																	
95	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52		
96	Michigan.....	416															Pennsylvania.....	1,099																
97	Minnesota.....	345															Rhode Island.....	64																
98	1	1		1	1	2					1								6							153	14							
99		9																	7		3	2			60	4	1	1	79					
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52		
	Mississippi.....	184																		2	2	1					17							
	Missouri.....	510																								1	1	72						
	Montana.....	27																																
	Nebraska.....	251																																
	Nevada.....	3																																
	New Hampshire.....	46																																
	New Jersey.....	350																																
	New Mexico.....	11																																
	New York.....	2,035																																
	North Carolina.....	420																																
	North Dakota.....	34																																
	Ohio.....	683																																
	Oklahoma.....	130																																
	Oregon.....	92																																
	Pennsylvania.....	1,099																																
	Rhode Island.....	64																																
	South Carolina.....	161																																
	South Dakota.....	51																																
	Tennessee.....	238																																
	Texas.....	489																																
	Utah.....	86																																
	Vermont.....	59																																
	Virginia.....	334																																
	Washington.....	110																																
	West Virginia.....	141																																
	Wisconsin.....	333																																
	Wyoming.....	6																																
	Philippines, etc.....	95																																
	Foreign.....	400																																
	Totals.....	14,022																																

n unknown quantity, preliminary requirements are
ow known with fair accuracy.

FURTHER MERGERS NEEDED

During the year a noteworthy event was the merg-
g of the Medico-Chirurgical College of Philadelphia
ith the University of Pennsylvania School of Medi-
ine as its Graduate School of Medicine. This is an
mportant step toward the desired end of having the
bundance of clinical material of Philadelphia orga-
ized under a centralized control whereby it may be
est utilized.

There are still sixteen cities each of which has two
r more medical schools, and in two of these mergers
re scarcely possible, owing to the fact that the schools
re for different races, leaving fourteen cities where
mergers are still possible. These cities and the num-
er of colleges in each are as follows: Chicago, 8; New
ork, 7; Philadelphia, 5; Boston, 4; San Francisco, 3;
t. Louis, 3; Washington, 3, and there are 2 colleges
ach in Ann Arbor, Baltimore, Cincinnati, Columbus,
owa City, Los Angeles and Omaha. In 1904 there
ere 24 cities having each from 2 to 14 medical

TABLE 11.—CITIES HAVING TWO OR MORE MEDICAL COLLEGES

City	A	B	C	Total
Chicago.....	3	3	2	8
New York.....	5	1	1	7
Philadelphia.....	4	1	..	5
Boston.....	3	..	1	4
San Francisco.....	2	..	1	3
St. Louis.....	2	..	1	3
Washington.....	3*	..	..	3
Ann Arbor.....	2	..	..	2
Baltimore.....	2	..	..	2
Cincinnati.....	1	1	..	2
Columbus.....	1	..	1	2
Dowa City.....	2	..	..	2
Los Angeles.....	..	1	1	2
Memphis.....	1	..	1*	2
Nashville.....	1	1*	..	2
Omaha.....	1	1	..	2

* One school for the colored race.

schools. The highest development of medical educa-
on in these cities is prevented by the existence of too
any competing medical schools. For the further
mprovement not only of undergraduate, but also of
graduate medical instruction in this country, there
ould be other mergers in the fourteen cities which
ave been named.

LENGTH OF TERMS

The length of terms of each college fluctuates some-
what from year to year, but on the whole, during the
last thirteen years there has been a decided lengthening
of college terms. This has reference to the weeks of

TABLE 12.—COLLEGE TERMS

Year	23 to 26 weeks		27 to 28 weeks		29 to 30 weeks		31 to 32 weeks		33 to 34 weeks		35 to 36 weeks		Over 36 weeks	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1901	58	36.5	42	26.4	8	5.0	26	16.4	4	2.5	18	11.3	3	1.9
1902	44	28.4	44	28.4	11	7.1	33	21.3	3	1.9	18	11.6	2	1.3
1903	33	21.4	46	29.9	15	9.7	37	24.0	2	1.3	19	12.4	2	1.3
1904	27	16.3	44	26.5	22	13.3	37	22.3	13	7.8	20	12.0	3	1.8
1905	15	9.4	35	21.8	12	7.5	44	27.5	13	8.1	28	23.8	3	1.9
1906	14	8.7	35	21.7	26	16.1	32	19.9	24	14.9	28	17.4	2	1.3
1907	6	3.7	27	16.8	26	16.1	42	26.1	29	18.0	29	18.0	2	1.3
1908	2	1.3	21	13.8	28	18.4	51	33.6	24	15.8	22	14.5	4	2.6
1909	4	2.3	17	11.6	23	16.4	51	34.9	18	12.3	30	20.5	3	2.0
1910	2	1.5	8	6.0	19	14.3	42	31.5	30	22.6	30	22.6	2	1.5
1911	..	..	6	5.0	16	13.3	37	30.8	32	26.7	28	23.4	1	0.8
1912	1	0.9	1	0.9	11	9.5	34	29.3	37	31.8	31	26.7	1	0.9
1913	..	..	3	2.8	5	4.7	29	27.4	41	38.7	27	25.5	1	0.9
1914	..	..	2	2.0	4	4.0	25	24.8	41	40.5	28	27.7	1	1.0
1915	..	..	1	1.0	5	5.3	22	23.2	36	37.9	30	31.6	1	1.0
1916*	..	..	..	..	4	4.2	17	17.9	43	45.3	28	29.5	..	..

* Information not obtained from three Class C colleges.

actual work exclusive of holidays. No colleges this
year reported sessions shorter than 29 weeks and only
4 reported sessions of 29 and 30 weeks, two of these
being colleges for colored students. Sessions of from
33 to 36 weeks were reported by 71, or 74.7 per cent.
of all colleges. It should be noted that the great prog-
ress has been since the agitation for longer terms and
standards in medical education was begun by the
Council on Medical Education in 1904.

TUITION AND OTHER FEES

Attention is called in Table 1, on page 588, to the
amounts charged by the various medical colleges per
annum for tuition, matriculation, laboratory and grad-
uation fees for each student. In Table 13, 93 of the
95 remaining colleges—from two the figures were not
obtained—have been grouped according to the amount
of fees charged and according to their classification
by the Council on Medical Education in Classes A, B
and C. Nineteen colleges charge fees of \$100 or less
per year; fifty-three between \$100 and \$175, and
twenty-one charge above \$175. Of the nineteen col-
leges charging \$100 or less, thirteen, or more than

Name of College	Enrolled During 1915-16					Name of College	Enrolled During 1915-16				
	1st Yr.	2d Yr.	3d Yr.	4th Yr.	Total		1st Yr.	2d Yr.	3d Yr.	4th Yr.	Total
University of Alabama School of Medicine....	6	9	23	18	56	University of Nebraska College of Medicine....	48	35	19	21	123
Univ. of Arkansas Medical Dept., Little Rock...	7	17	13	19	56	Dartmouth Medical School, Hanover.....	25	8	.....	.....	33
College of Medical Evangelists, Loma Linda...	4	26	9	12	51	Albany Medical College, Albany.....	27	24	44	53	148
College of Phys. and Surgs., Los Angeles.....	47	23	49	24	143	University of Buffalo Dept. of Med., Buffalo..	48	29	66	38	181
Oakland College of Med. and Surg., Oakland..	4	2	5	2	13	Columbia University Coll. of Phys. and Surgs.	135	116	97	71	419
College of Phys. and Surgs., San Francisco....	10	30	10	13	63	Cornell Univ. Medical College, New York City..	56	33	31	31	151
Hahnemann Med. Coll. of the Pacific.—H.....	.....	7	20	16	43	Fordham University School of Medicine.....	90	74	50	42	256
Leland Stanford Junior Univ. School of Med...	20	23	26	27	96	Long Island College Hospital, Brooklyn.....	57	45	82	88	272
University of California Medical School.....	38	28	29	29	124	New York Homeopathic Medical College and	.....	.....	.....	.....	.....
University of Colorado School of Medicine....	31	13	22	13	79	Flower Hospital.—H.	14	43	55	65	177
Yale University School of Med., New Haven....	25	16	11	6	58	New York Med. Coll. & Hosp. for Women.—H.	17	6	11	13	47
Georgetown University School of Medicine....	10	19	11	13	53	Univ. and Bellevue Hosp. Med. Coll., N. Y. City	168	111	68	48	397
George Washington University Medical School..	32	20	48	41	141	Syracuse University College of Medicine.....	33	29	29	24	115
Howard University School of Medicine.....	27	33	18	22	100	University of North Carolina School of Med...	36	41	.....	.....	77
Atlanta Medical College, Atlanta.....	34	32	58	108	232	North Carolina Medical College, Charlotte....	.....	3	18	9	30
Georgia Coll. of Eclectic Med. and Surg.—E.....	.....	.....	.....	29	29	Leonard Medical School, Raleigh.....	3	2	.....	.....	5
University of Georgia Medical Department....	20	11	13	10	54	Wake Forest College School of Medicine.....	20	14	.....	.....	34
Chicago College of Medicine and Surgery.....	45	80	142	221	488	University of North Dakota School of Medicine	13	10	.....	.....	23
Chicago Hospital College of Medicine*.....	.....	.....	.....	.....	60	Eclectic Medical College, Cincinnati.—E.....	23	23	27	28	101
Hahnemann Medical College and Hospital, Chi-	.....	.....	.....	.....	.....	University of Cincinnati College of Medicine...	23	23	20	22	88
cago.—H.	18	16	33	18	85	Western Reserve University School of Medicine	52	42	32	52	179
Jenner Medical College, Chicago.....	2	52	21	23	98	Ohio State University College of Medicine.....	18	31	76	60	185
Loyola University School of Med., Chicago....	22	47	86	153	308	Ohio State University Coll. of Homeo. Med.—H.	11	13	8	7	39
Northwestern University Med. School, Chicago.	87	59	51	39	236	University of Oklahoma School of Medicine....	17	14	24	20	75
Rush Medical School, Chicago.....	125	125	130	108	488	University of Oregon Dept. of Med., Portland.	27	25	12	17	81
University of Illinois, College of Medicine....	47	22	48	110	227	Hahnemann Med. Coll. and Hosp. of Phila.—H.	33	11	34	20	98
Indiana University School of Medicine.....	47	37	39	33	156	Jefferson Medical College of Philadelphia.....	135	80	146	177	538
State Univ. of Iowa Coll. of Med., Iowa City..	59	43	20	29	151	Medico-Chirurgical College of Philadelphia....	69	44	103	90	306
State Univ. of Iowa Coll. of Homeo. Med.,	.....	.....	.....	.....	.....	Temple University Dept. of Med., Philadelphia	9	1	22	14	46
Iowa City.—H.	4	4	2	.....	10	University of Pennsylvania School of Medicine	101	67	75	74	317
University of Kansas School of Medicine.....	48	25	20	12	105	Woman's Medical College of Pennsylvania....	10	8	20	17	55
University of Louisville Medical Department...	14	10	70	55	149	University of Pittsburgh School of Medicine...	54	19	16	22	111
Tulane University of Louisiana School of Med.	80	51	59	75	265	Medical College of the State of South Carolina	11	13	20	17	61
Bowdoin Medical School, Brunswick-Portland..	18	21	11	10	60	University of South Dakota College of Med...	5	7	.....	.....	12
Johns Hopkins University Medical Dept.....	90	89	89	85	353	Lincoln Memorial University Medical Dept....	.....	2	5	14	21
University of Maryland School of Medicine and	.....	.....	.....	.....	.....	University of Tennessee College of Medicine....	16	15	65	63	159
College of Physicians and Surgeons.....	53	55	105	155	368	Univ. of West Tenn. College of Med. and Surg.	6	4	3	14	27
Boston University School of Medicine.—H.....	16	11	23	20	75	Meharry Medical College, Nashville.....	33	76	105	87	301
College of Physicians and Surgeons, Boston...	14	8	3	22	47	Vanderbilt University Medical Dept., Nashville..	23	26	76	87	212
Medical School of Harvard University.....	104	95	68	67	334	Baylor University College of Medicine, Dallas..	5	17	9	28	59
Tufts College Medical School, Boston.....	128	75	98	79	380	Fort Worth School of Medicine.....	16	8	19	7	50
Univ. of Michigan Medical School, Ann Arbor..	108	83	69	64	324	University of Texas Department of Medicine...	75	48	57	35	215
Univ. of Michigan Homeo. Medical School.—H.	11	13	10	10	44	University of Utah School of Medicine.....	13	10	.....	.....	23
Detroit College of Medicine and Surgery.....	35	30	65	50	180	University of Vermont College of Medicine....	21	24	17	14	76
University of Minnesota Medical School.....	89	76	52	36	253	Medical College of Virginia, Richmond.....	25	55	87	99	266
University of Mississippi Dept. of Medicine....	32	23	.....	.....	55	University of Virginia Department of Medicine	39	30	23	22	114
University of Missouri School of Medicine....	42	32	.....	.....	74	West Virginia University School of Medicine...	8	9	.....	.....	17
Kansas City College of Med. and Surg.—E....	30	40	20	18	108	University of Wisconsin Medical School.....	43	58	.....	.....	101
Southwest School of Medicine and Hospital,	.....	.....	.....	.....	.....	Marquette University School of Medicine.....	13	17	11	46	87
Kansas City.—H.	7	1	4	8	20						
National Univ. of Arts and Sciences Med. Dept.	18	38	36	57	149	Totals for 1916.....	3582	3094	3559	3727	14952
St. Louis University School of Medicine.....	89	49	49	44	231	Totals for 1915.....	3373	3919	3675	3864	14831
Washington University Med. School, St. Louis	27	12	36	17	92	Totals for 1914.....	4684	3981	3807	3955	16427
Lincoln Medical College, Lincoln.—E.....	10	3	3	9	25						
John A. Creighton Medical College.....	24	17	45	42	128						

H.—Homeopathic; E.—Eclectic.

* Figures for 1914-15; distribution by classes not given.

This table shows for all colleges, except one, the number of students enrolled in each of the four classes. Eleven colleges teach only the first two years of the medical course. Hahnemann Medical College of the Pacific, Lincoln Memorial University and the North Carolina Medical College had students only in the last three classes. The Georgia College of Eclectic Medicine and Surgery had only seniors and graduated its last class.

The largest first year classes are found at the University and Bellevue Hospital Medical College, 168; Columbia University College of Physicians and Surgeons and Jefferson Medical College, each 135; Tufts College Medical School, 128; Rush Medical College, 125; the University of Michigan Medical School, 108; Harvard University Medical School, 104, and University of Pennsylvania School of Medicine, 101. The smaller enrollments in the first and second year classes of the Atlanta Medical College, Loyola University School of Medicine and the Chicago College of Medicine and Surgery mark the beginning of a more rigid administration of their requirements for admission.

The totals for the previous session are also given, to permit of comparison. The marked reduction in the number of first year students is due to the general adoption of higher entrance standards. Sixty students (of the Chicago Hospital College of Medicine) have been figured in the total (14,022) which are not shown by classes.

The six colleges having the largest enrollments are Jefferson Medical College, 538; Rush Medical College and Chicago College of Medicine and Surgery, each 488; Columbia University College of Physicians and Surgeons, 419, and the University and Bellevue Hospital Medical College, 395.

There were 3,582 freshmen enrolled this year, an increase of 209 over last year. This is evidence that after a few years have been allowed for readjustments under the higher entrance standards, the enrollments of students will again increase.

TABLE 4.—ENROLMENTS IN MEDICAL COLLEGES FOR TWELVE YEARS

Name of College	Total Enrollment of Students in Session Ending in											
	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
University of Alabama School of Medicine.....	170	158	170	169	191	179	154	137	115	94	65 ¹	50
University of Arkansas Med. Dept.....	220	176	182	177	179	171	104	145	110	95	77	50
College of Medical Evangelists.....	.....	.....	.....	.....	.....	10	39	56	62	75	63 ¹	51
College of Physicians and Surgeons, Los Angeles.....	25	32	34	37	32	69	108	126	125	153	132 ²	143
College of Physicians and Surgeons, San Francisco.....	144	145	79	70	40	29	23	16	19	34	62 ¹	63
Hahnemann Medical College of the Pacific.....	34	24	28	33	23	34	34	35	38	40	45	40
Oakland College of Medicine and Surgery.....	12	10	10	10	17	20	21	22	13	15	12	13
Leland Stanford Junior University School of Med.....	.....	.....	.....	.....	.....	15	16	70	53 ³	75	95	90
University of California Medical School.....	104	90 ²	54	36	36	107	92	88	111	124	133	124
University of Colorado School of Medicine.....	54	70	58	52	54	77	152	118 ²	90	54	59	70
Yale University School of Medicine.....	138	134	153	136	141	124	83 ²	63	42	49	49	58
Georgetown University School of Medicine.....	133	102	82	82	89	117	131	155	126	99 ²	81	58
George Washington University Med. School.....	298	280	215	198	156	109	98	92	103	171	145 ¹	140
Howard University School of Medicine.....	153	157	186	205	205	210	193 ¹	170	122	110	100 ²	100
Atlanta Medical College.....	250	180	200	234	280	334	320	372	338	488 ⁴	341	230

TABLE 4.—ENROLMENTS IN MEDICAL COLLEGES FOR TWELVE YEARS—(Concluded)

Name of College	Total Enrolment of Students in Session Ending in											
	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Georgia College of Eclectic Medicine and Surgery.....	53	57	76	71	66	90	81	70	70	51	21	29
University of Georgia Medical Department.....	108	113	98	113	99	113	136	126	80	58	54 ¹	54
Chicago College of Medicine and Surgery.....	292	189	239	325	396	580	630	556	642	638	529	488 ¹
Chicago Hospital College of Medicine.....										75	60	60
Hennemann Medical College of Chicago.....	220	178	136	117	130	131	107	104	76	92	86 ¹	85
Mer Medical College.....	102	250	185	175	112	105	117	138	191	109	175	98
Yola University School of Med.....	103	166	153	150	186	231	283	402	395	406	393	308 ¹
Northwestern University Medical School.....	593	580	473	533	537	637	397 ¹	259	196 ²	180	194	236
Sh Medical College ⁵	522	450	567	586	488	468	426	559	422	462	487	488
University of Illinois College of Medicine.....	654	556	501	463	517	526	508	506	535	422 ¹	289 ²	227
Liana University School of Medicine.....	14	21	109	308	266	248 ¹	188 ²	155	146	133	152	156
ate University of Iowa College of Medicine.....	277	267	272	266	266	190 ¹	118 ²	110	98	108	143	151
ate University of Iowa College of Homeopathic Medicine.....	41	47	44	43	42	35	18	16 ²	13	5	11	10
iversity of Kansas School of Medicine.....	32	162	115	101	90	89 ²	85	75	66	105	101	105
iversity of Louisville Medical Department.....	248	213	456	331	706	624	447	353	255	278	208 ¹	149
lane University of Louisiana School of Medicine.....	469	458	516	535	439	417	379 ¹	321	296	327	286	265
wdoin Medical School.....	93	82	94	93	81	74	67	83	75 ¹	67	70	60
ons Hopkins University Medical Department ⁶	291	293	264	281	297	334	347	357	351	360	361	353
iversity of Maryland School of Medicine.....	340	339	311	316	329	309	324	310	293	454	347 ¹	368
ston University School of Medicine.....	83	100	96	102	95	79	86	94	98	113	86 ¹	75
llege of Physicians and Surgeons, Boston.....	168	134	123	162	172	80	198	89	80	110	55	47
rvard University Medical School ⁶	307	292	366	298	285	279	264	258	285	305	319	334
fts College Medical School.....	385	375	376	371	384	428	379	329	317	311	305	380
roit College of Medicine and Surgery.....	208	173	158	146	161	152	163	172	197	249	197 ¹	180
iversity of Michigan Medical School.....	376	369	371	390	404	315 ²	260	242	221	282	307	324
iversity of Michigan Homeopathic Medical School.....	66	82	82	82	81	74	92	91	63 ¹	73	68	44
iversity of Minnesota Medical School.....	228	189	188	166 ²	245	160	172	183	176	169	208	253
iversity of Mississippi Department of Med.....	18	22	18	28	27	50	50	44	38	35	45 ¹	55
ectic Medical University.....	56	46	36	41	50	21	49	50	42	65	65	108 ^{1,2}
ional University of Arts and Sciences Med. Dept.....	66	63	38	41	28	39	46	172	211	146	127	149
thwest College of Medicine and Hospital.....												20 ¹
Louis University School of Medicine.....	385	295	268	241	243	261	274 ¹	271	233	204	188	231
iversity of Missouri School of Med.....	108	98 ¹	66	65	47	29	34 ²	36	45	55	65	74
ashington University Medical School.....	254	239	215	208	201	205	123 ¹	109	66 ²	61	75	92
n A. Creighton Medical College.....	167	172	167	158	177	194	188	194	182	182	148 ¹	128
coln Medical College.....	81	71	50	50	42	58	42	26	35	29	29	25
iversity of Nebraska College of Medicine.....	92	142	82	98	122	76 ²	72	70	78	84	96	123
tmouth Medical School ⁷	60	59	62	58	58	57	42 ²	36	27	23	23	33
any Medical College.....	172	165	195	180	180	196	208	223	239	258	173 ¹	145
umbia University College of Physicians and Surgeons.....	568	450	387	322	312	360	328 ²	347	339	308	381	419
nell University Medical College.....	392	369	342	316	217 ²	164	116	85	102	108	134	151
hdam University School of Medicine.....			24 ¹	30	43	75	94	118	136	175	209	256
ng Island College Hospital.....	414	343	342	337	364	368	407	412	438	360	285 ¹	272
York Homeopathic Medical College.....	110	110	109	80	109	125	210	170	245	237	242	177 ¹
York Medical College and Hosp. for Women.....	34	20	24	26	24	24	24	31	45	42	38	47
acause University College of Medicine.....	154	153	153	150	149	140 ¹	109 ²	91	87	96	100	115
iversity and Bellevue Hospital Medical College.....	391	481	502	503	445	474	510	476	352 ¹	333	364	395
iversity of Buffalo Department of Medicine.....	231	225	224	176	185	191	223	228	221	236	191 ¹	181
nard Medical School ⁷	136	147	149	146	125	133	120	121	97	76	11 ²	5
th Carolina Medical College.....	81	92	69	82	94	107	112	100	85	91 ⁸	52	36
ke Forest College School of Medicine.....	18	20	39	40	53	37 ²	38	39	32	28	26	34
iversity of North Carolina School of Medicine.....	100	96	114	114	113	74	51 ¹	54	54	60	80	77
iversity of North Dakota School of Medicine.....		7	15	20 ²	22	36	39	13	14	14	17	23
ctic Medical College.....	135	116	97	91	81	91	95	89	89	87	114	101
o State University College of Medicine ¹³				209	231	220	252	256	231	284	231 ¹	185 ²
o State University College of Homeopathic Medicine.....											46 ¹	39
iversity of Cincinnati College of Medicine ¹⁴	121	137	133	117	120	191	149 ¹	113	80	60 ²	80	88
stern Reserve University School of Medicine ⁶	73	85	87	104	98	94	107	176	161	157	169	178
iversity of Oklahoma School of Medicine.....	8	16	13	8	10	21	63	51	32	94	93 ¹	75
iversity of Oregon Department of Medicine.....	102	82	86	88	74	80	72 ¹	67	57	79	82	81
nnemann Medical College of Philadelphia.....	164	186	188	168	187	159	135	116	92	93	85 ¹	98
erson Medical College.....	676	617	629	693	501	531	559	616	680	648	556 ¹	538
lico-Chirurgical College of Philadelphia.....	461	467	434	419	461	455	462	341	314	350	297 ¹	306
ple University Department of Medicine.....	87	101	90	134	245	197	82	81	69	101	63 ¹	46
iversity of Pennsylvania School of Medicine.....	546	577	583	604	544	529 ¹	445 ²	367	307	266	276	317
iversity of Pittsburgh School of Medicine.....	281	307	346	362	378	309	240	174 ¹	145	124 ²	103	111
uman's Medical College of Pennsylvania.....	151	136	152	138	125	114	110	112	93	93	78 ¹	55 ²
ical College of the State of South Carolina.....	87	99	130	153	213	229	203	164	118	104	82 ¹	61
iversity of South Dakota College of Medicine.....				3	11	7 ²	7	9	13	14	12	12
coln Memorial University ⁸	92	82	80	83	84	98	101	97	98	75 ⁸	43	21
arry Medical College.....	328	321	300	285	275	281	299	335	322	359	354	301 ¹
iversity of Tennessee College of Medicine.....	164	182	167	137	119	203 ⁹	192	155	112	321 ⁹	212 ¹	159
iversity of West Tennessee College of Medicine and Surgery.....	33	40	23	35	25	35	35	37	45	73	53	27
derbilt University Medical Department.....	158	197	215	207	209	271	279	392	365	381	294 ¹	212
lor University College of Medicine.....	132	70	57	62	53	67	90	68	71	50 ¹	56	59
t Worth School of Medicine.....	191	192	176	108	100	81	90	71	60	48	43	50
iversity of Texas Department of Medicine.....	168	189	188	198	211	206	177 ¹	162	153	172	189	215
iversity of Utah School of Medicine.....		30	46	28	18	30 ¹	19 ²	12	23	20	27	23
iversity of Vermont College of Medicine.....	185	170	165	142	166	178	186	176	140 ¹	117	102	76
ical College of Virginia.....	209	242	212	215	206	191	210	242	240	386 ^{1,9}	339	266 ²
iversity of Virginia Department of Medicine.....	145	122	134	106	88	87	79 ¹	82	91	104	108	114
et Virginia University School of Medicine.....	26	35	45	24	40	27	13	19 ¹	8	21	19	17
quette University School of Medicine.....	174	139	130	147	166	293	253	242	283 ¹¹	169 ¹	125	87 ²
iversity of Wisconsin Medical School.....				26 ²	32	48	48	60	66	83	96	101
olment in colleges now extinct or merged.....	9,164	8,689	7,855	6,051	5,237	4,335	3,885	2,382	1,910	645	329	.....
Totals.....	26,147	25,204	24,276	22,602	22,145	21,526	19,786	18,412	17,015	16,502	14,891	14,022

1. First enrolment under the entrance requirement of one year of college work.
2. First enrolment under the entrance requirement of two years of college work.
3. First enrolment for four classes. Leland Stanford adopted the higher entrance standard in 1909.
4. Combined enrolment after the merger of the Atlanta College of Physicians and Surgeons with the Atlanta School of Medicine in 1913.
5. Rush Medical College began the requirement of two years of college work in 1904.
6. Johns Hopkins, Harvard and Western Reserve adopted the higher entrance standard, respectively, in 1896, 1900 and 1901.
7. Dartmouth Medical School and Leonard Medical School discontinued the teaching of the last two or clinical years of medicine in 1911.
8. Has enrolled no new students since 1914. Is nominally existing to graduate classes already enrolled at that time.
9. Combined enrolment after merger of the University of Nashville in 1909. The larger class in 1914 followed the merger of the Memphis Hospital Medical College in 1913.
10. Combined enrolment after the merger of the University College of Medicine in 1913.
11. Combined enrolment of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons, which in 1912 were joined to form the Marquette University School of Medicine. Figures given previous to 1913 are the annual enrolments of the Milwaukee Medical College which was the Medical Department of Marquette University.
12. The enrolment for 1915-1916 was in the Kansas City College of Medicine and Surgery, the evident successor to, or offshoot from, the Eclectic Medical University.
13. Figures for 1908 to 1913 are for the Starling-Ohio Medical College.
14. Figures given are for the Medical College of Ohio from 1905 to 1909.

(Continued from page 595)

two-thirds, were listed among Class A (acceptable) colleges³ by the Council on Medical Education; four were Class B and two were Class C colleges. Among the eight Class A colleges having these low fees are the schools of medicine of the state universities of Colorado, Iowa, Michigan, Mississippi, Missouri, North Dakota, South Dakota, Texas and Utah. On the other hand, eight colleges listed by the Council in Class C charge fees of from \$100 to \$175 per year for each student. As shown on page 605, diplomas from Class C colleges are reported as not recognized by thirty-two state licensing boards. A student would be silly if he knowingly spent his time and money in a low-grade college the diplomas of which were not recognized by many states,⁴ when in the same time and for even less money he could attend one of the best-equipped colleges, the diplomas of which were recognized everywhere. Although forty-one colleges listed in Class A charge fees ranging from \$150 to \$275 per year for each student, the actual expense for

TABLE 13.—COLLEGE FEES

Total Fees	Number of Colleges			
	Class A*	Class B	Class C†	Total
\$ 50 or less.....	3	3	..	6
50 to \$ 75.....	3	1	1	5
75 to 100.....	7	..	1	8
100 to 125.....	7	3	1	11
125 to 150.....	6	3	3	12
150 to 175.....	23	3	4	30
175 to 200.....	9	2	..	11
200 or above.....	9	1	..	10
Totals.....	67	16	10	93

* Based on the latest classification of medical colleges prepared by the Council on Medical Education (see page —).
† Information not obtained for two Class C colleges.

teaching that student in these colleges amounts to from two to three to several times these sums. In fact, accurate data secured from eighty-two medical colleges this year show that the average amount received each year from the individual student was \$150, while the average amount actually expended in the training of that student for a year was \$419! And among these 82 colleges were several which still made profits from running the medical schools or paid all expenses including rents or costs of new buildings from students' fees!

In this connection, a glance at Table 1 on page 588 will show that many of the Class A colleges have only from 7 to 75 students in each class, or totals of from 50 to 300 enrolled, when they could easily care for classes of 50 to 100, or total enrolments of 200 to 400 each. It is quite evident, therefore, that with the same equipment and at practically no additional expense these schools could easily accommodate two, three, or in some instances several times the number of students at present enrolled, which would greatly

3. See classification on page 604.

4. See also THE JOURNAL of April 8, 1916, p. 1106, the table showing in what states the diplomas of the various medical colleges are not given recognition.

reduce the disproportion of expense over income from fees. A further reduction in the vast oversupply of medical schools in this country, therefore, would be in the interests of economy as well as of marked advantage to medical education.

COLLEGES, STUDENTS AND GRADUATES BY STATES

Illinois has heretofore had the largest number of medical colleges, but now, as shown in Table 14, the first place is held by New York, where there are ten

TABLE 14.—MEDICAL COLLEGES, STUDENTS AND GRADUATES BY STATES

State	College		Students		Graduates		Graduates with B.S. or A.B.
	Total	Class C	Men	Women	Men	Women	
Alabama.....	1	..	56	....	18	....	6
Arkansas.....	1	..	55	1	15	1	....
California.....	7	2	458	75	92	17	53
Colorado.....	1	..	75	4	13	....	8
Connecticut.....	1	..	58	....	6	....	6
Dist. of Columbia...	3	..	286	8	48	1	12
Georgia.....	2	..	315	....	140	....	5
Illinois.....	8	2	1,875	115	602	25	118
Indiana.....	1	..	156	....	34	....	28
Iowa.....	2	..	158	3	29	....	10
Kansas.....	1	..	99	6	10	1	9
Kentucky.....	1	..	149	....	54	....	7
Louisiana.....	1	..	264	1	75	....	9
Maine.....	1	..	60	....	10	....	0
Maryland.....	2	..	683	38	199	6	97
Massachusetts.....	4	1	787	49	157	17	80
Michigan.....	3	..	529	19	113	8	51
Minnesota.....	1	..	246	7	49	2	41
Mississippi.....	1	..	55	....	....	....	....
Missouri.....	6	2	655	19	130	5	21
Nebraska.....	3	1	268	8	68	3	20
New Hampshire.....	1	..	33	....	....	....	....
New York.....	10	1	2,073	88	440	16	121
North Carolina.....	3	..	145	1	8	....	....
North Dakota.....	1	..	23	....	....	....	....
Ohio.....	5	1	570	21	160	7	60
Oklahoma.....	1	..	74	1	20	....	....
Oregon.....	1	..	78	3	16	....	....
Pennsylvania.....	6	..	1,404	67	372	19	9
South Carolina.....	1	..	61	....	16	....	....
South Dakota.....	1	..	12	....	....	....	....
Tennessee.....	4	1	711	9	262	4	3
Texas.....	3	..	312	12	66	1	1
Utah.....	1	..	23	....	....	....	....
Vermont.....	1	..	76	....	13	....	....
Virginia.....	2	..	380	....	104	....	1
West Virginia.....	1	..	17	....	....	....	....
Wisconsin.....	2	..	177	11	45	1	....
Totals.....	95	11	3,456	566	3,334	134	94

colleges. Illinois has eight; California has seven and Pennsylvania has six colleges. This year New York has the largest number of students enrolled, having 2,161 matriculants last session, followed by Illinois with 1,990 and Pennsylvania with 1,471. In regard to the graduates, the same relative positions obtain.

TABLE 15.—STATISTICS ACCORDING TO COLLEGE CLASSIFICATION

Colleges*	Students		Graduates	
	Number	Per Cent.	Number	Per Cent.
Class A.....	68	68.7	11,162	79.6
Class B.....	18	18.2	2,087	14.9
Class C and unclassified.	13	13.1	773	5.5
Totals.....	99	100	14,022	100

* Includes 4 colleges which will hold no more sessions.

Table 15 shows the colleges existing during the last session and their students and graduates grouped according to their rank in the classification of the Council on Medical Education. As will be noted,

There were sixty-eight colleges in Class A, eighteen in Class B, twelve in Class C, and one unclassified. It is encouraging to note that 79.6 per cent. of all students were enrolled in the 68.7 per cent. of colleges which are in Class A, and that these colleges turn out 77 per cent. of all graduates. At the other extreme, only 5.5 per cent. of all students and all graduates respectively were from the 13.1 per cent. of colleges listed in Class C.

COLLEGE NOTES

Colleges Closed.—Two medical colleges were closed this year, the Medico-Chirurgical College of Philadelphia, which merged with the University of Pennsylvania as its graduate school of medicine, and the Georgia College of Eclectic Medicine and Surgery of Atlanta, which has become extinct.

New Colleges.—Two new colleges have been organized during the year. One was the Southwest College of Medicine and Hospital, Homeopathic, which occupies the same building as the Kansas City Hahnemann Medical College, which closed last year. It is reported not recognized by the Missouri State Board of Health after an inspection was made. The other is the Kansas City College of Medicine and Surgery, Eclectic, an offshoot of, if not the successor to, the notorious Eclectic Medical University, from which it apparently led away the entire student enrolment. No information has been received to indicate that the child will differ in character from its parent.

A group of men have revived the charter of the old Mid-Mex College of Cambridge, Mass. It is evident that the institution is furnishing M.D. degrees to osteopaths and possibly other drugless practitioners. It is therefore to be listed with drugless cult colleges.

Special Items Concerning Medical Education

California.—Leland Stanford Junior University School of Medicine is planning to erect a new hospital during the present summer, at a cost of \$500,000.

—The University of California has received further gifts of \$25,616.50 to the fund for the new University Hospital, which will be completed by the end of the present year, at a cost of over \$600,000. The University has announced that in the immediate future it will erect a new building for the departments of anatomy and pathology, to cost \$150,000; an outpatient building, to cost \$100,000; a nurses' home, to cost \$100,000, and that alterations costing \$30,000 will be made on the present hospital building to fit it for use for departments of physiology and physiological chemistry. Another scholarship, amounting to \$400 per annum, to be known as the William Watt Kerr scholarship, has been established at the University of California by the medical alumni of that institution.

Connecticut.—The Yale Corporation has voted to admit a limited number of women students to the School of Medicine of Yale University.

—The New Brady Memorial Laboratory, the cost of which, including equipment, will be \$125,000, is in course of construction and will be finished this fall. A new Roentgen plant for the New Haven Hospital, the teaching institution of the School of Medicine of Yale University, is being erected and will be completed before the opening of the college session. The school received \$14,845 by the will of Norman B. Bayley.

Georgia.—The Atlanta Medical College will require two years of college work for admission beginning with the session of 1918-19. The school has secured \$25,000 toward endowment fund.

—The University of Georgia Medical Department has raised its entrance requirements to two years of college for all students matriculating in the session of 1918-19 and thereafter.

Illinois.—The University of Illinois College of Medicine will commence immediately the erection of an eight-story building, to cost \$250,000. This will comprise the main unit of the school's new plant, and will provide a dispensary, operating rooms, a floor for medical cases, one for surgical and one for obstetrical cases.

Iowa.—The State University of Iowa College of Medicine has set aside \$42,000 for the erection of an isolation hospital having a capacity of forty beds, work on which has already been begun.

Kansas.—The University of Kansas School of Medicine received real and personal property valued at about \$25,000 by the will of Dr. J. L. Porter.

Louisiana.—Commencing with the session of 1918-19 Tulane University of Louisiana School of Medicine will require two years of college work for admission.

Maine.—Bowdoin Medical School received from Dr. Thomas Upham Coe a donation of \$27,000 for the erection of an infirmary.

Maryland.—The University of Maryland School of Medicine and College of Physicians and Surgeons has increased its entrance requirements to two years of college work for all students matriculating in the session of 1918-19 and thereafter. The institution has received an appropriation of \$25,000 a year for two years from the state legislature.

—A valuable collection of periodicals, monographs and other medical books, consisting of more than 4,000 volumes, was presented to the Johns Hopkins Hospital by Dr. Howard A. Kelly. Most of the books deal with special work in gynecology and obstetrics and are valued at about \$25,000.

Michigan.—The University of Michigan received \$6,000 by the will of Dr. Florence Huson. The sum is to be used to defray the expenses of women students, preferably those in the medical department.

Missouri.—The St. Louis University School of Medicine will require two years of college work for admission beginning with the session of 1918-19. A memorial fund amounting to \$2,200 was raised by friends of the late Dr. Jessie S. Myer and presented to the school for the purchase of books on internal medicine.

—The General Education Board has appropriated \$250,000 more for the Medical School of Washington University, making a total donation of \$1,000,000 toward a gift of \$1,500,000, to be used in placing the teaching of medicine, surgery and pediatrics on the so-called full-time basis. The school received a gift of \$166,000 from Edwin Mallinckrodt and a similar amount from John W. Milliken.

Nebraska.—The Board of Regents of the University of Nebraska have approved plans for a new hospital to be erected in connection with the College of Medicine. The building is to be five stories in height and will have six wards, three receiving rooms, six groups of isolation rooms and the necessary operating rooms, operating amphitheater and rooms for administration and service.

New York.—Albany Medical College received \$41,000 from five citizens of Albany to meet this year's deficit in the running expenses. A gift of \$12,635.20 was provided by the will of Dr. John M. Bigelow.

—The entrance requirements of the Long Island College Hospital, for students who enter in the session of 1918-19 and thereafter, will be two years of college work. The institution received \$75,000 by the will of Mrs. Katherine S. Leavitt; a bequest of \$20,000 from Francis Ripley and \$5,000 from an anonymous benefactor.

—Commencing with the session of 1918-19 the entrance requirements of the University and Bellevue Hospital Medical College will include two years of college work.

—The New York Medical College and Hospital for Women has received contributions amounting to \$62,000 toward the \$250,000 fund expected to be raised during the year. Of this amount \$10,000 was contributed by W. W. Cole and \$2,000 by Dr. Cornelia C. Brant, the dean of the college. The institution received a donation of \$5,000 by the will of Colonel Edward M. Knox and a gift of \$1,000 for laboratory equipment from Dr. Marshall O. Terry.

North Carolina.—A bequest of \$1,000 was received by the Leonard Medical School by the will of the late Dr. Samuel Guy of Virginia.

North Dakota.—The North Dakota legislature at its last session appropriated \$2,500 for an equipment fund for the School of Medicine of the University of North Dakota.

Ohio.—The Ohio State University College of Medicine will require two years of college work for admission in 1916-1917 and thereafter.

—The University of Cincinnati College of Medicine has received \$10,000 from Mr. Charles Boldt, to be used in furnishing and remodeling rooms set aside in the Cincinnati General Hospital for the outpatient clinic. In addition, Mr. Boldt will contribute \$1,000 per year for five years toward the support of the clinic which will be opened October 1. The annual report of the children's clinic of the college shows that during 1915, 2,300 children made more than 10,000 visits to the clinic. The university has received gifts of \$600 each from Henry Strauss, Casper H. Rowe, Adam A. Kramer and Albert Lackman for scholarships in its medical department.

—A bequest of \$50,000 for the Western Reserve University School of Medicine was provided by the will of Robert R. Rhodes. Plans for the removal of the School of Medicine, the Babies' Dispensary and the Lakeside Hospital to a tract of land on Euclid Avenue, near the Adelbert College campus, have been approved by the trustees of the university.

Oregon.—Four business men of Portland have contributed \$25,000 toward the establishment of new buildings for the Department of Medicine of the University of Oregon. This makes available the \$50,000 appropriated by the state. The school received a donation of \$5,000, from an anonymous benefactor, with the condition that nine other gifts of the same amount shall be secured.

Pennsylvania.—The Hahnemann Medical College of Philadelphia will require two years of college work for admission beginning with the session of 1917-18. The institution will receive at least \$50,000 as an endowment through the will of Dr. Edward R. Gregg. A bequest of \$35,000 for the school was provided by the will of Jacob E. Neaife, which became operative in January, through the death of a daughter of Mr. Neaife.

—Jefferson Medical College has advanced its requirements for admission to two years of college work, including courses in physics, chemistry and biology, with laboratory work, and either French or German, for matriculants of the session of 1917-18. The promised gift of \$100,000 by Daniel Baugh became available for the college in June, when subscriptions for a like sum were completed.

—Conditional bequests amounting to \$150,000 have been received by the Medico-Chirurgical College of Philadelphia. A bequest for the endowment of a chair in physiology in the college was provided by the will of Mrs. Ott. An appraisal of the estate in 1905 gave this a value of \$73,717.

—The Woman's Medical College of Philadelphia has established a fellowship in obstetrics. It carries with it the sum of \$1,000 for twelve months' work and is open to any woman graduate of an accredited medical college who has served as intern for at least one year in a hospital with an obstetric service, has spent at least one year in further practice and who intends to continue in the practice of obstetrics. Two new scholarships in the college amounting to \$225 and \$250, respectively, have been provided by friends of the institution.

South Carolina.—The Medical College of the State of South Carolina received \$1,000 through an anonymous benefactor, to be used in purchasing equipment for the outpatient department.

Tennessee.—Meharry Medical College has secured pledges for the greater portion of the \$10,000 endowment fund, a campaign for which was recently launched by the school's alumni.

Texas.—Beginning with the session of 1917-18 the University of Texas Department of Medicine will require two years of college work for admission. Improvements and additions amounting to \$80,000 for the John Sealy Hospital, which is connected with the university, are contemplated by Mr. John Sealy.

Virginia.—Pledges of over \$250,000 for the erection of a hospital for contagious diseases, a hospital for colored patients and a nurses' home, to be departments of the Memorial Hospital, the teaching hospital of the Medical College of Virginia, have been received by the college.

Wisconsin.—At the commencement exercises in June the members of this year's graduating class of the Marquette University School of Medicine announced that they had each

taken out endowment insurance in the sum of \$250, under a twenty-year plan, and that in 1936 there would go to the university \$11,500 as a memorial to the class.

Ontario.—Heretofore the Medical Council of Canada has included in their rules governing the practice of medicine that province a clause requiring that graduates of medical schools in the United States be required to attend the first year in one of the medical schools of that province to be eligible for examination. This was a discrimination against the better medical schools in the United States. The matter was taken up by the Council on Medical Education and the discriminatory clause has been rescinded.

Funds for Research

The Rockefeller Foundation has provided funds for the establishment of a school of hygiene and public health in connection with Johns Hopkins University. A site will be purchased and a suitable building erected, provided with laboratories and departments needed in such a school. A special building for the institute of hygiene will be the central and principal feature of the school. This will have its own laboratories and facilities and its own staff of full-time teachers. The school will be opened in October, 1916.

The Johns Hopkins Hospital has received \$7,500 from Mr. Kenneth Dows to enlarge and equip the Phipps Tubercular Dispensary and \$17,500 as an annuity for five years to support a research fund. Several thousand dollars have been expended to equip the rooms opened recently for research work in pathology. A fund of \$22,000 has been raised to support the work for the next three years. A gift of \$150,000 to Johns Hopkins Hospital was provided by the will of Mr. Jessie Gillender. A part of the money is to be used for scientific research into the cause, prevention and cure of epilepsy. This laboratory will probably be connected with the Henry Phipps Psychiatric Clinic.

The Medical School of Harvard University received a bequest of \$75,000 by the will of Morrill Wyman, the income of which is to be used for medical research. The Cambridge Commission of Harvard University is to receive the income from \$25,000 by the will of William Endicott.

The Washington University Medical School received a gift providing for a research fellowship in surgery for 1916 from an anonymous benefactor.

A gift of \$100,000 was received by the College of Physicians and Surgeons of Columbia University from the executors of the estate of the late Emil C. Bondy as an endowment fund for medical research, chiefly in regard to cancer.

Western Reserve University School of Medicine has received a fund of \$50,000 to further the study of obstetrics.

By the will of Dr. J. William White, \$150,000 was received by the University of Pennsylvania School of Medicine to establish and permanently endow a professorship in surgical research.

Medical Students in Great Britain

The following is an official return from the General Medical Council* of medical students in actual attendance, during May, 1916, on courses of professional instruction, at medical schools and approved teaching institutions:

	Men	Women	Total	Men Under 18	Men from the United Kingdom
First year.....	1,422	636	2,058	489	10
Second year.....	783	295	1,078	26	12
Third year.....	519	163	682	0	14
Fourth year.....	1,078	145	1,223	0	18
Fifth year.....	922	140	1,062	0	11
Totals.....	4,724	1,379	6,103	515	67
Per Cent.	77.4	22.6			

Kings College Medical Faculty of London has thrown open its doors to women, beginning Oct. 31, 1916. This was an inevitable step following the amalgamation of Kings College for Women with Kings College.

* Brit. Med. Jour., June 3, 1916, p. 1133.

STANDARDS OF THE COUNCIL ON MEDICAL EDUCATION OF THE AMERICAN MEDICAL ASSOCIATION

Essentials of an Acceptable Medical College

(Revised to Aug. 1, 1916)

The following outline of the essentials of an acceptable medical college was issued by the Council on Medical Education of the American Medical Association for its suggestive use in the rapid development in progress in the medical colleges of the United States. It also represents the basis on which medical colleges are rated in the Council's classifications.

ADMISSION OF STUDENTS

A strict enforcement of the following standards and requirements, the college itself to be held responsible for any instances in which they are not enforced.

Note.—Since the product of the medical school depends largely on the quality of the students admitted, in rating medical colleges, special basis is laid by the Council on the strictness and honesty by which standards of admission and advanced standing are administered. The admission of unfit students the school is handicapped from the beginning and, in the opinion of the Council, deserves a low rating regardless of its equipment, its clinical facilities and its teaching.

A requirement for admission by the medical school of four-year high school education, and in addition at least one year of college work, and, after Jan. 1, 1918, two years of college work. This premedical college work must have been taken in a college of arts and sciences approved by the Council or in lieu thereof the student must have an equivalent education as demonstrated by an examination approved by the Council.

I. HIGH SCHOOL REQUIREMENTS

(a) For admission to the preliminary college year, students must have completed a *four-year course of at least thirteen units* in a standard accredited high school or other institution of standard secondary school grade, or have its equivalent as demonstrated by an examination conducted by a duly authorized examiner of the College Entrance Examination Board, or by the authorized examiner of a standard college or university who has been approved by the Council on Medical Education, or by an examiner whose certificates are accepted by such approved standard colleges or universities. *A detailed statement of attendance at the secondary school, and a transcript of the student's work should be kept on file by the medical school authorities.* This evidence of actual attendance at the secondary school or schools should be obtained for every student no matter whether he is admitted to the freshman or to advanced classes.

(b) The subjects for which credits for admission to the preliminary college year may be accepted are shown in the accompanying schedule.

II. PRELIMINARY COLLEGE WORK

(c) Until Jan. 1, 1918, the minimum requirement for admission to acceptable medical schools, in addition to the high school work specified above, is one year of collegiate work, extending through thirty-two weeks and covering thirty semester hours¹ which must have been completed by the student before he is eligible for admission. This college work should include courses of at least eight semester hours in physics, chemistry and biology, including laboratory work. It is urged that the student obtain a reading knowledge of a modern language, preferably French or German. These subjects and the amounts required are shown in the accompanying schedule.

After Jan. 1, 1918, the minimum requirement for admission to acceptable medical schools will be two years (sixty semester hours) of work in a college of arts and sciences approved by the Council on Medical Education or its actual educational equivalent as demonstrated by an examination approved by the Council. It is suggested that in addition to the courses outlined in the preceding paragraph, this two-year course include a course in organic chemistry, a second course of biology and more work in the modern language so that the student already possesses a reading knowledge

APPROVED COLLEGES OF ARTS AND SCIENCES

(a) A list of colleges of arts and sciences approved by the Council on Medical Education will be prepared and

¹A semester hour is the measurement of work represented by one period per week for half of the college year. Each laboratory period to be so valued must extend over at least two hours.

published from time to time. By an approved college (of arts and sciences) is meant one whose standing has been vouched for by some standardizing agency in whose methods the Council has confidence. To be recognized a college must have sufficient scientific equipment and maintain laboratories in the premedical sciences. It must have ample endowment to maintain a sufficient corps of teachers. Membership in some national organization or association of colleges will be favorably regarded by the Council and, in the absence of such membership, careful investigation will be made of the causes of exclusion.

(b) An approved college must also maintain national standards for admission to its freshman class. Students must be required to complete a four-year high school course, and the requirements for admission to the premedical course must be fully equal to the requirements for the regular B. S. course of the college. The admission of students must be in

SCHEDULE OF SUBJECTS OFFERED IN ACADEMIC AND SECONDARY SCHOOLS, CREDITS IN WHICH ARE ACCEPTABLE FOR ENTRANCE TO THE PRE-MEDICAL COLLEGE COURSES

Subjects	Units	Required	Elective
ENGLISH LITERATURE AND COMPOSITION	3-4	3	1
MATHEMATICS			
Elementary algebra	1	1	
Advanced algebra	1/2-1	..	1/2-1
Plane geometry	1	1	
Solid geometry	1/2	..	1/2
Trigonometry	1/2	..	1/2
LATIN	1-4	*	1-4
Greek	1-3	*	1-3
FRENCH	1-4	2*	1-4
GERMAN	1-4	2*	1-4
Other Foreign Languages	2	..	2
HISTORY			
Ancient history	1	**	1
Medieval and modern history	1	**	1
English history	1/2-1	**	1/2-1
American history	1/2-1	**	1/2-1
Civil government	1/2-1	**	1/2-1
SCIENCE †			
Botany	1/2-1	..	1/2-1
Zoology	1/2-1	..	1/2-1
Chemistry	1	..	1
Physics	1	..	1
Physiology	1/2-1	..	1/2-1
Physiology	1/2-1	..	1/2-1
Astronomy	1/2	..	1/2
Geology	1/2-1	..	1/2-1
Agriculture	1-2	..	1-2
Bookkeeping	1	..	1
Business Law	1/2	..	1/2
Commercial geography	1/2-1	..	1/2-1
Domestic science	1-2	..	1-2
Drawing, freehand and mechanical	1/2-2	..	1/2-2
Economics and economic history	1/2-1	..	1/2-1
Manual training	1-2	..	1-2
Music: Appreciation or harmony	1-2	..	1-2

A unit is the credit value of at least 36 weeks' work of 4 or 5 recitation periods per week, each recitation period to be of not less than 40 minutes. In other words, a unit represents a year's study in any subject in a secondary school constituting approximately a quarter of a full year's work. A satisfactory year's work in any subject cannot be accomplished under ordinary circumstances in less than 120 sixty-minute hours, or their equivalent.

Required Branches: Of the 14 units of high school work it is suggested that the subjects in capitals aggregating 8 units be required. Other work to the amount of at least 7 units may be made up from any of the other subjects of the above schedule.

* Two units of Greek or Latin may be substituted for the two required units of French or German.

** One unit of history and civics prescribed.

† Credentials of each science course must include evidence of laboratory work.

the hands of a responsible committee or examiner whose records shall always be open for inspection. Documentary evidence of the students' preliminary education should be obtained and kept on file. Particular attention will be given to the character of high schools from which certificates are received. Colleges should recognize only certificates from high schools approved by commissions or boards of associations of colleges and secondary schools or other agencies approved by the Council. When such endorsement is lacking the college should be slow in accepting certificates without the support of entrance examinations. Undue liberality in the acceptance of certificates from secondary schools unendorsed by approved standardizing agencies will be registered by the Council as a failure to comply with its requirements and the college will be dropped from the approved list.

(c) Unless the university examiner and his records are closely accessible, the medical school should obtain and keep

on file documentary evidence of all students' preliminary education including both high school and collegiate work. It is particularly important that the records show that the required amount of work in the premedical sciences, including laboratory exercises, has been completed.

(d) Premedical college courses given in or by medical schools, or advance years taken in high schools, will not be considered as acceptable unless they have been investigated and approved by some association of colleges and secondary schools or other approved agency having to do with the standardizing of liberal arts colleges.

MEDICAL SCHOOL REQUIREMENTS

4. The college should require that students be in actual attendance in the college *within the first week* of each annual session and thereafter.

5. Actual attendance at classes should be insisted on except for good cause, such as for sickness, and under no circumstances should credit be given for any course where the attendance has been less than 80 per cent. of the full time.

6. (a) Full advanced standing may be granted to students only for work done in other acceptable colleges, and in granting advanced standing there should be no discrimination against the college's full-course students. (b) In *exceptional cases* students from Class B medical schools may be given advanced standing but not higher than *entrance* to the third

SCHEDULE

Subject	Lectures or Recitations per Week	Laboratory Periods* per Week	Total Hours per Semester	Total Semester Hours per Year
Physics, 1.....	2 or 3	2 or 1	4	8
Chemistry, 1.....	2	2	4	8
Biology, 1.....	2 or 3	2 or 1	4	8
Elective, preferably French or German, 2.....	4 or 3	.....	4 or 3	8 or 6
Totals.....	9 or 11	6 or 5	16 or 15	32 or 30

* Each laboratory period must extend at least two hours.

year (junior) class, and no credit should be given in any subject except on recommendation of the head of the department teaching that subject. (c) In *exceptional cases* students from Class C colleges may be given advanced standing but not higher than *entrance* to the second year (sophomore) class, and then only after thorough examinations in all first year subjects have been passed.

SUPERVISION, EQUIPMENT, TEACHERS

7. There should be careful and intelligent supervision of the entire school by a dean or other executive officer who holds, and has sufficient authority to carry out fair ideals of medical education as determined by modern knowledge.

8. There should be a good system of records showing conveniently and in detail the credentials, attendance, grades and accounts of the students by means of which an exact knowledge can be obtained regarding each student's work. Records should also be kept showing readily the attendance of patients at the teaching hospitals and dispensaries; the maternity cases attended by students, and the postmortem cases used in teaching.

9. The college should have a fully graded course covering four years of at least thirty-two weeks each, exclusive of time required for matriculation and holidays, and at least thirty hours per week of actual work; this course should be clearly set forth in a carefully prepared and printed schedule of lectures and classes.

(a) The college should give two years of work consisting largely of laboratory work in thoroughly equipped laboratories in anatomy, histology, embryology, physiology, chemistry (inorganic, organic and physiologic), bacteriology, pathology, pharmacology, therapeutics and clinical diagnosis. Present-day medical knowledge makes it essential that these subjects be in charge of full-time, well-trained teachers.

(b) Two years of clinical work largely in hospitals and dispensaries, with thorough courses in internal medicine (including physical diagnosis, pediatrics, nervous and mental diseases), surgery (including surgical anatomy and operative surgery on the cadaver), obstetrics, gynecology, laryngology, rhinology, ophthalmology, otology, dermatology, hygiene and medical jurisprudence.

(c) As soon as conditions warrant, a fifth undergraduate year should be required which should be spent by the student as an intern in an approved hospital.

10. The college should provide at least *six expert, thoroughly trained professors* in the laboratory branches, so varied so that they may devote their entire time to instruction and to that research without which they cannot well keep up with the rapid progress being made in their subjects. There should also be a sufficient number of assistants in each department to look after the less important details. For colleges having *sixty students or less*, each class, there should be *at least one full-time salary assistant each in the departments of (a) anatomy, (b) physiology, (c) pathology and bacteriology, and (d) physiologic chemistry and pharmacology, and one additional assistant each of these departments should be provided for each additional thirty students enrolled*. This represents a low average of the full-time assistants already employed by the acceptable medical colleges.

11. The faculty should be thoroughly organized and should be made up of graduates of institutions recognized as medical colleges and who have had a training in all departments of medicine. Nonmedical men should be selected as teachers in medical schools only under exceptional circumstances and only when medical men of equal special capacity are not available. Faculty members should be appointed because of their ability as teachers and not because they happen to be on the attending staff of a hospital or for other like reasons.

CLINICAL FACILITIES

12. The college should own or entirely control a hospital in order that students may come into close and extended contact with patients under the supervision of the attending staff. This hospital should be in close proximity to the college and have a daily average (for senior classes of 100 students *or less*) of not less than 200 patients who can be utilized for clinical teaching, these patients to be of such character as to permit the student to see and study the common variety of surgical and medical cases as well as a fair number in each of the so-called specialties. In the use of this material it is suggested that *bedside and ward clinics* be developed for sections of from five to ten students and that a certain number of patients in medicine, surgery and the specialties be assigned to each senior student. A well supervised clinical clerk system should also be installed. The treatment and care of these patients should be particularly observed and recorded by the student under the strict supervision of the intern, or the attending staff of the hospital.

13. The college should also have ample hospital facilities for children's diseases, contagious diseases and nervous and mental diseases.

14. At least six maternity cases should be provided for each senior student, who should have actual charge of these cases under the supervision of the attending physician. Careful records of each case should be handed in by the student.

15. Facilities should be provided for at least thirty necropsies (for senior classes of 100 students *or less*) during each college session which are attended and participated in by senior students.

16. The college should own or control a dispensary, or a patient department, the attendance to be a daily average of 100 patients (visits) (for senior classes of 100 students *or less*), the patients to be carefully classified, good histories and records of the patients to be kept and the material to be well used. The attending staff should be made up of good teachers, should be well organized and be regular in attendance.

OTHER TEACHING FACILITIES AND FINANCES

17. The college should have a working medical library which include the more modern text and reference books with *Index Medicus* and thirty or more leading medical periodicals.

2. These professors should have a definite responsibility in the conduct of the college, and their first and chief interest should be the training of medical students. It is advised that four of the professors be placed in charge of the departments of (a) anatomy, (b) physiology, (c) pathology and bacteriology and (d) physiologic chemistry and pharmacology. The other two may be assigned one to laboratory course in histology and embryology under the department of anatomy and the other to the department of pathology and bacteriology possibly to the course in laboratory clinical diagnosis.

3. Suggestions more in detail may be found in the "Report of the Committee on the Reorganization of Clinical Teaching," THE JOURNAL OF THE A. M. A., March 6, 1915. Reprint sent on application.

ls; the library room should be properly lighted and heated, and easily accessible to students during all or the greater part of the day; it should be equipped with suitable tables and chairs, and have a librarian in charge.

18. A working medical museum having its various anatomic, embryologic, pathologic and other specimens carefully prepared, labeled and indexed so that any specimen may be easily found and employed for teaching purposes. It is suggested that so far as possible with each pathologic specimen coming from postmortems there also be kept the record of the postmortem, the clinical history of the patient on whom the necropsy was held and microscopic slides showing the minute structures of the disease shown in the gross specimen.

19. There should be sufficient dissecting material to enable each student individually to dissect at least the lateral half of the human cadaver; to provide cross-sections and other demonstration material and to allow of a thorough course for each senior in operative surgery on the cadaver.

20. For modern experimental laboratory work in physiology, pharmacology and bacteriology as well as for a reasonable amount of medical research, a supply of animals—frogs, turtles, rabbits and guinea-pigs, if not also cats and dogs—essential. Proper provision, also, is necessary for the housing and care of such animals. In any use made of animals great care should be used to prevent needless suffering and work by students should be carefully supervised.

21. A supply of such useful auxiliary apparatus as a stereopticon, a reflectoscope, carefully prepared charts, embryologic or other models, manikins, dummies for use in bandaging, a Roentgen ray and other apparatus now so generally used in medical teaching.

22. The college should show evidences of thorough organization and of reasonably modern methods in all departments and evidences that the equipment and facilities are *being intelligently used* in the training of medical students.

23. A clear statement of the college's requirements for admission, tuition, time of attendance on the classes, sessions, courses offered and graduation should be clearly set forth, together with complete classified lists of its matriculants and the best graduating class in regular annual catalogues or announcements.

24. Statistics show⁴ that modern medicine cannot be acceptably taught by a medical school depending solely on the income from students' fees. No medical school should expect to be retained in Class A, therefore, which does not have an annual income of at least \$25,000 in addition to the amount obtained from students' fees.

NOTE.—Correspondence from medical colleges regarding the above requirements is invited, and further suggestions and information available will be gladly furnished.

Grading of Medical Colleges

All medical colleges are rated by the Council on Medical Education on a civil service basis on a scale of 1,000 points. The data relating to each college are grouped under ten general heads in such manner that the groups have as nearly equal weight as possible, each group allowing a possible 100 points (10 per cent.) out of a possible 1,000 points (100 per cent.). The ten heads under which the data are arranged are as follows:

1. Showing of graduates before state boards and other evidences of the training received.
2. Enforcement of a satisfactory preliminary educational requirement, rating of advanced standing and the character of the records.
3. Character of curriculum, grading of course, length of session, time allowed for matriculation and supervision.
4. Medical school buildings; light, heat, ventilation, cleanliness.
5. Laboratory facilities and instruction.
6. Dispensary facilities and instruction.
7. Hospital facilities and instruction, maternity work, necropsies, specialties.
8. Faculty, number and qualifications of trained teachers, full-time instructors, and assistants, especially of the laboratory branches, organization, and extent of research work.
9. Extent to which the school is conducted for properly teaching the science of medicine rather than for the profit of the faculty directly or indirectly.
10. Possession and use made of libraries, museums, charts, stereopticons, etc.

Class A colleges are those which are acceptable; Class B, those which, under their present organization, might be made acceptable by general improvements, and Class C, those which require a complete reorganization to make them acceptable.

⁴ See Medical College Finances, THE JOURNAL A. M. A., April 8, 1916, p. 1115.

CLASSIFICATION OF MEDICAL COLLEGES

Revised to Aug. 1, 1916

CLASS A—ACCEPTABLE MEDICAL COLLEGES

ALABAMA

University of Alabama School of Medicine.....Mobile

CALIFORNIA

Leland Stanford Junior Univ. School of Med..San Francisco

University of California Medical School.....San Francisco

COLORADO

University of Colorado School of Med.....Boulder-Denver

CONNECTICUT

Yale University School of Medicine.....New Haven

DISTRICT OF COLUMBIA

Georgetown University School of Medicine.....Washington

George Washington University Medical School..Washington

Howard University School of Medicine.....Washington

GEORGIA

Atlanta Medical College.....Atlanta

University of Georgia Medical Department.....Augusta

ILLINOIS

Northwestern University Medical School.....Chicago

Rush Medical College (University of Chicago)....Chicago

University of Illinois College of Medicine.....Chicago

INDIANA

Indiana Univ. School of Med.....Bloomington-Indianapolis

IOWA

State University of Iowa College of Medicine....Iowa City

State Univ. of Iowa Coll. of Homeopathic Med....Iowa City

KANSAS

University of Kansas School of Med....Lawrence-Rosedale

KENTUCKY

University of Louisville Medical Department....Louisville

LOUISIANA

Tulane Univ. of Louisiana School of Med....New Orleans

MAINE

Bowdoin Medical School.....Brunswick-Portland

MARYLAND

Johns Hopkins University Medical Department....Baltimore

University of Maryland School of Medicine and the College of Physicians and Surgeons⁵.....Baltimore

MASSACHUSETTS

Boston University School of Medicine.....Boston

Medical School of Harvard University.....Boston

Tufts College Medical School.....Boston

MICHIGAN

Detroit College of Medicine and Surgery.....Detroit

University of Michigan Medical School.....Ann Arbor

University of Mich. Homeopathic Med. School....Ann Arbor

MINNESOTA

University of Minnesota Medical School.....Minneapolis

MISSISSIPPI

University of Mississippi Dept. of Medicine*.....Oxford

MISSOURI

St. Louis University School of Medicine.....St. Louis

University of Missouri School of Medicine*.....Columbia

Washington University Medical School.....St. Louis

NEBRASKA

University of Nebraska College of Medicine.....Omaha

NEW HAMPSHIRE

Dartmouth Medical School*.....Hanover

5. In 1915 the University of Maryland School of Medicine and the College of Physicians and Surgeons of Baltimore were merged into one institution which retains the double title.

* These colleges give only the first two years of the medical course.

NEW YORK

Albany Medical College.....Albany
Columbia Univ. Coll. of Phys. and Surgs....New York City
Cornell University Medical College.....New York City
Fordham University School of Medicine....New York City
Long Island College Hospital.....Brooklyn
Syracuse University College of Medicine.....Syracuse
University and Bellevue Hospital Med. Coll..New York City
University of Buffalo Department of Medicine.....Buffalo

NORTH CAROLINA

University of North Carolina School of Med.* Chapel Hill
Wake Forest College School of Medicine*....Wake Forest

NORTH DAKOTA

University of North Dakota School of Medicine*..University

OHIO

Ohio State University College of Medicine.....Columbus
University of Cincinnati College of Medicine.....Cincinnati
Western Reserve University School of Medicine..Cleveland

OREGON

University of Oregon Department of Medicine.....Portland

PENNSYLVANIA

Hahnemann Medical College and Hospital.....Philadelphia
Jefferson Medical College of Philadelphia.....Philadelphia
University of Pennsylvania School of Med....Philadelphia
University of Pittsburgh School of Medicine....Pittsburgh
Woman's Medical College of Pennsylvania.....Philadelphia

SOUTH CAROLINA

Medical College of the State of South Carolina⁶..Charleston

SOUTH DAKOTA

University of South Dakota College of Medicine*..Vermilion

TENNESSEE

Vanderbilt University Medical Department.....Nashville
University of Tennessee College of Medicine.....Memphis

TEXAS

Baylor University College of Medicine⁷.....Dallas
University of Texas Department of Medicine.....Galveston

UTAH

University of Utah School of Medicine*.....Salt Lake City

VERMONT

University of Vermont College of Medicine.....Burlington

VIRGINIA

Medical College of Virginia.....Richmond
University of Virginia Department of Med....Charlottesville

WISCONSIN

Marquette University School of Medicine.....Milwaukee
University of Wisconsin Medical School*.....Madison
Total, 67.

CLASS B—COLLEGES NEEDING GENERAL
IMPROVEMENTS TO BE MADE
ACCEPTABLE

ARKANSAS

University of Arkansas Medical Department.....Little Rock

CALIFORNIA

College of Physicians and Surgeons.....Los Angeles
Oakland College of Medicine and Surgery.....Oakland

ILLINOIS

Loyola University Medical Department†.....Chicago
Chicago College of Medicine and Surgery.....Chicago
Hahnemann Medical College and Hospital.....Chicago

NEBRASKA

John A. Creighton Medical College.....Omaha

NEW YORK

New York Homeopathic Medical College and
Flower HospitalNew York City

6. Rating changed from Class B to Class A, Feb. 6, 1916.
7. Rating raised to Class A, June 12, 1916.
† Heretofore known as the Bennett Medical College.

NORTH CAROLINA

Leonard Medical School*.....Raleigh

OHIO

Eclectic Medical College.....Cincinnati

OKLAHOMA

Univ. of Oklahoma School of Med..Norman-Oklahoma City

PENNSYLVANIA

Temple University Department of Medicine.....Philadelphia

TENNESSEE

Meharry Medical College.....Nashville

TEXAS

Fort Worth School of Medicine.....Fort Worth

WEST VIRGINIA

West Virginia University School of Med.*....Morgantown
Total, 15.

CLASS C—COLLEGES REQUIRING A COMPLETE
REORGANIZATION TO MAKE THEM
ACCEPTABLE

CALIFORNIA

College of Medical Evangelists....Loma Linda-Los Angeles
College of Physicians and Surgeons.....San Francisco

ILLINOIS

Chicago Hospital College of Medicine.....Chicago
Jenner Medical College.....Chicago

MASSACHUSETTS

College of Physicians and Surgeons⁸.....Boston

MISSOURI

Eclectic Medical University⁹.....Kansas City
Southwest School of Medicine and Hospital⁹....Kansas City
National Univ. of Arts and Sciences Med. Dept.¹⁰..St. Louis

NEBRASKA

Lincoln Medical College¹¹.....Lincoln

NEW YORK

New York Med. Coll. and Hosp. for Women..New York City

OHIO

Ohio State Univ. Coll. of Homeopathic Med.....Columbus

TENNESSEE

University of West Tenn. Coll. of Med. and Surg..Memphis
Total 12.

CLASSIFICATION OF CANADIAN MEDICAL
COLLEGES

CLASS A

University of Toronto Faculty of Medicine....Toronto, Ont.
McGill University Faculty of Medicine.....Montreal, Que.

CLASS B

Dalhousie University Faculty of Medicine.....Halifax, N.S.
Montreal School of Medicine and Surgery....Montreal, Que.
Laval University Faculty of Medicine.....Quebec, Que.
University of Manitoba, Manitoba Medical CollegeWinnipeg, Man.

CLASS C

Queen's University Faculty of Medicine.....Kingston, Ont.
Western University Faculty of Medicine.....London, Ont.
The University of Alberta at Edmonton, besides the first
medical year, gives only the first two years of the medical
course as measured by that of the medical schools of the
United States. It has not been inspected.

Colleges Not Recognized

The licensing boards of New Hampshire, Rhode Island
and Virginia report that they recognize only the medical
colleges listed in Class A.

8. Reported not recognized by the Massachusetts Medical Society.
9. Reported not recognized by the Missouri State Board of Health.
10. Formerly known as the American Medical College.
11. Formerly known as the Cotner University Medical College.

Official statement from the following thirty-four state licensing boards indicate that as a rule the colleges rated Class C are not recognized:

Alabama	Maryland (Reg.)	Oklahoma
Arkansas (Reg.)	Michigan	Pennsylvania
Colorado	Minnesota	Porto Rico
Connecticut (Reg.)	Mississippi	Rhode Island
Delaware	New Hampshire	South Carolina
Florida (Reg.)	New Jersey	South Dakota
Georgia	New Mexico	Texas
Indiana	New York	Vermont
Iowa	North Carolina	Virginia
Kentucky	North Dakota	West Virginia
Louisiana (Reg.)	Ohio	Wisconsin
Maine		

A table (Table D) showing in what states diplomas from various medical colleges are not fully recognized appears in THE JOURNAL of April 8, 1916, on page 1106.

State Requirements of Higher Preliminary Education

There are now thirty-three states which have adopted requirements of preliminary education in addition to a standard four-year high school education. These states, the number of college years required and the time the higher requirements became effective are as follows:

State Examining Board of	Number of Years Required	Affects Students Matriculating	Affects All Graduates
Requiring Two Years:			
Alabama.....	2	1915-16	1919
Arizona.....	2	1918-19	1922
Colorado.....	2	1910-11	1914
Indiana.....	2	1911-12	1915
Iowa.....	2	1911-12	1915
Maryland.....	2	1918-19	1922
Minnesota.....	2	1908-09	1912
New Hampshire.....	2	1915-16	1919
New Jersey.....	2	1917-18	1921
New Mexico.....	2	1918-19	1922
North Dakota.....	2	1908-09	1912
Oklahoma.....	2	1917-18	1921
Rhode Island.....	2	1918-19	1922
South Dakota.....	2	1911-12	1915
Virginia.....	2	1917-18	1921
Washington.....	2	1918-19	1922
Wisconsin.....	2	1915-16	1919
Requiring One Year:			
Arizona*.....	1	1914-15	1918
Arkansas.....	1	1915-16	1919
California.....	1	1915-16	1919
Connecticut.....	1	1910-11	1914
Illinois.....	1	1915-16	1919
Indiana*.....	1	1910-11	1914
Kansas.....	1	1910-11	1914
Kentucky.....	1	1914-15	1918
Louisiana.....	1	1915-16	1919
Maryland*.....	1	1914-15	1918
Michigan.....	1	1914-15	1918
Mississippi.....	1	1915-16	1919
New Hampshire*.....	1	1914-15	1918
New Jersey*.....	1	1916-17	1920
North Carolina.....	1	1914-15	1918
Oklahoma*.....	1	1914-15	1918
Pennsylvania.....	1	1914-15	1918
Rhode Island*.....	1	1914-15	1918
Tennessee.....	1	1915-16	1919
Texas.....	1	1914-15	1918
Utah.....	1	1913-14	1917
Vermont.....	1	1913-14	1917
Virginia*.....	1	1914-15	1918
Washington*.....	1	1914-15	1918
West Virginia.....	1	1917-18	1921

* The 2-year requirement becomes effective later.

Colleges Having Higher Entrance Requirements

The forty-six medical schools* which are now requiring, as a minimum for entrance *two years* or more of work in a college of liberal arts in addition to a four-year high-school education, the year when the higher requirement became effective and the rating of each college, are as follows:

	In College Effect	Rating
ALABAMA		
University of Alabama School of Medicine.....	1915	A
CALIFORNIA		
College of Medical Evangelists.....	1915	C
College of Physicians and Surgeons, Los Angeles.....	1916	B
Leland Stanford Junior University School of Medicine....	1909	A
University of California Medical School.....	1905	A
COLORADO		
University of Colorado School of Medicine.....	1910	A

* Colleges will be omitted from this list unless evidence obtained shows that, in the admission of students, they are requiring at least sixty semester hours of preliminary collegiate work in addition to a four-year high school education.

CONNECTICUT		
Yale University School of Medicine.....	1909	A

DISTRICT OF COLUMBIA		
Georgetown University School of Medicine.....	1912	A
Howard University School of Medicine.....	1914	A

ILLINOIS		
Northwestern University Medical School.....	1911	A
Rush Medical College (University of Chicago).....	1904	A
University of Illinois College of Medicine.....	1914	A

INDIANA		
Indiana University School of Medicine.....	1910	A

IOWA		
State University of Iowa College of Medicine.....	1910	A
State University of Iowa College of Homeopathic Medicine	1910	A

KANSAS		
University of Kansas School of Medicine.....	1909	A

MAINE		
Bowdoin Medical School.....	1916	A

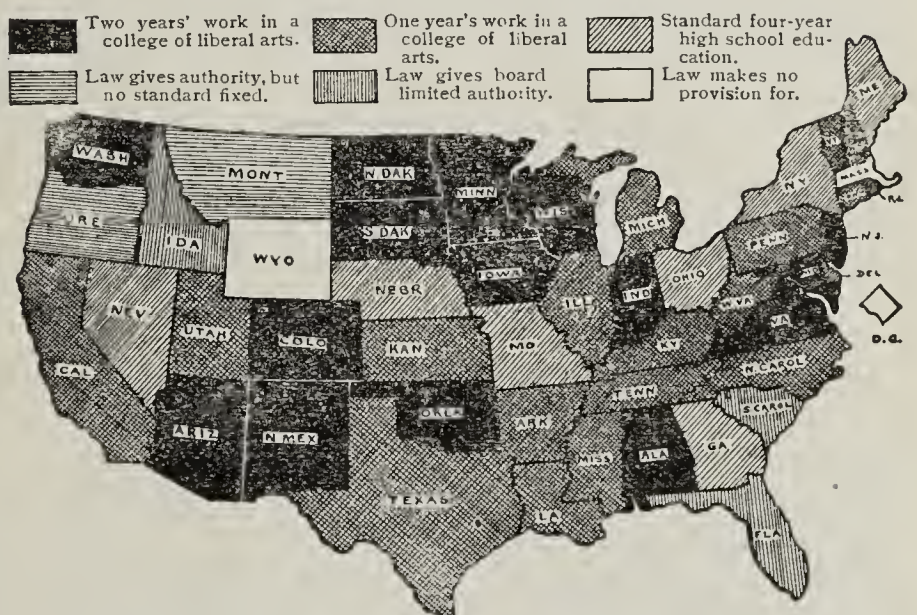
MARYLAND		
Johns Hopkins University Medical Department.....	1893	A

MASSACHUSETTS		
Boston University School of Medicine.....	1916	A
Medical School of Harvard University.....	1900	A

MICHIGAN		
University of Michigan Medical School.....	1909	A
University of Michigan Homeopathic Medical School.....	1916	A

MINNESOTA		
University of Minnesota Medical School.....	1907	A

STATE REQUIREMENTS OF PRELIMINARY EDUCATION FOR PHYSICIANS



In Arkansas and Louisiana the higher standard has been adopted by the regular board only.

MISSOURI		
University of Missouri School of Medicine.....	1910	A
Washington University Medical School.....	1912	A

NEBRASKA		
University of Nebraska College of Medicine.....	1909	A

NEW HAMPSHIRE		
Dartmouth Medical School.....	1910	A

NEW YORK		
Columbia University College of Physicians and Surgeons..	1910	A
Cornell University Medical College.....	1908	A
Syracuse University College of Medicine.....	1910	A

NORTH CAROLINA		
Leonard Medical School.....	1914	B
Wake Forest College School of Medicine.....	1908	A

NORTH DAKOTA		
University of North Dakota School of Medicine.....	1907	A

OHIO		
Ohio State University College of Medicine.....	1915	A
Ohio State Univ. College of Homeopathic Medicine.....	1916	C
University of Cincinnati College of Medicine.....	1913	A
Western Reserve University School of Medicine.....	1901	A

PENNSYLVANIA		
University of Pennsylvania School of Medicine.....	1910	A
University of Pittsburgh School of Medicine.....	1913	A
Woman's Medical College of Pennsylvania.....	1915	A

SOUTH CAROLINA		
Medical College of the State of South Carolina.....	1916	A

SOUTH DAKOTA		
University of South Dakota College of Medicine.....	1909	A

UTAH		
University of Utah School of Medicine.....	1910	A
VIRGINIA		
Medical College of Virginia.....	1915	A
WISCONSIN		
Marquette University School of Medicine.....	1915	A
University of Wisconsin Medical School.....	1907	A
The thirty-eight medical colleges† which are now requiring, as a minimum for entrance one year of collegiate work in addition to a four-year high school course, the years when the requirements began and the rating of the colleges are:		
ARKANSAS		
	In Effect	College Rating
University of Arkansas Medical Department.....	1915	B
CALIFORNIA		
Oakland College of Medicine and Surgery.....	1915	B
DISTRICT OF COLUMBIA		
George Washington University Medical School.....	1914	A
GEORGIA		
Atlanta Medical College.....	1914	A
University of Georgia Medical Department.....	1914	A
ILLINOIS		
Loyola University Medical Department.....	1915	B
Chicago College of Medicine and Surgery.....	1915	B
Hahnemann Medical College and Hospital of Chicago.....	1914	B
KENTUCKY		
University of Louisville Medical Department.....	1914	A
LOUISIANA		
Tulane University of Louisiana School of Medicine.....	1910	A
MARYLAND		
University of Maryland School of Medicine and College of Physicians and Surgeons.....	1914	A
MASSACHUSETTS		
Tufts College Medical School.....	1914	A
MICHIGAN		
Detroit College of Medicine and Surgery.....	1914	A
MISSISSIPPI		
University of Mississippi Department of Medicine.....	1914	A
MISSOURI		
St. Louis University School of Medicine.....	1910	A
NEBRASKA		
John A. Creighton Medical College.....	1914	B
NEW YORK		
Albany Medical College.....	1914	A
Fordham University School of Medicine.....	1911	A
Long Island College Hospital.....	1914	A
New York Homeopathic Medical College and Flower Hospital.....	1915	B
New York Medical College and Hospital for Women.....	1916	C
University and Bellevue Hospital Medical College.....	1912	A
University of Buffalo Department of Medicine.....	1914	A
NORTH CAROLINA		
University of North Carolina School of Medicine.....	1910	A
OHIO		
Eclectic Medical College.....	1915	B
OKLAHOMA		
University of Oklahoma School of Medicine.....	1914	B
OREGON		
University of Oregon Department of Medicine.....	1910	A
PENNSYLVANIA		
Hahnemann Medical College and Hospital of Philadelphia	1914	A
Jefferson Medical College of Philadelphia.....	1914	A
Temple University Department of Medicine.....	1914	B
TENNESSEE		
Vanderbilt University Medical Department.....	1914	A
University of Tennessee College of Medicine.....	1914	A
TEXAS		
University of Texas Department of Medicine.....	1910	A
Baylor University College of Medicine.....	1913	A
Fort Worth School of Medicine.....	1916	B
VERMONT		
University of Vermont College of Medicine.....	1912	A
VIRGINIA		
University of Virginia Department of Medicine.....	1910	A
WEST VIRGINIA		
West Virginia University School of Medicine.....	1911	A

† Colleges will be omitted from this list unless evidence obtained shows that, in the admission of students, they are requiring at least thirty semester hours of preliminary collegiate work, in addition to a four-year high school education.

The fifteen following medical colleges, now requiring one year of collegiate work for admission, have announced that all students admitted in and after the session given will be required to have completed *two years* of collegiate work:

	Session of
University of North Carolina School of Medicine.....	1917-18
University of Oklahoma School of Medicine.....	1917-18
Hahnemann Medical College of Philadelphia.....	1917-18
Jefferson Medical College.....	1917-18
University of Texas Department of Medicine.....	1917-18
University of Virginia Department of Medicine.....	1917-18
West Virginia University School of Medicine.....	1917-18
Atlanta Medical College.....	1918-19
University of Georgia Medical Department.....	1918-19
Tulane University School of Medicine.....	1918-19
University of Maryland School of Medicine and College of Physicians and Surgeons.....	1918-19
University of Mississippi Department of Medicine.....	1918-19
St. Louis University School of Medicine.....	1918-19
Long Island College Hospital.....	1918-19
University and Bellevue Hospital Medical College.....	1918-19

The ten following medical colleges either have not announced the higher entrance requirements or evidence has not been received to show they are in effect for all students enrolled:

	Rating
College of Physicians and Surgeons, San Francisco.....	C
Chicago Hospital College of Medicine.....	C
Jenner Medical College, Chicago.....	C
College of Physicians and Surgeons, Boston.....	C
Eclectic Medical University, Kansas City.....	C
Kansas City College of Medicine and Surgery.....	*
National University of Arts and Sciences, St. Louis.....	C
Southwest School of Medicine and Hospital, Kansas City.....	C
Lincoln Medical College, Lincoln, Neb.....	C
University of West Tenn. College of Med. and Surg., Memphis....	C

* This college has not been inspected.

State University Medical Schools

Twenty-nine states now have medical schools as integral parts of the state universities or—in one instance—under state control as a separate institution. These states and other interesting data regarding the medical schools are as follows:

STATE UNIVERSITY MEDICAL SCHOOLS

Medical School of State University of	Only School in State	Length of Med. Course in Years	Years of College Work for Admission	Medical School of State University of	Only School in State	Length of Med. Course in Years	Years of College Work for Admission
Alabama.....	Yes	4	2†	North Carolina..	....	2	2
Arkansas.....	Yes	4	1	North Dakota...	Yes	2	2
California.....	....	5	2	Ohio*.....	....	4	2
Colorado.....	Yes	4	2†	Oklahoma.....	Yes	4	2
Georgia.....	....	4	2	Oregon.....	Yes	4	1
Illinois.....	....	4	2	South Carolina..	Yes	4	2
Indiana.....	Yes	4	2†	South Dakota...	Yes	2	2
Iowa*.....	Yes	4	2†	Tennessee.....	....	4	1
Kansas.....	Yes	4	2	Texas.....	....	4	2
Maryland.....	....	4	2†	Utah.....	Yes	2	2
Michigan*.....	....	4	2	Vermont.....	Yes	5	1
Minnesota.....	Yes	5	2†	Virginia.....	....	4	2
Mississippi.....	Yes	2	2	West Virginia....	Yes	2	2
Missouri.....	....	2	2	Wisconsin.....	....	2	2
Nebraska.....	....	4	2				

* Have homeopathic departments.
† Similar requirements by licensing board.

In sixteen states no other medical schools exist, medical education in the state being entirely in charge of the state university.

An act of the Maryland legislature in 1914 created a Maryland State University and provided \$15,000 per year for 1915 and 1916, to be used for medical education in the state. A feature in its development was the merger in 1915 between the University of Maryland School of Medicine and the College of Physicians and Surgeons of Baltimore.

Of the twenty-nine state medical schools; twenty-one give the complete medical course and grant degrees while eight give only the first two years of the medical course. California, Minnesota and Vermont require a five-year course, the fifth year to be spent by the student in a hospital as an intern, or in other recognized clinical work. The universities of Iowa, Michigan and Ohio have homeopathic departments.

All but four of these medical schools require or have announced the requirement of two years of college work for admission, the exceptions being those of Arkansas, Oregon

Tennessee and Vermont.* Of the twenty-five which have adopted the higher entrance standard eleven have the support of their state licensing boards which have adopted two years of college work as the minimum requirement of preliminary education. In some of the remaining states the licensing boards do not appear to be in sympathy with the higher requirement.

Hospital Intern Year

Six medical colleges have adopted the requirement of a fifth year to be spent by the student as an intern in an approved hospital or in other acceptable clinical work before the M.D. degree will be granted. These colleges and the sessions when the requirement became effective are as follows:

	Session of
University of Minnesota Medical School.....	1910-11
Leland Stanford Jr. University School of Medicine.....	1914-15
Rush Medical College (University of Chicago).....	1914-15
University of California Medical School.....	1914-15
Northwestern University Medical School.....	1915-16
University of Vermont College of Medicine.....	1915-16

Four state licensing boards now require that every candidate to be eligible for license to practice medicine in those states must have served at least one year as an intern in an approved hospital. The requirement became effective in Pennsylvania in 1914, in New Jersey in 1916, and will become effective in Rhode Island in 1917 and in North Dakota in 1918.

Graduate Schools of Medicine.

Graduate schools have been organized in connection with six universities as follows:

University of Alabama Graduate School of Medicine.....	Birmingham
University of California Graduate School of Medicine.....	Los Angeles
Tulane University, The New Orleans Polyclinic.....	New Orleans
Harvard University Graduate School of Medicine.....	Boston
University of Minnesota Graduate School of Medicine.....	Minneapolis
University of Pennsylvania, The Medico-Chirurgical College.....	Philadelphia

Independent graduate (or postgraduate) medical schools which have been inspected by the Council on Medical Education are:

Chicago Polyclinic	Chicago
Post-Graduate Medical School.....	Chicago
New York Post-Graduate Medical School.....	New York City
New York Polyclinic Medical School.....	New York City
Manhattan Post Graduate School of Ophthalmology, Otology and Laryngology.....	New York City
School of Ophthalmology and Otology.....	New York City
Philadelphia Polyclinic	Philadelphia

Graduate Courses in Public Health

Graduate courses in public health have been established in connection with ten medical schools, the first of which was established at the University of Pennsylvania in 1909; the latest is that recently announced in connection with the Medical Department of Johns Hopkins University and the details of the course have not yet been published. Of the other nine the facts set forth in the accompanying table are interesting:

Seven of these schools give the degree of Doctor of Public Health (Dr. P. H.), three after a two-year course and four after a one-year course. The degree of Certified Sanitarian (C. S.), after a one-year course, is given by the University of Pennsylvania to graduates of colleges of arts and sciences. The degree of Master of Public Health (M. P. H.) is given after a one-year course by the Detroit College of Medicine and Surgery and the University of Wisconsin Medical School. The Master of Arts in Public Health (A.M.(P.H.)) or the Master of Science in Public Health (M.S.(P.H.)) is given by three institutions. The Master of Science in Sanitary Engineering is given after a one-year course by the University of Colorado to students who have received the degree of B.S. in engineering from that institution. Instead of the degree of public health, the University of California gives the degree of Graduate in Public Health (Gr.P.H.). The University of California offers three courses leading to the degree of Graduate in Public Health:

(a) A four-year course beginning with the junior college year and covering three additional years in the College of Letters and Science and one year in the Medical School.

(b) A two-year course, one year in the College of Letters and Science and one year in the Medical School, for graduates of the College of Civil Engineering who have completed the undergraduate curriculum in sanitary engineering.

(c) A course in one and one-half years, one year in the College of Letters and Science and one-half year in the Medical School, for students who have completed three and one-half years of the medical curriculum. The completion of this course gives the degrees of M.D. and Graduate in Public Health.

Altogether 68 degrees in public health were granted, including 52 Graduates or Doctors of Public Health and 16 Masters of Arts in Public Health, Masters of Science in Public Health, Masters of Public Health and Certified Sanitarians. Certificates of Public Health were issued to 15 individuals after a one-year course. The total number of certificates issued on a course less than one year has not been recorded.

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES

The requirements for admission to and graduation from colleges holding membership in this association are as follows:

SECTION 1.—Every college holding membership in this Association shall, on and after Jan. 1, 1914, require for matriculation a completed or unconditioned medical student's certificate, to be granted by a state medical examining and licensing board, or a board empowered by statute to grant such certificates, or a certificate of entrance to the academic department of any state university, or a certificate of entrance to an accredited university or college, providing that said certificate is granted on no less than the following requirements:

(a) A diploma and transcript of record from a fully accredited high school, normal school or academy requiring for admission evidence

GRADUATE COURSES IN PUBLIC HEALTH

Name of College	Degrees in Health	Course Began	Years in Course	Instruction	Total Fees, Dollars	Thesis Required	Prerequisite College Work Required	Total No. of Degrees Granted
University of California Medical School.....	Cert. P.H.	1914	1	30	150	Yes	B.L., or B.S.	2
University of California Medical School.....	M.A. (P.H.)	1915	1	30	150	Yes	A.B., or B.S.	1
University of California Medical School.....	Gr. P.H.	1915	2	30	300	Yes	A.B., B.S., or M.D.	5
University of Colorado School of Medicine....	Cert. P.H.	1913	*	20	...	....	M.D.	
University of Colorado School of Medicine....	M.S. (San. Eng.)	1913	1	20	50	Yes	B.S. (Eng.)	
University of Colorado School of Medicine....	M.S. (P.H.)	1913	1	20	50	Yes	A.B., or B.S.	1
University of Colorado School of Medicine....	Dr. P.H.	1913	2	20	100	Yes	A.B., B.S., or M.D.	
Tulane University College of Medicine.....	Dr. P.H.	1912	1	16	205	Yes	M.D.	4
Tulane University College of Medicine.....	Cert. P.H.	1912	½	16	85	....	M.D.	(many)
Harvard University Medical School.....	Dr. P.H.	1910	1	59	150	Yes	A.B., and San. Eng., or M.D.	13
Harvard University Medical School.....	Cert. P.H.	1912	1	59	250	....	San. Eng. and M.D.	13
University of Michigan Medical School.....	M.S. (P.H.)	1913	1	7	67	Yes	A.B., B.S., or M.D.	6
University of Michigan Medical School.....	Dr. P.H.	1913	2	7	124	Yes	A.B., or B.S., and M.D.	2
Detroit College of Medicine and Surgery.....	M.P.H.	1913	1	11	80	....	M.D.	2
University and Bellevue Hospital Med. Coll. ..	Cert. P.H.	1914	6 wks.	35	50	....	M.D.	
University and Bellevue Hospital Med. Coll. ..	Dr. P.H.	1914	1	35	205	Yes	M.D.	
University of Pennsylvania School of Medicine	Dr. P.H.	1909	1	14	150	Yes	M.D.	26
University of Pennsylvania School of Medicine	C.S.	1909	1	14	150	....	A.B., or B.S.	2
University of Wisconsin Medical School.....	Dr. P.H.	1911	2	8	350	Yes	M.D.	2
University of Wisconsin Medical School.....	M.P.H.	1911	1	8	175	Yes	M.D.	4

* This is a course for practicing physicians covering six weeks in each of four years—a total of twenty-four weeks.
A new School of Public Health has just been established at Johns Hopkins University Medical Department; the details have not been published.

of the completion of a standard course in primary and intermediate grades, and for graduation, the completion of a standard four-year high school course, embracing two years (2 units) of mathematics, two years (2 units) of English, two years (2 units) of one foreign language, one year (1 unit) of history and civics, and seven years (7 units) of further credit in language, literature, history or science, making the total of units at least fourteen; and in addition, one year each of physics, chemistry, biology and French or German of college grade of each not less than eight semester hours.

(Note: A recommendation was endorsed by the Association, at its 1916 meeting, that on and after Jan. 1, 1918, two years of college work, including these required subjects, shall be the admission requirement. This recommendation will be voted on as an amendment at the 1917 annual meeting.)

(b) For the high school requirement an examination in the following branches totaling 14 units:

(A) Required, 7 units	Units
Mathematics (minimum 2 years, maximum 3 years), algebra and plane geometry.....	2
English (minimum 2 years, maximum 4 years).....	2
One foreign language (minimum 2 years, maximum 4 years)	2
History and civics.....	1
Total number of required units.....	7

(B) Elective, 7 units.

To be selected from the following:

	Units
English language and literature (in addition to the required work).....	1 to 2
Foreign languages, additional, Latin, German, Italian, French, Spanish or Greek (not less than 1 year in any one).....	1 to 4
Advanced mathematics, advanced algebra, solid geometry and trigonometry ($\frac{1}{2}$ year each).....	1
Natural science, chemistry 1 year, physics 1 year, and biology, botany, physiology and zoology ($\frac{1}{2}$ to 1 year each).....	$\frac{1}{2}$ to 2
Earth science, physical geography, geology and agriculture ($\frac{1}{2}$ year to 1 year each).....	$\frac{1}{2}$ to 1
Astronomy ($\frac{1}{2}$ year).....	$\frac{1}{2}$
Drawing ($\frac{1}{2}$ to 1 year).....	$\frac{1}{2}$ to 1
History, ancient, medieval and modern, and English (1 year each).....	1 to 3
Economics ($\frac{1}{2}$ year).....	$\frac{1}{2}$
Manual training (1 year).....	1
Bookkeeping ($\frac{1}{2}$ to 1 year).....	$\frac{1}{2}$ to 1

One unit in any subject is the equivalent of work in that subject for four or five periods per week for a year of at least thirty-six weeks, periods to be not less than forty-five minutes in length. One unit is equivalent to 2 semester credits or 2 points.

THE PRELIMINARY COLLEGE YEAR

(The requirements of the preliminary college year are the same as set forth in the standard of the Council on Medical Education on page 700. The standard was adopted April, 1915, by a joint committee representing the two organizations. After Jan. 1, 1917, the requirement in physics shall be 8 semester hours of college work, of which at least two are laboratory, or 96 hours of didactic plus 64 hours of laboratory, in periods of not less than two hours each.)

SEC. 2.—The examination of credentials must be conducted by and under the authority of the board of medical examiners of the state in which the college is located, or by a duly authorized examiner of the college entrance examination board, or the authorized examiner of an accredited university, state or otherwise, or by an examiner whose certificates are accepted by accredited colleges or universities, or by a method approved by the judicial council of this association.

SEC. 3.—The term "accredited" as applied to high schools, academies, colleges and universities means institutions of that type that have been investigated and are accredited by the state university of their respective states, by the North Central Association of Colleges and Secondary Schools, the Association of Colleges and Preparatory Schools of the Southern States, the Association of Colleges and Preparatory Schools of the Middle States and Maryland, the New England College Entrance Certificate Board, the Association of American Universities and the Association of State Universities, provided that such accrediting is based on Article III, Section 1, of this constitution.

SEC. 4.—Colleges in membership in this Association may honor the official credentials presented by students from other colleges having the standard requirements maintained by members of this Association, excepting for the fourth year of the course, but no member of this Association shall admit a student to advanced standing without receiving from the dean, secretary or registrar of such college a direct written communication certifying to the applicant's standing. Credit for time or scholarship cannot be given beyond that of the college issuing the credentials; except by mutual agreement between the colleges.

SEC. 5.—Candidates for the degree of Doctor of Medicine shall have attended four courses of study in four calendar years, each annual course to have been of not less than thirty-two teaching weeks' duration, and at least ten months shall intervene between the beginning of any course and the beginning of the preceding course.

SEC. 6.—No time credit shall be given to holders of a Bachelor's degree, but subject credit may be given on satisfactory examination. Four years of residence in a medical college shall be required of all candidates for the degree of Doctor of Medicine.

SEC. 7.—A college which gives less than a four years' course of study, but does not graduate students, and is possessed of other required qualifications, may be admitted to membership.

SEC. 8.—Each student shall be obliged to attend not less than 80 per cent. of the exercises in every annual course of study for which he seeks credit. No student shall be given credit on examination unless he attains a grade of at least 70 per cent. or its equivalent in any other marking system. And no student shall be graduated unless he shall have attained a passing grade in each and all subjects of the required curriculum.

CURRICULUM

SECTION 1.—The entire course of four years shall consist of at least 4,000 hours for each student, and shall be grouped in divisions and subdivided into subjects; each division and subject to be allotted the number of hours as shown in the following schedule:

DIVISION 1.—ANATOMY, 720 HOURS (18 per Cent.)				
	Hours.	Lect.	Rec. Dem.	Lab. Wk.
(a) Gross anatomy (including applied anatomy)	510		120	390
(b) Histologic and microscopic anatomy	135		30	105
(c) Embryology	75		30	45

DIVISION 2.—PHYSIOLOGY AND CHEMISTRY, 600 HOURS (15 per Cent.)				
	Hours.	Lect.	Rec. Dem.	Lab. Wk.
(a) Inorganic chemistry	180		60	120
(b) Organic chemistry	75		30	45
(c) Physiologic chemistry	104		30	75
(d) Physiology	240		140	100

DIVISION 3.—PATHOLOGY, BACTERIOLOGY AND HYGIENE, 450 HOURS (11.25 per Cent.)				
	Hours.	Lect.	Rec. Dem.	Lab. Wk.
(a) Bacteriology	135		30	105
(b) Hygiene and general dietetics	45		45	...
(c) Pathology	270		60	210

DIVISION 4.—PHARMACOLOGY, MATERIA MEDICA AND THERAPEUTICS, 240 HOURS (6 per Cent.)				
	Hours.	Lect.	Rec. Dem.	Lab. Wk.
(a) Pharmacology	105		40	65
(b) Materia medica and pharmacology	80		...	...
(c) Therapeutics	55		...	...

DIVISION 5.—MEDICINE AND MEDICAL SPECIALTIES, 970 HOURS (24.25 per Cent.)				
	Hours.	Lect.	Rec. Dem.	Lab. Wk.
(a) General medicine (including clinical microscopy)	640		...	...
(b) Pediatrics	150		...	...
(c) Nervous and mental diseases	105		...	...
(d) Jurisprudence, ethics and economics	30		...	...
(e) Dermatology and syphilis... ..	45		...	...

DIVISION 6.—SURGERY AND SURGICAL SPECIALTIES, 720 HOURS (18 per Cent.)				
	Hours.	Lect.	Rec. Dem.	Lab. Wk.
(a) General surgery	510		...	...
(b) Orthopedic surgery	45		...	...
(c) Genito-urinary diseases.....	45		...	...
(d) Eye	60		...	...
(e) Ear, nose and throat.....	60		...	...

DIVISION 7.—OBSTETRICS AND GYNECOLOGY, 300 HOURS (7.5 per Cent.)				
	Hours.	Lect.	Rec. Dem.	Lab. Wk.
(a) Obstetrics	195		...	...
(b) Gynecology (including some abdominal surgery)	105		...	...

Colleges may reduce the number of hours in any subject not more than 20 per cent. provided that the total number of hours in a division is not reduced. Where the teaching conditions in a college are subserved, the subject may be, for teaching purposes, transferred from one division to another. When didactic and laboratory hours are specified in any subject, laboratory hours may be substituted for didactic hours.

(NOTE.—At the 1916 meeting the Committee on Education and Pedagogy was instructed to revise this curriculum to meet the present requirements.)

SEC. 2.—Each medical college in membership in the Association shall print in every annual catalogue or announcement a table of the total number of hours' work given in said college, arranged both by subject and years.

SEC. 3.—Each college in membership in this Association shall print annually a list of its students by classes.

MEMBERS OF ASSOCIATION

University of Alabama, School of Medicine.
Leland Stanford Junior University, School of Medicine.
University of California Medical School.
University of Southern California, Medical Department.
University of Colorado, School of Medicine.
Yale University, School of Medicine.
Georgetown University, School of Medicine.
George Washington University Medical School.
Howard University, School of Medicine.
University of Georgia, Medical Department.
Northwestern University Medical School.
Rush Medical College.
University of Illinois, College of Medicine.
Indiana University, School of Medicine.
State University of Iowa, College of Medicine.
University of Kansas, School of Medicine.
University of Louisville, Medical Department.
Tulane University of Louisiana, School of Medicine.

College of Physicians and Surgeons, Baltimore.
Johns Hopkins University, Medical Department.
University of Maryland, School of Medicine.
Medical School of Harvard University.
Tufts College Medical School.
Detroit College of Medicine and Surgery.
University of Michigan Medical School.
University of Minnesota Medical School.
University of Mississippi, Department of Medicine.
St. Louis University, School of Medicine.
University of Missouri, School of Medicine.
Washington University Medical School.
John A. Creighton Medical College.
University of Nebraska, College of Medicine.
Columbia University, College of Physicians and Surgeons.
Cornell University Medical College.
Syracuse University, College of Medicine.
University and Bellevue Hospital Medical College.
University of Buffalo, Medical Department.
University of North Carolina, School of Medicine.
Wake Forest College, School of Medicine.
University of North Dakota, School of Medicine.
University of Cincinnati, College of Medicine.
Ohio State University, College of Medicine.
Western Reserve University, School of Medicine.
University of Oklahoma, School of Medicine.
Hahnemann Medical College and Hospital of Philadelphia.
University of Pennsylvania, School of Medicine.
University of Pittsburgh, School of Medicine.
University of the Philippines College of Medicine and Surgery.
Medical College of the State of South Carolina.
Meharry Medical College (Affiliated Member).
University of Tennessee, College of Medicine.
Vanderbilt University, Department of Medicine.
University of Texas, Department of Medicine.
University of Vermont, College of Medicine.
Medical College of Virginia.
Marquette University School of Medicine.
University of Wisconsin Medical School.

The secretary-treasurer of the Association is Dr. Fred C. Zapffe, 3431 Lexington Street, Chicago.

DESCRIPTION OF MEDICAL COLLEGES

Below are given brief descriptions of the medical colleges in the United States and Canada that are legally chartered to teach medicine, several of which do not grant degrees. The name, address, year of organization, history and date when first class graduated are given in each instance. Unless otherwise stated, a class graduated each subsequent year. Where official reports have been received from the college, information regarding faculty, entrance requirements, length of term, fees, students (excluding specials and postgraduates), graduates, name of dean and next session is given without discrimination, regardless as to whether the college is sectarian or not. In a few instances in which such reports were not received the information published is from other reliable sources. Figures for graduates include all who graduated since July 1, 1915. Extracts of rules and the membership of the Association of American Medical Colleges are shown following the list of colleges. Figures showing population of cities and states are taken from the United States Census Bureau's estimate for 1915. Statements have been added showing the preliminary requirements held by state licensing boards where those requirements include one or two years of collegiate work. Four states, New Jersey, North Dakota, Pennsylvania and Rhode Island require a year's hospital internship before a license will be granted.

ALABAMA

Alabama, population 2,301,277, has one medical college, the School of Medicine of the University of Alabama, located in Mobile, a city with a population of 56,536.

In order to secure licenses to practice medicine in Alabama, students matriculating in the session of 1915-16 and thereafter, must have completed *two years* of work in an approved college of liberal arts, including courses in physics, chemistry, biology and a modern language, prior to entering on the study of medicine.

Mobile

UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE, St. Anthony and Lawrence Streets.—Organized in 1859 as the Medical College of Alabama. Classes were graduated in 1861 and in all subsequent years except 1862 to 1868 inclusive. It was reorganized as the Medical Department of the University of Alabama in 1897. All property was transferred to the

University of Alabama in 1907, when the present title was assumed. Two years of college work are required for admission. The faculty consists of 15 professors and 27 lecturers and assistants, a total of 42. The course of study covers four years of thirty-two weeks each. The total fees for each of the four years, respectively, are \$160, \$155, \$155 and \$175. The Dean is Dr. T. H. Frazer. The total registration for 1915-16 was 56; graduates, 18. The fifty-first session begins Oct. 5, 1916, and ends June 5, 1917.

ARKANSAS

Arkansas, population 1,713,102, has one medical college, the Medical Department of the University of Arkansas, located in Little Rock, a city of 55,158.

To secure licenses to practice medicine in Arkansas, students matriculating in the session of 1915-16 and thereafter must have completed at least one year of collegiate work including college courses in physics, chemistry, biology and a modern language before beginning the study of medicine. This applies to all graduates of 1919 and thereafter.

Little Rock

UNIVERSITY OF ARKANSAS MEDICAL DEPARTMENT, Markham and Center Streets.—Organized in 1879 as the Medical Department of Arkansas Industrial University. It assumed the present title in 1899. In 1911 the College of Physicians and Surgeons united with it and the new school was made an integral part of the University of Arkansas. The first class was graduated in 1880. The faculty consists of 15 professors and 48 lecturers and assistants, total 63. Entrance requirements are a year of collegiate work beyond a four-year high school course. The course of study covers four years of thirty-two weeks each. The fees are \$125 for each of the first three years and \$150 for the fourth year. The Dean is Dr. Morgan Smith. Total registration 1915-16 was 56; graduates, 16. The thirty-eighth session begins Sept. 18, 1916, and ends May 31, 1917.

CALIFORNIA

California, population 2,848,275, has seven medical colleges. Three are located in San Francisco, a city of 448,502 inhabitants. They are Leland Stanford Junior University School of Medicine, College of Medicine of the University of California, the College of Physicians and Surgeons and the Hahnemann Medical College of the Pacific. The College of Physicians and Surgeons, Medical Department of the University of Southern California is situated in Los Angeles, population 465,367. The Oakland College of Medicine and Surgery is in Oakland, population 190,803. The College of Medical Evangelists is located at Loma Linda, a village of 110 people.

To secure licenses to practice medicine in California under the "physician's and surgeon's" certificate, students matriculating in medical colleges in and after the session of 1915-16, prior to such matriculation, must have completed at least one year of recognized collegiate work including college courses in physics, chemistry, biology and a modern language. This applies to all graduates of 1919 and thereafter.

Berkeley-San Francisco

UNIVERSITY OF CALIFORNIA MEDICAL SCHOOL, University Campus, Berkeley; Second and Parnassus Avenues, San Francisco.—Organized in 1863 as the Toland Medical College. The first class graduated in 1865. In 1872 it became the Medical Department of the University of California. In 1909 the College of Medicine of the University of Southern California, at Los Angeles, by legislative enactment, became a clinical department. This Los Angeles portion was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged and elective chairs in homeopathic materia medica and therapeutics were provided for. *Two years* of collegiate work are required for admission. The work of the first year and a half is given at Berkeley and the work of the last two and a half years at San Francisco. The faculty is composed of 31 professors and 99 associates and assistants, a total of 130. The course covers five years of nine months each, the fifth year to consist of an internship or of special work in a department of the medical school. Fees for the four years, respectively, are \$190, \$190, \$167 and \$167. The Dean is Dr. Herbert C. Moffitt, San Francisco. Total registration for 1915-16 was 124, graduates, 29. The forty-fourth session begins Aug. 18, 1916, and ends May 16, 1917.

Loma Linda-Los Angeles

COLLEGE OF MEDICAL EVANGELISTS.—Organized in 1909. The faculty numbers 55. The first class graduated in 1914. The course extends over four years of nine months each. *Two years* of college work are required for admission. The total fees each year are \$136; matriculation fee, \$5, payable but once; graduation fee, \$10. President is Dr. Newton Evans. The total registration for 1915-16 was 51; graduates, 9. The eighth session begins Sept. 11, 1916, and ends May 31, 1917.

Los Angeles

COLLEGE OF PHYSICIANS AND SURGEONS, MEDICAL DEPARTMENT OF THE UNIVERSITY OF SOUTHERN CALIFORNIA, 516 East Washington Street.—Organized in 1903, first class graduated in 1905; became Medical Department, University of Southern California, Aug. 11, 1909. The course covers four years of nine months each. *Two years* of collegiate work are required for admission. The faculty consists of 22 professors and 74 associate professors, lecturers and instructors, a total of 96. The fees for the four years, respectively, are \$220, \$217, \$202 and \$227. The

Dean is Dr. Charles W. Bryson. The registration for 1915-16 was 143; graduates, 23. The next session begins Sept. 5, 1916, and ends June 7, 1917.

Oakland

OAKLAND COLLEGE OF MEDICINE AND SURGERY, Thirty-First and Grove Streets.—Organized in 1900, opened in 1902. The first class graduated in 1906. The faculty numbers 45. The course covers four years of nine months each, and the classes are limited to ten students each. The total fees for each of the four years, respectively, are \$195, \$190, \$150 and \$150. The Registrar is Dr. Edward N. Ewer. The total registration for 1915-16 was 13; graduates, 2. The fifteenth session begins Aug. 21, 1916, and ends June 1, 1917.

San Francisco

COLLEGE OF PHYSICIANS AND SURGEONS, 344 Fourteenth Street.—Organized in 1896. The first class graduated in 1897. The faculty numbers 28. The course covers four years of nine months each. The fees for each of the four years, respectively, are \$165, \$160, \$160 and \$185. The Dean is Dr. L. W. Spriggs. Registration for 1915-16 was 63; graduates, 9. The twentieth session begins Sept. 4, 1916, and ends June 7, 1917. *Reported not recognized by licensing boards of thirty-three states.*

San Francisco-Palo Alto

LELAND STANFORD JUNIOR UNIVERSITY SCHOOL OF MEDICINE, University Campus, Palo Alto, and Sacramento and Webster Streets, San Francisco.—Organized in 1908 when, by an agreement, the interests of Cooper Medical College were taken over. The faculty consists of 46 professors and 52 lecturers, assistants, etc., a total of 98. Three years of collegiate work are required for admission. The course covers five years of nine months each, including a year of practical or intern work. The total fees for the first four years, respectively, are \$160, \$155, \$150 and \$150. The Dean is Dr. W. Ophüls, San Francisco. The total registration for 1915-16 was 96; graduates, 24. The seventh session begins Aug. 30, 1916, and ends May 16, 1917.

COLORADO

Colorado, with a population of 935,799, has one medical college, the University of Colorado School of Medicine. The first two years of the course are given at Boulder, the seat of the university, while the last two, or clinical years, are given in Denver, which has a population of 253,161.

The Colorado State Board of Medical Examiners will register without further examination graduates of medical colleges in good standing who present licenses issued after examination by any other licensing board. The law permits any one, graduate or non-graduate, to try the Board's written examination. No graduate of 1914 or thereafter is eligible to obtain a license in Colorado, on indorsement of his credentials, unless he graduated from a medical college which, at the time he matriculated, required at least *two years'* study, without conditions, in an accredited college of liberal arts, and this work must have included courses in physics, chemistry, biology and one modern language.

Boulder-Denver

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine was merged Jan. 1, 1911, when the legal right to teach the last two or clinical years in Denver was secured. The faculty embraces 56 professors and 30 lecturers and assistants, a total of 86. The work embraces a graded course of four years of nine months each. The entrance requirements are *two years* of college work counting toward a degree in arts in an accredited college or university. The tuition is \$75 per year for residents of Colorado, \$100 for non-residents. There are laboratory fees of \$10 for each of the first two years. The Dean is Dr. Charles N. Meader. The total registration for 1915-16 was 79; graduates, 13. The thirty-fifth session begins Sept. 11, 1916, and ends June 6, 1917.

CONNECTICUT

Connecticut, with a population of 1,223,583, has one medical college, Yale University, School of Medicine, located in New Haven, population 147,095.

Candidates for license to practice medicine in Connecticut, who graduate in 1914 or thereafter are not eligible unless, prior to entering on the study of medicine they had completed, in addition to an accredited four-year high school education, at least nine months of collegiate work including college courses in physics, chemistry and general biology.

New Haven

YALE UNIVERSITY SCHOOL OF MEDICINE, 150 York Street and Congress Avenue and Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. The faculty consists of 24 professors and 50 lecturers and assistants, a total of 74. The requirements for admission is *two full years* of collegiate work plus evidence of satisfactory completion of courses in general physics, general inorganic chemistry, general biology, organic chemistry and physical chemistry or laboratory physics, all reasonably equivalent to the courses in these subjects in Yale University. The student also

must have a reading knowledge of German. The course covers four years of nine months each. The fees for the four years, respectively, are approximately \$195, \$165, \$150 and \$163. The Dean is Dr. George Blumer. The total registration for 1915-16 was 58; graduates, 6. The one hundred and fourth session begins Sept. 28, 1916, and ends June 20, 1917.

DISTRICT OF COLUMBIA

The District of Columbia, population 358,679, has three medical colleges; George Washington University Medical School, Georgetown University, School of Medicine and Howard University, School of Medicine.

Washington

GEORGE WASHINGTON UNIVERSITY MEDICAL SCHOOL, 1325 H Street, N.W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name, National Medical College. Classes were graduated in 1826 and in all subsequent years, except 1834 to 1838, and 1861 to 1863, inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904, by an act of Congress, the title of George Washington University was granted to the institution. The faculty is composed of 23 professors and 62 instructors, demonstrators and assistants, a total of 85. One year of collegiate work is required for admission. The course covers four years of thirty-two weeks each. The total fees for the four years, respectively, are \$168, \$169, \$163 and \$163. The Dean is Dr. William C. Borden. The total registration for 1915-16 was 141; graduates, 27. The ninety-fifth session begins Sept. 27, 1916, and ends June 6, 1917.

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE, 920 H Street, N.W.—Organized in 1851. The first class graduated in 1852. The faculty contains 24 professors, 67 instructors and assistants; total, 91. *Two years* of collegiate work are required for entrance. The course of study covers four terms of eight and one-half months each. The fees for the first year are \$165, and for each of the other three years, \$150. The Dean is Dr. George M. Kober. The registration for 1915-16 was 53; graduates, 7. The sixty-sixth session begins Sept. 24, 1916, and ends June 13, 1917.

HOWARD UNIVERSITY SCHOOL OF MEDICINE, Fifth and W. Streets, N.W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Colored students compose a majority of those in attendance. The faculty comprises 18 professors and 21 lecturers and assistants, 39 in all. The admission requirements are *two years* of collegiate work including physics, chemistry, botany and zoology and a reading knowledge of one modern language besides English. The course covers four years of thirty-two weeks each. The fees of each of the four sessions, respectively, are \$137, \$127, \$127 and \$134. The Dean is Dr. Edward A. Balloch. Registration for 1915-16 was 100; graduates, 15. The forty-ninth session begins Oct. 2, 1916, and ends June 6, 1917.

GEORGIA

Georgia, population 2,816,289, has two medical colleges, University of Georgia, Medical Department, located in Augusta, population 49,848, and the Atlanta Medical College in Atlanta, a city of 184,873 population.

Atlanta

ATLANTA MEDICAL COLLEGE, MEDICAL DEPARTMENT OF EMORY UNIVERSITY, Butler and Armstrong Streets.—Organized in 1854. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874. In 1898, merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913, merged with the Atlanta School of Medicine (organized in 1905) reassuming its first title. Became the Medical Department of Emory University in 1915. One year of collegiate work is required for entrance. Two years will be required for the session of 1918-19 and thereafter. It has a faculty of 31 professors and 70 instructors, assistants, etc., total of 101. The course of study is four years of thirty-two weeks each. The fees are \$150 each year. The Dean is Dr. W. S. Elkin. Total registration for 1915-16 was 232; graduates, 101. The next session begins Sept. 25, 1916, and ends May 30, 1917.

Augusta

UNIVERSITY OF GEORGIA, MEDICAL DEPARTMENT, University Place. Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. Since 1873 it has been known as the Medical Department of the University of Georgia. Entire property transferred to the University in 1911. Classes were graduated in 1833 and in all subsequent years except 1862 and 1863. The faculty includes 18 professors and 30 assistants, 48 in all. One year of collegiate work is required for entrance; two years will be required for the session of 1918-19 and thereafter. The course is four years of thirty-four weeks each. Fees are \$150 each year for non-residents of Georgia; for residents the fees for the four years respectively are \$55, \$50, \$55 and \$60. The Dean is Dr. W. H. Doughty. The total registration for 1915-16 was 54; graduates, 10. The eighth session begins Sept. 14, 1916, and ends May 30, 1917.

ILLINOIS

Illinois, population 6,069,519, has eight medical colleges, two of which give instruction at night, all located in Chicago, a city of 2,447,045 inhabitants, and are as follows: Rush Medical College, Northwestern University Medical School, University of Illinois College of Medicine, Hahnemann Medical College and Hospital, Loyola University School of Medicine, Chicago College of Medicine and Surgery, Jefferson Medical College and the Chicago Hospital College of Medicine.

To be eligible for license to practice medicine in Illinois, students matriculating in the session of 1915-16 and thereafter, in addition to an accredited four-year high school education, must have completed at least a year of collegiate work including courses in physics, chemistry, biology and a modern language, to be taken either in a preliminary year given by a recognized medical college, or in an approved college of liberal arts.

Chicago

RUSH MEDICAL COLLEGE.—This school was founded in 1837, organized in 1843, was the medical department of Lake Forest University from 1887 until 1898, when it became affiliated with the University of Chicago. The first class graduated in 1844. The faculty is composed of 108 professors, 193 associates, instructors, etc., a total of 301. The requirements for admission are *two years* of college work, including courses in college chemistry, physics and biology, and a reading knowledge of German or French. Classes are limited to 100 students in each of the freshman and sophomore classes, and to 120 students in each of the clinical years. No application for admission is accepted after September 1. The course covers four years of eight and a half months each, and a fifth year, consisting of a hospital internship or of a fellowship in one of the departments. All freshmen and sophomore studies are given at the University of Chicago. The clinical years are given in the building at the corner of Wood and Harrison Streets. The tuition fees are \$180 each year. A matriculation fee of \$5 is paid but once, and there are incidentals amounting from \$3 to \$10 annually. The Dean is Dr. John M. Dodson. Total registration 1914-15 was 488; graduates, 97. The seventy-third session begins Oct. 1, 1915, and ends June 17, 1916.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 2431 South Dearborn Street.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869, but retained the name of Chicago Medical College until 1891, when the present name was taken. Became an integral part of Northwestern University in 1905. The faculty comprises 54 professors and 70 lecturers and assistants, a total of 124. The requirements for admission are such as will admit to the College of Liberal Arts of Northwestern University plus *two years* of college work, including courses in physics, chemistry, biology and a modern language. The course covers four years of eight months each. The fees for the four years, respectively, are \$190, \$195, \$190 and \$206. The Dean is Dr. Arthur R. Edwards. The total registration for 1915-16 was 236; graduates, 42. The fifty-seventh session begins Oct. 3, 1916, and ends June 2, 1917.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, Honore and Congress Streets.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897 and an integral part in 1910. The relationship with the university was canceled in June, 1912, but restored in March, 1913, when the present title was assumed. The American Medical Missionary College was absorbed in 1910. *Two years* of collegiate work are required for admission. The faculty is composed of 55 professors, 90 assistants and instructors, a total of 145. The total fees for the four years, respectively, are \$155, \$160, \$150 and \$165. The Dean is Dr. D. A. K. Steele. Total registration for 1915-16 was 227; graduates, 110. The thirty-fifth session begins Sept. 28, 1916, and ends June 13, 1917.

CHICAGO COLLEGE OF MEDICINE AND SURGERY, 706 South Lincoln Street.—Organized in 1901 as the American College of Medicine and Surgery (Chicago Eclectic Medical College). The latter part of the name was dropped in 1902 and it became the Medical Department of Valparaiso University. Eclecticism was dropped in 1905. The name was changed to the above in 1907. One year of collegiate work, including courses in physics, chemistry, biology and a modern language is required for admission. The course covers four years of eight months each. The faculty numbers 167. The total fees of each of the four years are \$155. The Secretary is Dr. G. E. Wyneken. The total registration for 1915-16 was 488; graduates, 194. The sixteenth session begins Sept. 26, 1916, and ends May 27, 1917.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF CHICAGO, 2811 Cottage Grove Avenue.—Organized in 1859. The first class was graduated in 1861. Absorbed the Chicago Homeopathic Medical College in 1904. The faculty includes 57 professors and 26 lecturers, assistants, etc., a total of 83. One year of collegiate work, including courses in physics, chemistry and biology and a modern language is required for admission. *Two years* of collegiate work will be required in the session of 1918-19 and thereafter. The course extends over four years of eight months each. The tuition fees for the four years, respectively, are \$171, \$161.50, \$176.50 and \$191.50. The Dean is Dr. Joseph P. Cobb. The total registration for 1915-16 was 85; graduates 18. The fifty-seventh session begins Sept. 25, 1916, and ends June 7, 1917.

LOYOLA UNIVERSITY SCHOOL OF MEDICINE, Fulton and Ada Streets.—Organized in 1868 as the Bennett College of Eclectic Medicine and Surgery. Dropped Eclecticism and became Bennett Medical College in 1909. In 1910 it absorbed the Illinois Medical College. The first class graduated in 1870. Became an integral part of Loyola University in 1915. Present title in 1916. The faculty numbers 85. The course covers four years of thirty-two weeks each. One year of collegiate work required for admission, including courses in physics, chemistry and biology. The fees are \$150 each year. The Secretary is Dr. Alfred de Roulet. The total registration for 1915-16 was 308; graduates, 142. The next session begins Sept. 25, 1916, and ends June 18, 1917.

JENNER MEDICAL COLLEGE, an afternoon and night school, located at 701 South Wood Street.—Organized in 1892. Classes were graduated in 1896 and in all subsequent years. Total registration for 1915-16 was 28; graduates, 15. *Reported not recognized by the licensing boards of thirty-two states.*

CHICAGO HOSPITAL COLLEGE OF MEDICINE, another afternoon and night school, located at 3832 Rhodes Avenue.—Organized in 1911; chartered in 1912. Claimed to have had a registration of about 60 in 1914-15. There were 9 graduates. *Official reports indicate that the diplomas from this college are not recognized by the licensing boards of thirty-two states.*

INDIANA

Indiana, population 2,798,142, has one medical college, the Indiana University School of Medicine, located at Indian-

apolis, a city of 265,578 people, except that the work of the first year is offered also at Bloomington, the seat of the University.

Candidates for license to practice medicine in Indiana who matriculated between Jan. 11, 1910, and Jan. 1, 1911, must have completed one year of collegiate work, in addition to an accredited four-year high school course, prior to beginning the study of medicine. Those matriculating subsequent to Jan. 1, 1911, must have completed *two years* of work in a recognized college of liberal arts.

Bloomington and Indianapolis

INDIANA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1903, but did not give all of the work of the first two years of the medical course until 1905. In 1907, by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879) merged into it. The first class was graduated in 1908. The faculty consists of 74 professors and 63 lecturers, associates and assistants, a total of 137. *Two years* of collegiate work are required for admission. The work of the first year is emphasized only at Bloomington. The work of the other three years is all at Indianapolis. The fees for the four years, respectively, are \$100, \$100, \$130 and \$130. A fifth optional year leading to the "M.D. cum laude" has been added. The Secretary at Bloomington is Dr. B. D. Myers; the Dean is Dr. Charles P. Emerson, Indianapolis. The total registration for 1915-16 was 156; graduates, 34. The next session begins Sept. 18, 1916, and ends June 13, 1917.

IOWA

Iowa, population 2,221,038, has two medical colleges. The College of Medicine and the College of Homeopathic Medicine of the State University of Iowa, both located in Iowa City, population 11,200.

Candidates for license to practice medicine in Iowa who graduate subsequent to Jan. 1, 1915, must have completed *two years* of work in an approved college of liberal arts prior to beginning the study of medicine, this preliminary college work to have included courses in physics, chemistry, biology and a foreign language.

Iowa City

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE. University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. The faculty is made up of 27 professors, 27 lecturers, demonstrators and assistants, a total of 54. *Two years* of collegiate work, including courses in physics, chemistry, biology and French or German, are required for admission. The course of study covers four years of thirty-six weeks each. The tuition fee for residents of Iowa is \$85 per year and for nonresidents \$100, plus a matriculation fee of \$10 and a graduation fee of \$10. The Dean is Dr. Lee Wallace Dean, Iowa City. Total registration for 1915-16 was 151; graduates, 29. The forty-seventh session begins Sept. 18, 1916, and ends June 13, 1917.

STATE UNIVERSITY OF IOWA COLLEGE OF HOMEOPATHIC MEDICINE.—Organized in 1877. The first class graduated in 1878. Class each subsequent year except 1914. The faculty is composed of 15 professors and 12 lecturers and assistants, a total of 27. The work of the first two years is taken in classes with the students of the College of Medicine of the State University of Iowa, and it has the same entrance requirements. The fees are \$100 each year for nonresidents of Iowa and \$85 for residents, plus a matriculation fee of \$10, paid but once, and a graduation fee of \$10. The Dean is Dr. George Royal. Total registration for 1915-16 was 10; graduates, 0. The thirty-ninth session begins Sept. 18, 1916, and ends June 13, 1917.

KANSAS

Population 1,807,221, has one medical college. The School of Medicine of the University of Kansas gives its first two years in Lawrence, population 12,915, and the last two years in Rosedale, a suburb of the two Kansas Cities, which together have a population of 392,693.

Candidates for license to practice medicine in Kansas who matriculated in the session of 1910-11 and thereafter must present credentials showing that they matriculated in and graduated from a medical college which required for admission at least one year of collegiate work including college courses in physics, chemistry and biology in addition to an accredited four-year high school course. This applies to graduates of 1914 and thereafter.

Lawrence and Rosedale

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE.—Organized in 1880. It offered only the first two years of the medical course until in 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and

the Medico-Chirurgical College, founded in 1897. First class graduated in 1906. The clinical courses are given at Rosedale. Absorbed Kansas Medical College in 1913. The faculty, including lecturers and clinical assistant, numbers 61. The requirements for admission are *two years* of collegiate work. The course covers four years of nine months each. The total fees are for each of the first two years, \$30 per year (and for nonresidents of the state, \$45); for the last two years \$100 and \$105, respectively. The Dean is Dr. S. J. Crumbine; Associate Dean, Dr. M. T. Sudler. The total registration for 1915-16 was 105; graduates, 11. The thirty-seventh session begins Sept. 14, 1916, and ends June 6, 1917.

KENTUCKY

Kentucky, population 2,365,185, has one medical college, the University of Louisville Medical Department, situated in Louisville, a city of 237,012 inhabitants.

To be eligible for license to practice medicine in Kentucky all students matriculating in and after the session of 1914-15 must have completed, in addition to an accredited four-year high school course, at least one year's work in an approved college of liberal arts, including college courses in physics, chemistry, biology and a modern language.

Louisville

UNIVERSITY OF LOUISVILLE MEDICAL DEPARTMENT, First and Chestnut Streets.—Organized in 1837 as the Louisville Medical Institute. The first class graduated in 1838, and a class graduated in each subsequent year except in 1863. In 1846 the present name was assumed. In 1907 it absorbed the Kentucky University Medical Department. In 1908 it absorbed the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. One year of collegiate work is required for admission. It has a faculty of 34 professors and 68 lecturers and assistants, a total of 102. The course covers four years of thirty-two weeks each. The fees are \$175 each year; graduation fee, \$10. The Dean is Dr. Henry Enos Tuley. The total registration for 1915-16 was 149; graduates, 54. The next session begins Sept. 26, 1916, and ends June 7, 1917.

LOUISIANA

Louisiana, having a population of 1,801,306, contains one medical college, the School of Medicine of the Tulane University of Louisiana, situated in New Orleans, a city of 366,484.

Candidates for license to practice medicine in Louisiana who graduate in 1919 and thereafter must present evidence that they had successfully completed, at an approved college or university at least one year of work including biology, physics, chemistry and a modern language, before entering on the study of medicine. This applies to all students who matriculated in 1915 and thereafter.

New Orleans

TULANE UNIVERSITY OF LOUISIANA SCHOOL OF MEDICINE, University Campus and 1551 Canal Street.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years, except 1863-65, inclusive. It was transferred to the Medical Department of the University of Louisiana in 1847 and became the Medical Department of the Tulane University of Louisiana in 1884. Present name in 1913, when it became the School of Medicine of the College of Medicine of the Tulane University of Louisiana. The faculty has 24 professors and 89 assistant professors, instructors, demonstrators, etc., a total of 113. The course covers four years of thirty-two weeks each. One year of collegiate work is required for admission. Total fees are \$185 per year; graduation fee, \$30. The Dean is Dr. Isadore Dyer. The total registration for 1915-16 was 265; graduates, 75. The eighty-second session begins Sept. 25, 1916, and ends June 6, 1917.

MAINE

Maine, population 767,638, has one medical college, the Bowdoin Medical School, located in Brunswick and Portland, the latter having a population of 62,161.

Brunswick-Portland

BOWDOIN MEDICAL SCHOOL. The Medical Department of Bowdoin College. The first two years are given at Bowdoin College, Brunswick, the last two at Portland, building located on Chadwick Street.—Organized in 1820 as the Medical School of Maine. The first class graduated in 1821. Present title assumed in 1915. The faculty numbers 66. *Two years* of collegiate work, including courses in physics, chemistry and biology are required for admission. The course covers four years of eight months each. The total fees are \$115 each year. The Dean is Dr. Addison S. Thayer, 10 Deering Street, Portland. The total number of students in 1915-16 was 60; graduates, 10. The ninety-sixth session begins Oct. 12, 1916, and ends June 21, 1917.

MARYLAND

Maryland, with a population of 1,351,941, contains two medical colleges, located in Baltimore, a city with 584,605 inhabitants. They are as follows: Johns Hopkins University Medical Department and the University of Maryland School

of Medicine and College of Physicians and Surgeons, the last two having been merged.

To be eligible to practice medicine in Maryland, all students matriculating in the session of 1914-15 and thereafter in addition to a four-year high school education, must have completed a year of college work including courses in physics, chemistry, biology and French or German, prior to beginning the study of medicine. Students matriculating in 1918-19 and thereafter must have completed *two years* of College work.

Baltimore

JOHNS HOPKINS UNIVERSITY MEDICAL DEPARTMENT, Washington and Monument Streets.—Organized in 1893. The first class graduated in 1897. The faculty consists of 17 professors and 139 clinical professors, etc., a total of 156. The requirements for admission demand that the applicant either has (a) completed the chemical-biological course which leads to the A.B. degree in the university or (b) graduated at an approved college or scientific school and has a knowledge of French and German, physics, chemistry and biology, such as may be obtained from a year's course. The course extends over four years of eight and one-half months each. The charge for tuition is \$240 for the first year and \$200 for each of the other three years. The Dean is Dr. J. Whitridge Williams. Total registration for 1915-16 was 353; graduates, 82. The twenty-fourth session begins Oct. 3, 1916, and ends June 12, 1917.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND THE COLLEGE OF PHYSICIANS AND SURGEONS, Lombard and Green Streets.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged into it in 1913. In 1915 the College of Physicians and Surgeons was merged at the present name assumed. The combined faculty numbers 188. A year of collegiate work is required for admission. Beginning with the session of 1918-19 *two years* of college work will be required. The course covers four years of eight months each. The total fees are \$165 each year; matriculation fee, \$5; graduation fee, \$30. The Dean is Dr. J. M. H. Rowland. Total registration for 1915-16 was 368; graduates, 123. The one hundred and tenth session begins Oct. 2, 1916, and ends June 1, 1917.

MASSACHUSETTS

Massachusetts, population, 3,662,339, has four medical colleges: Medical School of Harvard University, Boston University School of Medicine, College of Physicians and Surgeons and Tufts College Medical School. They are all situated in Boston, a city of 745,139.

Boston

MEDICAL SCHOOL OF HARVARD UNIVERSITY, 240 Longwood Avenue.—Organized in 1782. The first class graduated in 1788. It has a faculty of 54 professors and 182 associates, assistants, etc., a total of 236. Candidates for admission must present a recognized college degree with courses in general and organic chemistry or credits for *two years* of work in a recognized college or scientific school, which must include courses in physics, general and organic chemistry and biology. The session is four years of eight months each. The total fee for each year is \$225. The Dean is Dr. Edward H. Bradford. The total registration for 1915-16 was 334; graduates, 74. The one hundred and thirty-fifth session begins Sept. 25, 1916, and ends June 21, 1917.

BOSTON UNIVERSITY SCHOOL OF MEDICINE, 80 East Concord Street.—Organized in 1873. In 1874 the New England Female Medical College founded in 1848, was merged into it. The first class graduated in 1878. *Two years* of collegiate work are required for admission. The faculty includes 30 professors, 40 associates, etc., making a total of 70. The course covers four years of eight months each. Total fees for each of the four years, respectively, are \$170, \$157, \$151 and \$150. The Dean is Dr. John P. Sutherland. Total registration for 1915-16 was 300; graduates, 18. The forty-fourth session begins Oct. 5, 1916, and ends June 6, 1917.

TUFTS COLLEGE MEDICAL SCHOOL, 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. It has a faculty of 45 professors and 77 assistant lecturers, etc., a total of 122. One year of collegiate work is required for admission. The course covers four years of eight months each. The total fees are \$155 each year. The Dean is Dr. Charles F. Painter. Total registration for 1915-16 was 380; graduates, 70. The twenty-third session begins Sept. 21, 1916, and ends June 15, 1917.

COLLEGE OF PHYSICIANS AND SURGEONS, 517 Shawmut Avenue.—Organized in 1880. The first class graduated in 1882. Total attendance of medical students during 1915-16 was about 47. There were 12 graduates. *This college has been reported not recognized by the Massachusetts Medical Society and by the licensing boards of thirty-three states.*

MICHIGAN

Michigan, population 3,015,442, has three medical colleges. Two of these, the University of Michigan Department of Medicine and Surgery and the Homeopathic Medical College of the University of Michigan, are located at Ann Arbor, a city of 14,979 people. The Detroit College of Medicine and Surgery is located at Detroit, a city of 554,717 inhabitants.

To be eligible for license to practice medicine in Michigan all students matriculating in and after the session of 1914-

in addition to an accredited four-year high school education, must have completed at least one year's work in an approved college of liberal arts, including college courses in physics, chemistry, biology and French or German, prior to beginning the study of medicine.

Ann Arbor

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. It has a faculty composed of 20 professors and 59 associates, instructors, etc., a total of 79. The entrance requirements are *two years* of college work, including courses in chemistry, physics and biology, with laboratory work, and a reading knowledge of one modern language. The curriculum embraces four years of nine months each. The total fees for Michigan students for the entire course of four years is \$350 and for others about \$400. The Dean is Dr. Victor C. Vaughan. The total registration for 1915-16 was 324; graduates, 64. The sixty-seventh session begins Oct. 5, 1915, and ends June 29, 1916.

UNIVERSITY OF MICHIGAN HOMEOPATHIC MEDICAL SCHOOL.—Organized in 1875. The first class graduated in 1877. The work of the first two years is taken in the same classes with the Medical School of the University of Michigan. The entrance requirements are *two years* of collegiate work. The Dean is Dr. W. B. Hinsdale. The total registration for 1915-16 was 44; graduates, 8. The next session begins Oct. 5, 1915, and ends June 9, 1916.

Detroit

DETROIT COLLEGE OF MEDICINE AND SURGERY, 250 St. Antoine Street.—Organized as the Detroit College of Medicine in 1885 by consolidation of Detroit Medical College, organized in 1868, and the Michigan College of Medicine, organized in 1880. Reorganized with present title in 1913. The first class graduated in 1886. Entrance requirements are one year of collegiate work. The faculty embraces 23 professors, 148 lecturers, etc., a total of 171. The course covers four years of eight months each. The fees for the four years, respectively, are \$155, \$150, \$130 and \$130. The Secretary is Dr. Joseph H. Hathaway. The total registration for 1915-16 was 180; graduates, 49. The thirty-second session begins Sept. 25, 1916, and ends May 31, 1917.

MINNESOTA

Minnesota, population 2,226,761, contains one medical school, the University of Minnesota Medical School, situated in Minneapolis, a city of 353,460, inhabitants.

Candidates for license to practice medicine in Minnesota who graduated subsequent to June 1, 1912, in addition to an accredited four-year high school education, must have completed *two years* of work the equivalent of that done in the liberal arts department of the University of Minnesota, including courses in physics, chemistry and biology, prior to beginning the study of medicine.

Minneapolis

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery, reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. The faculty includes 46 professors and 61 instructors and assistants, a total of 107. The curriculum covers four years of nine months each and a year's internship in an approved hospital. The entrance requirements are *two years* of university work which must include one year each of physics, general chemistry, qualitative analysis, zoology or botany, and French or German, all in addition to a four-year high school course, including two years of Latin. Students entering hereafter will be required to secure a degree of B.S. or A.B. before the M.D. is granted. Total fees are \$150 each year. The Dean is Dr. E. P. Lyon. The total registration for 1915-16 was 253; graduates, 51. The twenty-ninth session begins Sept. 27, 1916, and ends June 15, 1917.

MISSISSIPPI

Mississippi, population, 1,926,778, has one medical college, the Department of Medicine of the University of Mississippi, which is located at Oxford, a city of 2,014 inhabitants.

Candidates for license to practice medicine in Mississippi who matriculate in the session of 1915-16 and thereafter, in addition to a standard four-year high school education, must have completed a year's work in an approved college or university, including courses in physics, chemistry, biology and a modern language, before entering on the study of medicine.

Oxford

UNIVERSITY OF MISSISSIPPI DEPARTMENT OF MEDICINE.—Organized in 1903. Gives only the first two years of the medical course. In 1908 a clinical department was established at Vicksburg, but was discontinued in 1910 after graduating one class. The session extends over eight and a half months. Entrance requirements are one year of collegiate work in addition to an accredited four-year high school education. The total fees each year are \$98. The faculty numbers 21. The Dean is Dr. W. S. Leathers. The total registration for 1915-16 was 55. The fourteenth session begins Sept. 20, 1916, and ends May 29, 1917.

MISSOURI

Missouri, population 3,391,789, has seven medical colleges. St. Louis, population 745,988, contains three of these, viz., the School of Medicine of St. Louis University, Washington University Medical School and the Medical Department of the National University of Arts and Sciences. Kansas City, with a population of 289,879, has three colleges, the Eclectic Medical University, the Kansas City College of Medicine and Surgery and the Southwest School of Medicine and Hospital. The School of Medicine of the University of Missouri is at Columbia, a town of 12,103 people.

Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE.—Organized at St. Louis in 1845; was discontinued in 1855, but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. The faculty includes 13 professors and 7 assistant professors, lecturers, etc., a total of 20. The course covers two years of nine months each. The entrance requirements are *two years* of college work including French or German, 8 hours; general zoology, 8 hours; physics, 8 hours; inorganic chemistry, 8 hours, and general bacteriology, 3 hours. Total fees are \$45 each year. The acting Dean is Dr. Guy L. Noyes. Total registration for students for 1915-16 was 74. The next session begins Sept. 18, 1916, and ends June 7, 1917.

Kansas City

ECLECTIC MEDICAL UNIVERSITY, 1423 Independence Avenue.—Organized at Kansas City, Mo., in 1898 with the present title. Moved to Kansas City, Kan., in 1907, and took the name of Western Eclectic College of Medicine and Surgery. Returned to Kansas City, Mo., in 1909 and resumed the present title. First class graduated in 1900. No students or graduates are reported for 1915-16, and it is not known whether the school will reopen. *Reported not in good standing by the Missouri State Board of Health and by thirty other state licensing boards.*

KANSAS CITY COLLEGE OF MEDICINE AND SURGERY, Eclectic, Twenty-Third and Holmes Streets.—An offshoot of the Eclectic Medical University, organized in 1915. It apparently took away all the students from the latter, which reports no students or graduates for 1915-16. The new school had a total registration for 1915-16 of 86; graduates, 12. Since this school is an offshoot of a Class C medical college reported not recognized by the Missouri State Board, no higher rating could be granted to it, pending an inspection.

SOUTHWEST SCHOOL OF MEDICINE AND HOSPITAL, Homeopathic.—Organized in 1915 following the demise of the Kansas City Hahnemann Medical College, occupies the same building and most of the students enrolled were those in the old school. Total enrolment in 1915, was 20; graduates, 8. It was not learned whether the college would reopen. *It is reported as not in good standing by the Missouri State Board of Health.*

St. Louis

WASHINGTON UNIVERSITY MEDICAL SCHOOL, Kingshighway and Euclid Avenue.—Organized in 1842 as the Medical Department of St. Louis University. In 1855 it was chartered as an independent institution under the name of St. Louis Medical College. The first class graduated in 1843. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. The faculty comprises 27 professors and 67 lecturers, instructors, etc., a total of 94. *Two full years* of college work are required for admission including courses in English, physics, chemistry and biology and a reading knowledge of German. The course is four years of eight months each. The total fees for the four years are, respectively, \$155, \$150, \$150, and \$155. The Dean is Dr. Philip A. Shaffer. The total registration for 1915-16 was 92; graduates, 17. The next session begins Sept. 28, 1916, and ends June 14, 1917.

ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE, 1402 South Grand Avenue.—Organized in 1901 as the Marion-Sims-Beaumont Medical College by union of Marion Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical Department of St. Louis University in 1903. The faculty is composed of 48 professors, 85 lecturers and assistants, a total of 133. One year of college subjects preliminary to the four years of medical subjects is given in the medical school. After Nov. 1, 1917, *two years* of collegiate work will be required for admission. The curriculum covers four years of thirty-two weeks each. The total fees are \$150 each year. The Dean is Dr. Hanau W. Loeb. The total registration for 1915-16 was 231; graduates, 44. The next session begins Oct. 2, 1916, and ends June 1, 1917.

NATIONAL UNIVERSITY OF ARTS AND SCIENCES, Medical Department, Garrison and Lawton Avenues.—Organized in 1873 as the American Medical College, and Eclectic Institution. Eclecticism dropped in 1910. Absorbed the Barnes Medical College in 1911. Became the Medical Department of the National University of Arts and Sciences in 1912. Absorbed St. Louis College of Physicians and Surgeons in 1915. Two classes were graduated each year from 1874 to 1883, inclusive. Since then one class has graduated each year. The Secretary is Dr. E. L. Cooley. The total registration for 1915-16 was 149; graduates, 54. The next session begins Sept. 20, 1916, and ends June 10, 1917.

NEBRASKA

Nebraska, population 1,258,624, has three medical colleges. The University of Nebraska College of Medicine and the John A. Creighton Medical College of Omaha, population 135,455, and the Lincoln Medical College at Lincoln, population 46,028.

Lincoln

LINCOLN MEDICAL COLLEGE. Eclectic. Corner 13th and P Streets, Lincoln.—Organized in 1890 as the Lincoln Medical College. Became Cotner University Medical College in 1911. Affiliation with Cotner University cancelled and present title resumed in 1915. The first class graduated in 1891. The total registration for 1915-16 was 25; graduates, 9. *Official reports indicate that diplomas from this college are not recognized by the licensing boards of twenty-nine states.*

Omaha

JOHN A. CREIGHTON MEDICAL COLLEGE, Fourteenth and Davenport Streets. It is the Medical Department of Creighton University.—Organized in 1892. The first class graduated in 1893. It has a faculty of 20 professors and 33 associates, lecturers and assistants, a total of 53. One year of collegiate work is required for admission. The course of study embraces four years of eight months each. The total fees each year are \$130; matriculation fee, \$5. Total registration for 1915-16 was 128; graduates, 41. The thirty-fifth session begins Sept. 22, 1916, and ends June 2, 1917.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE, Forty-Second Street and Dewey Avenue.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The first two years were given at Lincoln and the last two in Omaha until 1913 when all four years were transferred to Omaha. The faculty is composed of 31 professors and 28 lecturers and instructors, total 59. Two years of collegiate work are required for admission including courses in physics, chemistry, zoology and German. The fees for each of the four years, respectively, are \$135, \$130, \$120 and \$120. The Dean is Dr. Irving S. Cutter. Total registration for 1915-16 was 123; graduates, 21. The next session begins Sept. 18, 1916, and ends June 9, 1917.

NEW HAMPSHIRE

New Hampshire, population 440,584, has one medical college, located at Hanover, population 2,075.

To be eligible for license to practice medicine in New Hampshire, all students matriculating in and after the session of 1915-16, in addition to a four-year high school education, must have completed at least *two years* of work in an approved college of liberal arts, prior to beginning the study of medicine.

DARTMOUTH MEDICAL SCHOOL.—Organized as New Hampshire Medical Institute in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Clinical Teaching was discontinued in 1914. The faculty is made up of 10 professors and 2 instructors, a total of 12. Two years of collegiate work are required for admission. The course covers nine calendar months in each year, or eight months of actual teaching. Candidates for the B.S. degree in Dartmouth College may substitute the work of the first two years in medicine for that of the junior and senior years in the academic department. Candidates for the A.B. degree may make a similar saving of one year. The fees for the two years in medicine are, respectively, \$174 and \$175.50. Dean, Dr. John M. Gile; Secretary, Colin C. Stewart. The total registration for 1915-16 was 33. The next session opens Sept. 21, 1916, and ends June 20, 1917.

NEW YORK

New York State, population 10,086,568, has ten medical colleges. Seven of these, College of Physicians and Surgeons (Columbia University), Long Island College Hospital, New York Homeopathic Medical College and Hospital, New York Medical College and Hospital for Women, Cornell University Medical College, the University and Bellevue Hospital Medical College and Fordham University School of Medicine, are located in New York City, population 5,468,190. Albany Medical College is located in Albany, a city of 103,580 people. The University of Buffalo Medical Department is situated in Buffalo, population 461,335. The College of Medicine, Syracuse University, is in Syracuse, a city of 152,534 inhabitants.

Albany

ALBANY MEDICAL COLLEGE, Lancaster and Jay Streets.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915, Union University assumed full control. The faculty is composed of 9 professors and 49 instructors, assistants, etc., a total of 71. One year of collegiate work, including college courses in physics, chemistry, biology and French or German is required for admission. The curriculum covers four years of eight months each. The fees for each year are \$160. The Dean is Dr. Thomas Ordway. The total registration for 1915-16 was 148; graduates, 48. The eighty-sixth session begins Sept. 25, 1916, and ends June 8, 1917.

Buffalo

UNIVERSITY OF BUFFALO MEDICAL DEPARTMENT, High Street, near Main.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. The faculty is composed of 31 professors and 74 lecturers, assistants, etc., a total of 105. One year of collegiate work, including college courses in physics, chemistry and biology are required for admission. The course covers four years of eight months each. The total fees for the four years, respectively, are \$185, \$180, \$140 and \$140. The Dean is Dr. Thomas H. McKee. Total registration for 1915-16 was 181; graduates, 35. The seventy-first session begins Sept. 25, 1916, and ends June 8, 1917.

New York

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, 437 West Fifty-Ninth Street.—Organized in 1807 by the regents of the University of the State of New York as their medical department. The first class graduated in 1811. In 1860 it became, by affiliation, the Medical Department of Columbia College. It was made a permanent part of Columbia College by legislative enactment in 1891. That institution became Columbia University in 1896. The faculty is composed of 17 professors and 233 instructors, demonstrators, etc., a total of 250. Two years of collegiate work, including courses in physics, chemistry and biology and either French or German are required for admission. The work covers four years of eight months each. The Dean is Dr. Samuel W. Lambert. The total fees for the four years, respectively, are \$265, \$251, \$250 and \$275. Total registration for 1915-16 was 419; graduates, 73. The one hundred and ninth session begins Sept. 27, 1916, and ends June 6, 1917.

CORNELL UNIVERSITY MEDICAL COLLEGE, First Avenue and Twenty-Eighth Street, New York City and Ithaca.—Organized in 1898. The first class was graduated in 1899. The work of the first year may be taken either in Ithaca or New York. The faculty is composed of 43 professors and 76 assistants, lecturers, instructors, etc., a total of 124. All candidates for admission must be graduates of approved colleges or scientific schools or seniors of approved colleges which will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the Bachelor degree on the completion of the year's work. The candidate must also have such knowledge of physics, inorganic chemistry and biology as may be obtained in college by a year's course in these subjects when accompanied by laboratory work. The fees for each of the four years are, respectively, \$190, \$185, \$185 and \$200. The Dean is Dr. William M. Polk. Total registration for 1915-16 was 151; graduates, 30. The nineteenth session begins Sept. 27, 1916, and ends June 16, 1917.

FORDHAM UNIVERSITY SCHOOL OF MEDICINE, Bathgate Avenue and Fordham Road.—Organized in 1905 as the School of Medicine of St. John's College. Present title assumed in 1907. First class graduated in 1909. The faculty consists of 51 professors and 59 lecturers and assistants, a total of 110. The course of instruction covers four years of eight and a half months each. Total fees for the four years, respectively, are \$216, \$216, \$212 and \$210. A year's work in a recognized college of liberal arts, including college courses in physics, chemistry and biology is required for admission. The Dean is Dr. William P. Healy. The total registration for 1915-16 was 256; graduates, 42. The twelfth session begins Sept. 29, 1916, and ends June 11, 1917.

LONG ISLAND COLLEGE HOSPITAL, Henry Street, near Atlantic Avenue, Brooklyn.—Organized in 1858. The first class graduated in 1860. It has a faculty of 16 professors and 111 assistants, instructors, etc., a total of 127. A year of collegiate work, including college courses in physics, chemistry and biology is required for admission. In and after 1918-19 two years of collegiate work will be required for admission. The course covers four years of eight months each. Fees: first year, \$210; second year, \$205; third, \$200, and \$200 for the fourth year. The secretary is Dr. Otto V. Huffman. Total registration 1915-16 was 272; graduates, 84. The fifty-ninth session begins Sept. 25, 1916, and ends June 1, 1917.

NEW YORK HOMEOPATHIC MEDICAL COLLEGE AND FLOWER HOSPITAL, Eastern Boulevard, between Sixty-Third and Sixty-Fourth Streets.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title, New York Homeopathic Medical College, was assumed in 1869. Present title assumed in 1908. The first class graduated in 1861. The faculty consists of 26 professors and 55 assistants, lecturers, etc., a total of 81. The total fees for each year of the four years, respectively, are \$190, \$185, \$175 and \$205. The Dean is Dr. Royal S. Copeland. Total registration for 1915-16 was 177; graduates, 63. The fifty-seventh session begins Sept. 26, 1916, and ends June 6, 1917.

NEW YORK MEDICAL COLLEGE AND HOSPITAL FOR WOMEN (Homeopathic) 17-19 West One Hundred and First Street.—Organized in 1863. The first class graduated in 1864. The faculty numbers 73. One year of collegiate work is required for admission which must include courses in physics, chemistry and biology. The course covers four years of thirty weeks each. The fees for each of the four years, respectively, are \$180, \$175, \$160 and \$180. The Dean is Dr. Cornelia C. Brant. The total registration for 1915-16 was 47; graduates, 11. The fifty-fourth session begins Sept. 20, 1916, and ends June 1, 1917.

UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE, First Avenue and Twenty-Sixth Street.—Organized in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. It is the Medical Department of New York University. First class graduated in 1899. The faculty is composed of 53 professors and 127 instructors, etc., in all 180. The course covers four years of eight months each. Entrance requirements are one year of collegiate work, in addition to a standard four-year high school course, including college courses in physics, chemistry and biology. On and after Jan. 1, 1918 (session of 1918-19), two years of college work will be required for admission, including course in the prescribed sciences and a modern language. The fees are \$200 per year; graduation fee, \$25. The Dean is Dr. Samuel A. Brown. Total registration for 1915-16 was 395; graduates, 46. The next session begins Sept. 20, 1916, and ends June 6, 1917.

Syracuse

SYRACUSE UNIVERSITY COLLEGE OF MEDICINE, 307-311 Orange Street.—Organized in 1872, when the Geneva Medical College, chartered in 1833, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title assumed in 1875, when a compulsory three-year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Two years of a recognized college course are required for admission. The course covers four years of thirty-five weeks each. The total fees are \$175 annually. The faculty is composed of 21 professors and 59 associate and assistant professors, lecturers and instructors. The Dean is Dr. John L. Heffron. The total enrollment for 1915-16 was 115; graduates, 24. The forty-fifth session begins Sept. 19, 1916, and ends June 12, 1917.

NORTH CAROLINA

North Carolina, population 2,371,095, has three medical schools, each of which gives only the first two years of the medical course. The School of Medicine of the University of North Carolina is located at Chapel Hill, population 1,149. The Leonard Medical School is at Raleigh, population 19,980. Wake Forest College School of Medicine is at Wake Forest, population 1,443.

Chapel Hill

UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department at Raleigh. The first class graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. One year of collegiate work is required for admission. The faculty is composed of 12 professors and 13 lecturers, assistants, etc., a total of 25. The total fees for the two years, respectively, are \$120 and \$125. The Dean is Dr. I. H. Manning. The total registration for 1915-16 was 77. The thirty-first session begins Sept. 12, 1916, and ends June 6, 1917.

Raleigh

LEONARD MEDICAL SCHOOL.—Colored. This department of Shaw University was established in 1882. Classes were graduated in 1886, 1888 and in all subsequent years, including 1914 when clinical teaching was discontinued. A year of collegiate work is required for admission. It has a faculty of 5. The course covers four years of seven and a half months each. The total fees for each year are \$30; graduation fee, \$10. The Dean is Dr. George H. Stoddard. Total registration for 1915-16 was 5. The thirty-fifth session begins Sept. 27, 1916, and ends May 9, 1917.

Wake Forest

WAKE FOREST COLLEGE SCHOOL OF MEDICINE.—This school was organized in 1902. The faculty, including the professors of chemistry, physics and biology, numbers 8, exclusive of laboratory assistants. Only the first two years of the medical course are offered after the completion of freshmen and sophomore college work, and on this combined course the B.S. degree is conferred. Each annual course extends over nine months. The fees for each year aggregate \$103. The Secretary is E. B. Earnshaw. The total registration for 1915-16 was 34. The fifteenth session begins Sept. 5, 1916, and ends May 25, 1917.

NORTH DAKOTA

North Dakota, population 713,083, has one medical college, the School of Medicine of the University of North Dakota, which is situated at University, a suburb of Grand Forks, a city of 15,332 people. It gives only the first two years of the medical course.

Candidates for license to practice medicine in North Dakota who graduated in 1912 and thereafter, in addition to a four-year high school education must have completed *two years* of work in an approved college of liberal arts including courses in Latin, physics, chemistry, botany and zoology, prior to beginning the study of medicine. Beginning in 1918 every applicant for a license must show evidence of having spent at least one year as an intern in a hospital.

University

UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE.—Organized in 1905. The faculty is composed of 6 professors and 12 instructors, a total of 18. The course consists of *two years* of academic work and two years of medicine, occupying nine months each year. The total fee for each of the medical years is \$50. The Dean is Dr. Harley E. French. The total registration for 1915-16 was 23. The eleventh session begins Sept. 26, 1916, and ends June 20, 1917.

OHIO

Ohio, population 5,038,627, has five medical colleges. Two of these, the Medical College of the University of Cincinnati and the Eclectic Medical College, are located in Cincinnati, a city of 406,706 inhabitants. Cleveland, population 656,975, contains one medical school, Western Reserve University School of Medicine. Columbus, population 209,722, contains the two departments of the Ohio State University, the College of Medicine and the College of Homeopathic Medicine.

Cincinnati

UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE, Clifton Avenue, west of Vinc Street.—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged into the University, when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. The faculty consists of 47 professors, 94 associates, assistants, etc., a total

of 141. The course covers four years of eight months each. The fees for each of the first three years are \$150 and for the fourth year, \$170. The Dean is Dr. Christian R. Holmes. The total registration for 1915-16 was 88; graduates, 22. The next session begins Oct. 3, 1916, and ends June 16, 1917.

ELECTIC MEDICAL COLLEGE, 630 West Sixth Street.—Organized in 1833 at Worthington as the Worthington Medical College. Removed to Cincinnati in 1843. In 1845 it was chartered as the Eclectic Medical Institute. In 1857 the American Medical College, organized in 1839, was merged into it, and in 1859 the Eclectic College of Medicine and Surgery, organized in 1856, was merged into it. In 1910 it assumed its present title. Classes were graduated in 1833 and in all subsequent years except 1839 to 1843, inclusive. It has a faculty of 25 professors and 10 lecturers and assistants, a total of 35. One year of college work is required for admission. The course covers four years of eight months each. The fees are \$120 for each year. The Secretary is Dr. John K. Scudder. Total registration for 1915-16 was 101; graduates, 28. The next session begins Sept. 14, 1916, and ends May 14, 1917.

Cleveland

WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE, 1353 East Ninth Street.—Organized in 1843 as the Cleveland Medical College. The first class graduated in 1844. It assumed the present title in 1881. In 1910 it absorbed the Cleveland College of Physicians and Surgeons. The faculty includes 38 professors and 58 lecturers, assistants, etc., a total of 96. The curriculum embraces four years of eight and one-half months each. Three years of college work are required for admission. The total fees for each of the four years are, respectively, \$162, \$155, \$150 and \$155. The Secretary is Dr. F. C. Waite. The total registration for 1915-16 was 178; graduates, 49. The seventy-fourth session begins Sept. 28, 1916, and ends June 14, 1917.

Columbus

OHIO STATE UNIVERSITY COLLEGE OF MEDICINE, Buttles Avenue and Park Street.—Organized in 1907 as the Starling-Ohio Medical College by the union of Starling Medical College (organized 1847) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. The faculty consists of 42 professors and 56 lecturers, demonstrators, etc., a total of 98. *Two years* of collegiate work are required for admission. The course covers four years of eight months each. Tuition fees are \$150 each year. The Dean is Dr. E. F. McCampbell. The total registration for 1915-16 was 185; graduates, 61. The next session begins Sept. 19, 1916, and ends June 23, 1917.

OHIO STATE UNIVERSITY COLLEGE OF HOMEOPATHIC MEDICINE.—Organized in 1914, when the property of the Cleveland-Pulte Medical College of Cleveland was transferred to the Ohio State University. The faculty numbers 17. *Two years* of college work are required for admission. Tuition fees are \$150 each year. The Dean is Dr. Claude A. Burrett. The total registration for 1915-16 was 39; graduates, 7. The third session begins Sept. 19, 1916, and ends June 23, 1917.

OKLAHOMA

Oklahoma, population 2,114,307, has one medical college, the School of Medicine of the University of Oklahoma. The work of the first and second years is given in the academic laboratories at Norman, a city of 3,724 inhabitants. The work of the third and fourth years is given in Oklahoma City, which has a population of 88,158 and which is eighteen miles north of Norman.

To be eligible for license to practice medicine in Oklahoma, all students matriculating in 1914-15, in addition to a four-year high school education, must have completed at least one year of work in an approved college of liberal arts, including courses in physics, chemistry, biology and a modern language prior to beginning the study of medicine. For students matriculated in and after 1917-18, two years of preliminary college work will be required.

Norman and Oklahoma City

UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE.—Organized in 1900. Gave only the first two years of the medical course until 1910, when a clinical department was established at Oklahoma City. It has a faculty of 46 professors and 8 instructors, a total of 54. One year of collegiate work is required for admission and beginning with the session of 1917-18 *two years* will be required. The course is four years of nine months each. An optional course of six years is offered for the degrees of B.S. and M.D. The total fees for the four years are, respectively, \$55, \$43, \$25 and \$25. The Dean is Dr. Leroy Long, 325 East Fourth Street, Oklahoma City. The total registration for 1915-16 was 75; graduates, 20. The seventeenth session begins Sept. 19, 1916, and ends June 5, 1917.

OREGON

Oregon, population 809,490, has one medical college, the University of Oregon Department of Medicine located in Portland, a city of 272,833 population.

Portland

UNIVERSITY OF OREGON DEPARTMENT OF MEDICINE, Lovejoy and Twenty-Third Streets.—Organized in 1887. The first class graduated in 1888. A class graduated each subsequent year except 1898. Became an integral part of the University of Oregon in 1910. The Willamette University Medical Department was merged in 1913. It has a faculty

of 28 professors and 35 lecturers, assistants, etc., a total of 63. Entrance requirements are one year of college work or its equivalent. The course is four years of eight months each. Fees: Matriculation, \$5; tuition, \$150 each year. The Dean is Dr. K. A. J. Mackenzie. The total registration for 1915-16 was 81; graduates, 16. The thirtieth session begins Oct. 1, 1916, and ends June 1, 1917.

PENNSYLVANIA

Pennsylvania, population 8,383,992, has six medical colleges. Of these, Philadelphia, having a population of 1,683,664, contains five, as follows: University of Pennsylvania School of Medicine, Jefferson Medical College, Hahnemann Medical College and Hospital, Woman's Medical College of Pennsylvania and Temple University Department of Medicine. The other school, the School of Medicine of the University of Pittsburgh, is situated in Pittsburgh, a city of 571,984.

To be eligible for license to practice medicine in Pennsylvania, students matriculating in the session 1914-15 and thereafter, in addition to a four-year high school education must have completed a year's work either in an approved college of liberal arts or in a preliminary year in the medical college, including college courses in physics, chemistry and biology, before beginning the study of medicine. He must also have completed an internship of at least one year in an approved hospital.

Philadelphia

UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE, Thirty-sixth Street and Hamilton Walk.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772-79, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title, School of Medicine of the University of Pennsylvania was adopted in 1909. It granted the first medical diploma issued in America. In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. The faculty is made up of 49 professors, associate, adjunct and assistant professors, and 130 lecturers, associates, instructors, etc., a total of 179. The minimum requirements for admission are a standard four-year high school course or its equivalent, plus *two years* of work in an approved College of Arts and Science, including courses in French or German, and in physics, chemistry and general biology or zoology, with appropriate laboratory exercises. The course embraces four years of study of thirty-four weeks each. The total fees for each of the four years are, respectively, \$233, \$210, \$210 and \$214. The Dean is Dr. William Pepper. Total registration for 1915-16 was 317; graduates, 74. The one hundred and fifty-first session begins Sept. 29, 1916, and ends June 20, 1917.

JEFFERSON MEDICAL COLLEGE, Tenth and Walnut Streets.—Organized in 1825 with its present title as the Medical Department of Jefferson College, Canonsburg, Pa. Classes have been graduated annually since 1826. In 1838 a separate university charter was granted without change of title since which time it has continued under the direction of its own board of trustees. It has a faculty of 42 professors, associate and assistant professors, and 106 associates, lecturers, demonstrators and instructors, a total of 148. Entrance requirements are a completed standard four-year high school or college preparatory course, or the equivalent, and in addition *two years* of work in an approved college of arts and science, including courses in a modern language other than English, with specified courses in physics, chemistry and biology with laboratory-work amounting to 8 semester hours each. The course of study covers graded work of four years of eight and a half months each. The tuition is \$200 a year with a matriculation fee of \$5 paid on admission. The Dean is Dr. Ross V. Patterson. The total registration for 1915-16 was 538; graduates, 162. The ninety-second session begins September 25, 1916 and ends June 2, 1917.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, Twenty-First and N. College Avenue.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. It has a faculty of 11 professors and 48 assistants, lecturers, etc., in all 59. Entrance requirements are a completed course in a standard secondary school, and in addition *two years* of collegiate work, including courses in physics, chemistry, biology and two foreign languages, one of which must be French or German. The curriculum covers four years of eight months each. Fees for each of the four years are, respectively, \$192, \$176, \$183 and \$179.50. The Dean is Dr. Clara Marshall. The total registration for 1915-16 was 55; graduates, 17. The seventy-seventh session begins Sept. 20, 1916, and ends June 6, 1917.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF PHILADELPHIA, 226 North Broad Street.—Organized in 1848 as the Homeopathic Medical College of Pennsylvania. In 1869 it united with the Hahnemann Medical College of Philadelphia, taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Entrance requirements are a completed course in a standard secondary school and in addition a preliminary year devoted to college courses in physics, chemistry and biology. It has a faculty of 48 professors and 41 lecturers, instructors, etc., in all 89. The work covers four years of eight and a half months each. Total fees for the four years, respectively, are \$185, \$185, \$175 and \$175. The Dean is Dr. William A. Pearson. The total registration for the college year 1915-16 was 98; graduates, 20. The sixty-ninth session begins Oct. 1, 1916, and ends May 31, 1917.

THE TEMPLE UNIVERSITY DEPARTMENT OF MEDICINE, Eighteenth and Buttonwood Streets.—Organized in 1901. The first class graduated in 1904. The faculty numbers 98. The fees for each of the four years, respectively, are \$168.50, \$167, \$151 and \$161. The Dean is Dr. Frank C. Hammond. The total registration for 1915-16 was 46; graduates, 13. The sixteenth session begins Sept. 18, 1916, and ends June 9, 1917.

Pittsburgh

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE, Grant Boulevard.—Organized in 1886, as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. The faculty is composed of 19 professors and 89 associates, assistants, etc., 108 in all. Entrance requirements are *two years* of recognized college work, to have included essentially courses in chemistry (inorganic and organic), physics, biology and German or French, based on a four-year high school preparation. It is possible for students to get the degree of B.S. and M.D. in six years. The course of study for medicine alone is four years of eight and a half months each. The tuition is \$250 a year. The Dean is Dr. Thomas S. Arbuthnot. The total registration for 1915-16 was 111; graduates, 22. The thirty-first session begins Sept. 25, 1916, and ends June 13, 1917.

SOUTH CAROLINA

South Carolina, population 1,607,745, has one medical college, situated in Charleston, a city of 60,427 people.

Charleston

THE MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA, Lucas and Calhoun Streets.—Organized in 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they were merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. In 1913, by legislative enactment, it became a state institution. It has a faculty of 32 professors and 28 lecturers, instructors, etc., a total of 60. The course covers four years of eight months each. *Two years* of collegiate work including courses in physics, chemistry and biology are required for admission in addition to a standard high school preparation. The total fees are \$140 each year. The Dean is Dr. Robert Wilson, Jr. Total enrolment for 1915-16 was 61; graduates, 16. The eighty-eighth session begins Oct. 2, 1916, and ends June 7, 1917.

SOUTH DAKOTA

South Dakota, population 680,046, has one medical college, the University of South Dakota College of Medicine, located at Vermilion, a town of 2,187 people.

To be eligible for license to practice medicine in South Dakota, graduates of 1915 and thereafter must show that they matriculated in and graduated from medical colleges which required at least *two years* of collegiate work for admission, including courses in physics, chemistry, biology and a modern language. This affects all students who matriculated in the session of 1911-12 and thereafter.

Vermilion

UNIVERSITY OF SOUTH DAKOTA COLLEGE OF MEDICINE.—Organized in 1907. Offers only the first two years of the medical course. *Two years* work in a college of liberal arts is required for admission. The fees are \$60 each year. The faculty numbers 10. The Dean is Christian P. Lommen, B.S. The total registration for 1915-16 was 12. The tenth session begins Sept. 19, 1916, and ends June 14, 1917.

TENNESSEE

Tennessee, population 2,271,379, has four medical colleges. Of these Vanderbilt University Medical Department and Meharry Medical College are situated in Nashville, a city with a population of 115,978. The College of Medicine of the University of Tennessee and the University of West Tennessee College of Medicine and Surgery are located in Memphis, population 146,113.

To be eligible for a license to practice medicine in Tennessee students matriculating in the session of 1914-15 and thereafter must have completed one year of collegiate work including courses in physics, chemistry, biology and a modern language in addition to a four year high school course before entering on the study of medicine.

Memphis

UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE, three buildings, 87 Madison Avenue, 880 Monroe Avenue and 718 Union Avenue.—Organized in 1876 at Nashville as Nashville Medical College. First class graduated 1877, and a class graduated each subsequent year. Became Medical Department University of Tennessee 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor in medical teaching, transferring all of its college and hospital equipment to the successor. This college then removed to Memphis, where united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. Entrance requirements are a completed secondary education plus one year of collegiate work. The fees are \$100 per year for bona fide residents of the state, and \$150 per year for non-residents; for the fourth year, \$175. The Dean is Dr. Herbert Thomas Brooks. Total registration for 1915-16 was 18.

graduates, 74. These figures include 21 students from the Lincoln Memorial University, 14 of whom were granted diplomas by the latter this year. The next session begins Sept. 23, 1916, and ends June 6, 1917.

UNIVERSITY OF WEST TENNESSEE COLLEGE OF MEDICINE AND SURGERY, Colored. 1190 South Phillips Place.—Organized in 1900. The first class graduated in 1904, and a class graduated each subsequent year. It has a faculty of 22. The course covers four years. One year of college work is required for admission. The fees are \$55 per year; graduation, \$10 extra. The Dean is Dr. M. V. Lynk. Registration for 1915-16 was 27; graduates, 9. The seventeenth session begins Sept. 14, 1916, and ends May 3, 1917. *Official reports indicate that the diplomas of this college are not recognized as an acceptable qualification for the license by the licensing boards of thirty-four states.*

Nashville

VANDERBILT UNIVERSITY MEDICAL DEPARTMENT.—This school was founded in 1874. The first class graduated in 1875. The faculty consists of 25 professors and 59 lecturers, a total of 84. One year of collegiate work is required for admission. The course covers four years of nearly eight and a half months each. The total fees for each of the first three years are \$150, and for the fourth year, \$175. The Dean is Dr. L. E. Burch. The total registration for 1915-16 was 212; graduates, 90. The forty-third session begins Oct. 2, 1916, and ends June 13, 1917.

MEHARRY MEDICAL COLLEGE, Colored. First Avenue, South, and Chestnut Street.—This school was organized in 1876 as the Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1916. The faculty is made up of 13 professors and 12 instructors, demonstrators, etc., 25 in all. The work embraces four years of thirty weeks each. The total fees for each of the first three years are \$70 and for the fourth year, \$80. The Dean is Dr. G. W. Hubbard. Total registration for 1915-16 was 301; graduates, 93. The forty-first session begins Sept. 19, 1916, and ends May 3, 1917.

TEXAS

Texas, population 4,343,710, has three medical colleges. The University of Texas Department of Medicine is located at Galveston, a city of 41,076 inhabitants. The Fort Worth School of Medicine is at Fort Worth, population 99,528. The Baylor University College of Medicine is located in Dallas, population 118,482.

To be eligible for a license to practice medicine in Texas, students matriculating in the session of 1914-15 and thereafter must have completed a year of collegiate work including courses of physics, chemistry, biology and a modern language, in addition to a standard four-year high school course before entering on the study of medicine.

Dallas

BAYLOR UNIVERSITY COLLEGE OF MEDICINE, 720 College Avenue.—Organized in 1900 as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University at Waco. It acquired the charter of Dallas Medical College in 1904. The first class graduated in 1901. The faculty numbers 54. Entrance requirement is one year of college work in addition to a four-year high school education. The course is four years of eight months each. The fees are \$115 each year; matriculation fee of \$5, paid but once; graduation fee, \$25. The Dean is Dr. E. H. Cary. Total registration for 1915-16 was 59; graduates, 25. The seventeenth session begins Oct. 2, 1916, and ends May 31, 1917.

Fort Worth

FORT WORTH SCHOOL OF MEDICINE, Medical Department of Texas Christian University, Calhoun and Fifth Streets.—Organized in 1894 as the Fort Worth School of Medicine. It was the Medical Department of the Fort Worth University until 1911, when it became affiliated with Texas Christian University. The first class graduated in 1895. The Dean is Dr. Samuel A. Woodward. The total registration for 1915-16 was 50; graduates 7. The twenty-third session begins Sept. 18, 1916, and ends June 7, 1917.

Galveston

UNIVERSITY OF TEXAS DEPARTMENT OF MEDICINE, on the Strand, between Ninth and Tenth Streets.—Organized in 1891. The first class graduated in 1892. It has a faculty of 16 professors and 16 lecturers, a total of 32. The curriculum embraces four years of eight months each. The entrance requirement is one year of collegiate work in addition to a four-year high school education. This requirement will be increased to two years of college work in and after the session of 1917-18. The total fees for the four years, respectively, are \$60, \$30, \$15 and \$10. The Dean is Dr. William S. Carter. Total registration for 1915-16 was 215; graduates, 35. The twenty-sixth session begins Oct. 1, 1916, and ends May 31, 1917.

UTAH

Utah, population 424,300, has one medical college, the School of Medicine of the University of Utah, situated at Salt Lake City, which has 113,567 people.

To be eligible to secure licenses to practice medicine in Utah, students matriculating in and after the session of 1912-13, in addition to a four-year high school education, must have completed at least one year of collegiate work

prior to beginning the study of medicine, this preliminary college work to have included college courses in physics, chemistry and biology.

Salt Lake City

UNIVERSITY OF UTAH SCHOOL OF MEDICINE.—Organized in 1906. Gives only first two years of medical course. Each course covers thirty-six weeks. Two years of collegiate work are required for admission. The medical faculty consists of 10 professors and 12 lecturers and assistants, a total of 22. The fees are \$70 each year for residents, and \$95 each year for non-residents. The Dean is Dr. Perry G. Snow. Total registration for 1915-16 was 23. The tenth session begins Sept. 18, 1916, and ends June 7, 1917.

VERMONT

Vermont, population 362,452, has one medical school, located at Burlington, a town of 21,432 people.

Students matriculating in and after the session of 1912-13 who desire to practice medicine in Vermont must have obtained a preliminary training of at least one year of collegiate work in addition to a standard four-year high school education, this additional year's work to include college courses in physics, chemistry and biology.

Burlington

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. The faculty numbers 45. One year of college work in addition to a four-year high school education is required for admission. The course of study covers four years of nine months each. The total fees for each of the first three years are \$145, and \$170 for the fourth year. The Dean is Dr. H. C. Tinkham. The total registration for 1915-16 was 76; graduates, 13. The next session begins Sept. 27, 1916, and ends June 27, 1917.

VIRGINIA

Virginia, population 2,171,014, has two medical colleges, one the Department of Medicine of the University of Virginia, situated in Charlottesville, population 6,765, and the Medical College of Virginia at Richmond, population 154,674.

Only graduates of medical colleges registered by the Virginia State Board of Medical Examiners are eligible to obtain licenses to practice medicine in this state. Medical colleges to be so registered must require of all students admitted in the session of 1914-15, completion of at least one year, and in the session of 1917-18 and thereafter two years of collegiate work including courses in physics, chemistry, biology and a modern language, preferably German, in addition to a four-year high school education.

Charlottesville

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. It has a faculty of 15 professors and 20 lecturers, instructors, assistants, etc., a total of 35. The requirements for admission are the completion of a four-year high school course, or its equivalent, and a year of college work devoted to chemistry, physics and biology. In 1917 and thereafter two years of preliminary college preparation will be required for admission, including the specified sciences and French or German. Total fees each year are \$140; matriculation fee, \$10. The Dean is Dr. Theodore Hough. The total registration for 1915-16 was 114; graduates, 21. The eighty-eighth session begins Sept. 4, 1916, and ends June 13, 1917.

Richmond

MEDICAL COLLEGE OF VIRGINIA, Marshall and College Streets.—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Classes were graduated in 1840 and in all subsequent years. It has a faculty of 45 professors and 88 lecturers, instructors, etc., a total of 133. The requirement for admission is a four-year high school education and in addition two years of collegiate work, including courses in physics, chemistry, biology and French or German. The course embraces four years of eight months each. Fees, \$164 for the first year and \$144 for each subsequent year; graduation fee, \$30. The Dean is Dr. Stuart McGuire. The total registration for 1915-16 was 296; graduates, 91, including 30 students of the North Carolina Medical College and 8 who were granted degrees by the latter. The eighty-eighth session begins Sept. 20, 1916, and ends June 5, 1917.

WEST VIRGINIA

West Virginia, population 1,359,474, has one medical college, the School of Medicine of West Virginia University, which offers the first two years of the medical course. It is located at Morgantown, a city of 12,974 population.

Morgantown

WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1902, and gives only the first two years of the medical course. One year of work in an approved college of liberal arts is required for admission. In 1917 and thereafter *two years* of college work will be required for admission and the Bachelor's degree will be granted to those who finish the two years in medicine. Session extends through nine months. The faculty numbers 11. Fees: For residents of the state, \$25 each year; for nonresidents, \$50. The Dean is Dr. John N. Simpson. The total registration for 1915-16 was 17. The next session begins Sept. 18, 1916, and ends June 13, 1917.

WISCONSIN

Wisconsin, population 2,473,533, has two medical colleges, the Medical School of the University of Wisconsin, which teaches the first two years of the medical course, and is located at Madison, a city of 30,084 people, and the Marquette University School of Medicine, located at Milwaukee, a city of 428,062 people.

To be eligible for licenses to practice medicine in Wisconsin, students matriculating in and after the session of 1915-16, prior to entering a medical school must have completed, besides a four-year high school course, *two years* of collegiate work including courses in physics, chemistry, biology and a modern language.

Madison

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL.—Organized in 1907. Gives only the first two years of the medical course. For matriculation at least *two years* in a college of arts and science or an equivalent training are required, including two years of Latin, a reading knowledge of French or German, and at least a year's work in physics, chemistry and biology. It has a faculty of 14 professors and 8 lecturers, instructors, etc., a total of 22. Tuition fees: For residents of the state, \$70 each year; for nonresidents, \$190. The Dean is Dr. Charles R. Bardeen. The registration for 1915-16 was 101. The ninth session begins Sept. 18, 1916, and ends June 20, 1917.

Milwaukee

MARQUETTE UNIVERSITY SCHOOL OF MEDICINE, Fourth Street and Reservoir Avenue.—Organized in December, 1912, by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. It has a faculty of 16 professors and 89 assistants, instructors, etc., a total of 105. The entrance requirements include, in addition to a four-year high school education, *two years* of college work, including courses in physics, chemistry, biology and a modern language. The curriculum is for four years of thirty-four weeks each. The total fees for the four years, respectively, are \$175, \$170, \$170 and \$195. The dean is Dr. Louis F. Jermain. The registration for 1915-16 was 87; graduates, 46. The fifth session begins Sept. 18, 1916, and ends June 14, 1917.

PHILIPPINE ISLANDS

The Philippine Archipelago, having a population (estimated 1912) of 8,460,052, has two medical colleges, the University of the Philippines College of Medicine and Surgery and the Medical Faculty of the University of St. Thomas. They are located in the city of Manila, which in 1910 had a population of 234,409.

Manila

UNIVERSITY OF THE PHILIPPINES COLLEGE OF MEDICINE AND SURGERY, Manila.—Organized in 1907 as the Philippine Medical School, under the support of the government of the Philippine Islands. Present title in 1910. The faculty includes 30 professors and 45 lecturers, assistants, etc., a total of 75. *Two years* of collegiate work leading to the degree of Bachelor of Arts are required for admission. The course extends over five years of nine months each with an additional sixth year of intern service. The Dean is Dr. William E. Musgrave. The total registration for 1915-16 was 159; graduates, 5. The tenth session began July 1, 1916, and ends April 4, 1917.

CANADA

The Dominion of Canada has nine medical colleges, all but one of which require a five-year course, including in the first year courses in physics, chemistry and biology. This course is practically equal to that in the colleges of the United States which require one year of college work for admission, including the science courses named. None of the Canadian colleges has a minimum requirement of two years of collegiate work, or its equivalent, preliminary to or as a part of the medical course. A new medical school at Edmonton, Alberta, gives only the first two years of the medical course, or three years including the preliminary science year.

Alberta

UNIVERSITY OF ALBERTA, FACULTY OF MEDICINE, Edmonton.—Organized in 1913. Offers only the first three years of the five-year medical course, including the preliminary science year. The faculty numbers 15. Fees for the first year are \$60; for the second and third years, each \$85.

The registrar is Cecil E. Race, B.A. The registration for 1915-16 was 42. The fourth session begins Sept. 30, 1916, and ends May 16, 1917.

Manitoba

MANITOBA MEDICAL COLLEGE, Winnipeg.—It is the Medical Faculty of the University of Manitoba. Organized in 1883, first class graduated in 1886 and a class graduated each subsequent year. The faculty numbers 58. The fees are \$155 for the first year and \$150 for each subsequent year. The entire course covers five years, the first year including premedical courses in physics, chemistry and biology. The Dean is Dr. H. H. Chown, 263 Broadway, Winnipeg. Total registration for 1915-16 was 134; graduates, 19. The next session begins Sept. 20, 1916, and ends May 11, 1917.

Nova Scotia

DALHOUSIE UNIVERSITY, FACULTY OF MEDICINE, Halifax, N. S.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College in 1855. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the University. By an arrangement between Dalhousie University and the Provincial Medical Board of Nova Scotia, the final professional examinations are conducted conjointly by the University and the Board, and candidates may qualify at the same time for their academic degrees and the provincial license. First class graduated in 1872. It has a faculty of 38 professors, lecturers and demonstrators. Requires matriculation examination and a graded course of five years, including premedical courses in physics, chemistry and biology. The fees are \$110 each year. Total registration for 1915-16 was 68; graduates, 12. The Secretary is Prof. D. Fraser Harris. The next session begins Sept. 13, 1916, and ends May 10, 1917.

Ontario

UNIVERSITY OF TORONTO, FACULTY OF MEDICINE, Toronto.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University, Medical Department, and in 1903 absorbed Trinity Medical College. The course of study covers five years of eight months each, the first year including premedical courses in physics, chemistry and biology. It has a faculty of 51 professors and 134 lecturers, associates, etc., a total of 185. The fees are \$150 each year; graduation fee \$20. The Secretary is Dr. A. Primrose. The total registration for 1915-16 was 527; graduates, 93. The next session begins Sept. 26, 1916, and ends May 26, 1917.

QUEEN'S UNIVERSITY FACULTY OF MEDICINE, Kingston.—Organized 1854, first class graduated in 1855, and a class graduated each subsequent year. The faculty was originally a department of the University, but a separation took place in 1866, when the school was conducted under the charter of the Royal College of Physicians and Surgeons at Kingston. In 1892 the school again became an integral part of Queen's University. The faculty includes 25 professors and 14 assistants, instructors, etc., a total of 39. The fees amount to \$105 each year; fee for M.D., C.M. degrees, \$30. The course covers five years of seven months each, the first year including premedical courses in physics, chemistry and biology. The total registration in 1915-16 was 204; graduates, 41 (including 30 who obtained the M.B. degree, and 11 the M.D. degree). The Dean is Dr. J. C. Connell. The next session begins Sept. 13, 1916, and ends April 25, 1917.

WESTERN UNIVERSITY, FACULTY OF MEDICINE, London.—Organized in 1881, first class graduated in 1883, and a class graduated each year subsequently. The Faculty of Medicine became an integral part of Western University in 1913. The faculty numbers 59. The course is five years of eight months each, the first year including premedical courses in physics, chemistry and biology. The total fees each year are \$115; matriculation fee \$5; graduation fee \$25. The Dean is Dr. H. A. McCallum. Total registration for 1915-16 was 68; graduates, 16. The next session begins Oct. 2, 1916, and ends May 18, 1917.

Montreal

MCGILL UNIVERSITY, FACULTY OF MEDICINE.—Founded 1824 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-39 owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop College. The course extends over five years of eight months each, including the preliminary year devoted largely to physics, chemistry and biology. The faculty numbers 130. The total fees for the five years respectively are \$174, \$174, \$181, \$174 and \$204. The total registration for 1915-16 was 317; graduates, 28. The Registrar is Dr. John W. Scane. The next session begins Oct. 1, 1916, and ends June 6, 1917.

MONTREAL SCHOOL OF MEDICINE AND SURGERY, Montreal.—Organized in 1843, incorporated in 1845. In 1891, by act of parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed. Present name assumed in 1911. A class was graduated in 1843 and in each subsequent year. The faculty numbers 75. The course extends over five years, including premedical courses in physics, chemistry and biology. The total fees for the five years, respectively, are \$110, \$118, \$126, \$126 and \$138. The Dean is Dr. E. P. Lachapelle. The total registration for 1915-16 was 173; graduates, 17. The next session begins Oct. 1, 1916, and ends June 30, 1917.

Quebec

LAVAL UNIVERSITY FACULTY OF MEDICINE, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 Medical Department of Laval University; first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 24. The fees are \$60 each year. The course extends over five years, the first year including courses in physics, chemistry and biology. The Dean is Dr. Edwin Turcot, Quebec. Total registration for 1915-16 was 81; graduates, 10. The next session begins Sept. 14, 1916, and ends June 1, 1917.

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SATURDAY, AUGUST 19, 1916

MEDICAL EDUCATION—A SIXTEEN YEARS' SUCCESSFUL CAMPAIGN

THE JOURNAL publishes this week, for the sixteenth consecutive year, complete statistics regarding medical education in the United States. During these sixteen years there has been a most remarkable and encouraging improvement, and it seems worth while to review the measures which have brought about the excellent results.

BEGINNING OF THE CAMPAIGN

In 1900, THE JOURNAL began collecting statistics regarding medical colleges, students and graduates, and in 1901 the first Educational Number of THE JOURNAL was published. There were 159 medical colleges included in the statistics. At that time it was a matter of common knowledge that many of the colleges then existing were joint-stock corporations, conducted largely for the profit of their owners; that by many of the colleges little or no attention was paid to admission requirements, and that conditions in medical education were far from satisfactory. The medical schools with endowments, with well equipped laboratories, or with six or more salaried teachers could be counted on one hand. Sectarian medicine had reached its zenith in 1901, there being twenty-two homeopathic and ten eclectic colleges. In all colleges included in the statistics, there was an enrolment of 26,417 students, and of these, 5,444 graduated.

By the collection and publication of such data, in 1901, a beginning was made in the great campaign for the improvement of medical education. The information published provided a fixed point from which future progress could be measured. The statistics were collected and published annually for five years, however, when it became evident that, if improvements were to be made, there would need to be a permanent committee, with a permanent secretary and with adequate funds at its disposal to centralize its efforts in this particular field and persistently work for improvement, using such influence and authority as could be exerted by a voluntary organization such as is the American Medical Association, and using also the

greater power of publicity, particularly that which was available through the columns of THE JOURNAL. The statistics collected and published by THE JOURNAL, therefore, showed the necessity, and led to the creation of a permanent committee of the American Medical Association—the Council on Medical Education—which, as one of its lines of work, would continue the collection and publication of these statistics. Although created in 1904, the Council did not complete its organization and employ a permanent secretary and secure fixed headquarters until in December, 1905. It had already prepared two standards of medical education, however, one referred to as "the standard now recommended"¹ and the other as "the ideal standard,"² and pamphlets had been issued setting forth these standards. The Council had also held its first annual conference on Medical Education which, repeated in successive years, became a powerful factor in its subsequent campaign. Another strong factor in the success of the Council's campaign was that from the beginning it had the hearty and gratifying support from the officers of a large majority of the medical colleges.

PROGRESS FROM 1906 TO 1910

By Jan. 1, 1906, permanent headquarters had been established, and the campaign by correspondence with medical colleges and licensing boards urging the adoption of the standards, had been begun. Then also was begun a careful study of medical education, and permanent files for the information were started. In 1907 the first complete list of foreign medical colleges was prepared,³ which revealed the fact that this country alone had more medical schools than all the rest of the world. Facts regarding the histories of all medical colleges in the United States, existing and extinct, were collected. To secure more reliable information regarding the work of the various medical colleges, in 1907 and 1909, respectively, two complete tours of inspection were made, and the first two classifications prepared, the second of which was published in 1910. A special campaign was carried on in cities in which two or more weak medical colleges existed, urging that such institutions merge and in that way form one stronger institution.

By 1910, the number of medical students had been reduced from 28,142 to 21,526, the number of graduates from 5,600 to 4,440, and the number of medical colleges from 162 to 131. Meanwhile, many of the institutions had undergone a remarkable internal development: better teachers had been employed, better buildings erected, new laboratories established, and

1. This briefly urged (a) a four year high school education, (b) four years of thirty weeks each, of thirty hours per week, in a medical school, and (c) the passing of an examination before a state licensing board. It was urged that it be generally adopted by all medical schools by Jan. 1, 1908.

2. This standard urged (a) a four year high school course, (b) a year's work in physics, chemistry and biology, (c) four years in a medical school, and (d) a year's internship in a hospital. This was urged for adoption by Jan. 1, 1910.

3. THE JOURNAL A. M. A., Aug. 17, 1907, p. 596.

better clinical facilities secured. Furthermore, a remarkable improvement had been made in entrance standards. The number of medical colleges requiring for admission, in addition to a high school education, one year of collegiate work, had been increased from five to thirty-five, and eight state licensing boards had adopted a similar standard of preliminary education for those who were to secure licenses to practice medicine in those states. Through the inspections and other means of verifying the data collected, the information published each year in the Educational Number was verified and made more reliable. A chart⁴ was published showing the educational standards of the European countries in comparison with those of the United States.

PROGRESS FROM 1910 TO 1915

During the second five-year period of the Council's work, between 1910 and 1915, the general study of medical education was continued. The information regarding medical colleges, existing and extinct, was perfected sufficiently to enable the publication of a life chart⁵ by means of which, for the first time, an accurate knowledge could be had as to the number of medical colleges existing in the United States in any year since the Department of Medicine of the College of Philadelphia—now the University of Pennsylvania—was organized in 1765. To secure a better record of the history and educational qualifications of medical students, and facts regarding their promotion from class to class, a medical students' register was established. Here, again, the Council received the earnest support and a gratifying cooperation from the majority of medical colleges. Two other complete inspections of medical colleges were made, and two new classifications published.

During this second five-year period, twenty medical colleges were merged with others, and nineteen became extinct, thus further reducing the total number, from 131 to ninety-five. The number of students also was reduced, from 21,526 to 14,891, and the total number of graduates from 4,440 to 3,536. Meanwhile, the number of medical colleges which had adopted the one or two years of collegiate work for admission was increased from thirty-five (27 per cent.) to eighty-three (88 per cent.), and the number of state licensing boards holding to these higher requirements was increased from eight to twenty-eight. Not only had 88 per cent. of all medical colleges adopted the higher entrance requirements, but also, through the reliable information collected by the Council, the methods employed by each college in admitting students, and the strictness with which the standards were enforced, were known with fair accuracy. The continuous agitation for better conditions in medical education had appealed to philanthropists to such an extent that endowments for medical education had been greatly

increased, and large gifts for medical buildings, new laboratories, scholarships, endowed chairs and teaching hospitals had become of frequent occurrence. The fall of 1914 witnessed the general adoption of higher entrance qualifications, namely, one or more years of college work, including courses in physics, chemistry and biology. The standard which, in 1905, had been termed "ideal" became the required minimum in 1914. At the beginning of that session, forty-three medical colleges, for the first time, began the enforcement of the higher requirements.

During 1915-1916, the further extension of this requirement of preliminary education from one to two years of collegiate work, in addition to the high school education, was urged and, in June, 1916, the Council was instructed by the House of Delegates not to retain in Class A, after Jan 1, 1918, any medical college which was not requiring for admission that standard of preliminary education. This action was by no means drastic, since the two years of college requirement has already been put into effect by forty-six medical colleges; it has also been adopted by seventeen licensing boards as the minimum standard of preliminary education of those who are to receive the license to practice medicine in those states.

THIS STANDARD TO BE PERMANENT

Coupled with its instructions to the Council regarding the requirement of two years of premedical college work, the House of Delegates adopted the statement of its reference committee on medical education that this represented the highest preliminary qualification that should be legally exacted in this country. It is evident, therefore, that the struggle by the medical colleges to reach higher entrance standards will have its fixed limit, and that their attention may hereafter be directed toward other needs, such as larger endowments, more salaried teachers and more abundant and better used clinical material.

THE EDUCATIONAL NUMBER FOR 1916

The readers of this Educational Number will doubtless share in the gratification that such marvelous improvements have been made in a brief sixteen years. In fact, the progress has far exceeded the highest expectations of those who were acquainted with the serious conditions existing at the time the campaign for improvement began. Many institutions which were conducted for the profit of their owners have been closed; the number of high grade, well equipped and well endowed medical colleges, however, has been greatly increased, and a permanent American standard of preliminary education has been established. A fixed basis has been reached on which medical education in this country can be built. In fact, it already has reached a stage which is quite satisfactory and can be referred to with something like pride. This country already has a score or more of medical schools which in every particular are equal, if not superior, to those

4. THE JOURNAL A. M. A., Aug. 20, 1910, p. 680.

5. THE JOURNAL A. M. A., Aug. 23, 1913, p. 578.

to be found in any other country. Under a continuance of the campaign for improvement, others will be added to this group, and the number of colleges conducted by those who are in the game for personal gain and who disregard reasonable educational standards are becoming fewer each year. There is a most hopeful outlook for the future.

THE ACQUIRED TOLERANCE FOR ARSENIC

The tolerance for arsenic in the form of arsenous oxid or the familiar "white arsenic," which is known to exist among arsenic-eating persons in various parts of the world, can be induced experimentally in animals by commencing with very minute doses. The phenomenon, therefore, is no longer regarded as anything peculiar to the human species or particularly unique in its manifestations. The degree of tolerance attainable is shown by the fact that Knapp administered 0.4 gm. (7 grains) of arsenous oxid to a habitual arsenic eater without inducing any obvious effect. The explanations of the establishment of a marked resistance against a substance of such high toxicity have been varied and often unconvincing. Of late there has been a tendency in some quarters to put this development of tolerance into the category of the immunity reactions which have acquired prominence in the field of bacteriologic study. The supposed evidence that the serum of animals "immunized" against arsenic contains both immunizing and antitoxic properties against this poison has been found to be invalid.¹ There is no real parallelism or analogy between the manifestations of tolerance to arsenic and immunity to bacterial invasion.

At the outset it must be understood that tolerance for arsenic has been obtained only through administration of arsenous oxid in substance by way of the mouth. The subcutaneous administration of soluble salts of arsenic apparently is not a satisfactory way of developing resistance to the poison.² Arsenic administered orally in the form of arsenous oxid reappears largely in the feces, only a small portion being excreted through the kidneys. In 1906 Cloetta³ of Zürich offered an explanation of the nature of the developed tolerance for arsenic that has aroused considerable interest. He attributed it to a diminished absorption of arsenic from the alimentary tract in cases of immunity. The intestinal mucosa was assumed to become less permeable gradually so that less arsenic would actually find its way into the circulation, and thus the body would become protected against ordinary lethal doses given by way of the mouth. In this sense, it will be noted, tolerance for arsenic would be equivalent to a localized resistance in the bowel

whereby the mucosa would allow less poison to traverse it. The evidence that the tolerance is not of a systemic character is seen in the fact that animals rendered resistant to enormous doses of arsenous oxid promptly succumb when a few milligrams of a soluble salt are introduced subcutaneously and thus actually enter the circulation.

A more recent examination of this subject at the Pharmacologic Institute of the University of Berlin has afforded a somewhat different interpretation of the phenomena. Joachimoglu⁴ denies that the absorption of arsenic is decreased with increasing doses. It must be remembered, however, that at best only small quantities of arsenic are absorbed when the administration is in the form of arsenous oxid given in substance by way of the mouth. The first effect of arsenic in the gastro-intestinal canal is well known to be a high degree of congestion of the lining membrane, often followed by extensive destruction or deterioration of the epithelial cells. Hemorrhages are not unknown, and erosion is sometimes evident. It appears reasonable that along an alimentary surface in this degraded condition absorption can go on much more rapidly and extensively than is the case through an uninjured mucosa. What is believed by Joachimoglu to happen after repeated feeding of increasing doses of arsenic is a gradual improvement and recovery of the mucosa so that it becomes more resistant to the irritant and necrotic influence of arsenic, so far as this applies to the administration of arsenous oxid. With the restoration of the alimentary mucosa, which may thus be said to become more tolerant to the destructive action of arsenic, the exaggerated absorption of the rather insoluble poison, through a damaged membrane, leading to the rapid toxicity in acute cases, is replaced by a more normal and characteristically poor absorption of the substance.

How are these assertions to be reconciled with the statements that among those rendered tolerant the habit of eating arsenic is not deleterious? Unless arsenic fails to be absorbed to any significant extent in such individuals, as Cloetta believed, or unless, as others have contended, the tissues in general become more resistant to the toxic action of this poison, it is difficult to reconcile the existing reports. It is alleged, for example, that the Styrian arsenic-eating peasants live to old age and that no symptoms attributable to the poison have been noted. This has the ring of true immunity. Joachimoglu is inclined to extreme skepticism toward all such assertions. He points out that the statements handed down in the toxicologic literature go back to the days when the symptoms of chronic arsenical intoxication were little appreciated. Catarrhal inflammation of the respiratory tract is a characteristic of mild chronic intoxication, and hoarseness

1. Morishima, K.: *Arch. internat. de pharmacod.*, 1900, vii, 65.
2. Compare Brouardel, G.: *Etude sur l'arsenicisme*, Paris, 1897.
3. Cloetta, M.: *Ueber die Ursache der Angewöhnung an Arsenik*, *Arch. f. exper. Path. u. Pharmacol.*, 1906, liv, 196.

4. Joachimoglu, G.: *Zur Frage der Gewöhnung an Arsenik*, *Arch. f. exper. Path. u. Pharmacol.*, 1916, xxix, 419.

appears to be widespread among arsenic eaters.⁵ Cases in which the supposedly tolerant persons succumb to arsenical poisoning are not unknown. It is not at all unlikely that a careful reinvestigation of the physical condition of arsenic eaters and their medical history would reveal sufficient evidence to warrant the abandonment of the hypothesis of a general cellular immunity or tolerance to arsenic. To upset tradition, however, is not an easy task.

RELATION OF OXIDATION TO METABOLISM

The idea that respiration directly causes or regulates metabolism was abandoned by physiologists many years ago, especially as a result of the investigations of Voit and Pflüger, who by independent methods demonstrated the untenability of this view. The intake of oxygen does not cause metabolism, but on the other hand the chemical reactions going on in the organism determine the amount of oxygen to be absorbed. The combustion processes in the living body may proceed for some time quite independent of the extent to which oxygen is supplied. Even in the days of Lavoisier it was appreciated that the utilization of oxygen in the organism is not enhanced by a greatly increased supply in the respired air. The breathing of compressed air or of pure oxygen leaves the combustion processes essentially unaltered. Metabolism regulates the respiration. As Lusk has expressed it, the metabolism of the tissues, through its oxygen requirement and its carbon dioxid production, changes the condition of the blood and thereby regulates the respiration. These are distinctions of fundamental importance.⁶ The relations of the products of metabolism to the activity of the respiratory mechanism and the resulting regulation of the breathing processes have often been discussed in THE JOURNAL.

The hypothesis of a deficient or defective oxidative power has often been called on to explain certain abnormal phenomena. Prior to the establishment of our present knowledge of purin metabolism, an increased output of uric acid in the urine was looked on as a sign of deficient oxidation of proteins. Sugar in the urine and the condition of diabetes were associated with impairment of oxidation. Other instances might be multiplied in which the pathologic manifestation has now been shown not to depend on any lack of oxygen in these cases. Respiration furnishes an abundance, and the element is suitably carried and distributed to the tissues. Evidently there is little if any occasion to continue to emphasize the doctrine of reduced general oxidation in the body.

It is quite another matter, however, to deny that products of incomplete oxidation never appear in the human body, or to fail to take their significance into consideration. Many of the intermediary products of

metabolism may be formed without the intermediation of an oxidative stage. But our life is essentially an oxidative process in its ultimate features, and at some stage sooner or later the compounds which arise in the sequence of reactions known as metabolism must be burned up. Imperfect local oxidation is far from being a rarity. A reduced local circulation in a portion of a muscle, for example, may produce anemia of the part. Lactic acid arises, and failing to be converted into the usual oxidation products, may enter the circulation. Active tissue breakdown, combined with insufficient local oxygen supply and the consequent appearance of abnormal products is not unknown. Surely no one who recalls the well known genesis of aceto-acetic acid, betahydroxybutyric acid or lactic acid can deny that they may give rise to a transient acidosis. Normally these products do not appear in the excreta; they are oxidized in the organism to the final end-products.

The free or fanciful use of words and phrases may give rise to misconceptions in science. The appearance of protein in the urine is not due to the lack of oxidative capacity on the part of the body. Protein is not oxidizable as such in the human organism; neither is sugar or fat. Preliminary chemical changes are requisite. There is such a thing as a product of incomplete oxidation; when it makes an appearance unexpectedly, one need neither deny its mode of origin nor maintain that it is a symptom of a reduction in the total oxidative power of an organism which may nevertheless have an impaired function in some localized area.

Current Comment

MEDICAL ADVERTISING STANDARDS

In the Propaganda Department this week we quote an interesting communication from the editor of a country newspaper to the *New York Tribune*. The editor discusses the difficulties of the newspaper man who attempts, intelligently, to censor medical advertising. The complexity of the problem prompts him to suggest "that the newspapers of America select some responsible physician as a national censor to pass fairly and conscientiously on all copy submitted and thus to establish a uniform basis of censorship." This is not the first time that a suggestion of this sort has been made by conscientious newspaper men anxious to protect the health as well as the purse of their reader. THE JOURNAL has received not a few letters urging similar measures. But it is not THE JOURNAL's intention at this time to discuss this interesting suggestion. What it desires to point out is the fact that medical journals are in the same position with reference to the acceptance of advertisements of proprietary remedies offered to physicians as are the newspapers in passing on "patent medicine" copy. There are few editors of medical journals who would have the temerity to consider themselves competent to determine the validity of the claims made for the various "ethical pro-

5. Von Tschudi, J. J.: *Wien. med. Wehnschr.*, 1853, iii, 6.
6. Lusk, Graham: *The Science of Nutrition*, 1909, p. 31.

prietaries" whose advertisements are submitted to them. THE JOURNAL has for years insisted that the "ethical proprietary" problem is so broad that it calls for expert knowledge in various departments of medicine and the allied sciences — knowledge such as no editor or publisher of a medical journal could be expected to possess. Recognition of this fact brought about the creation of the Council on Pharmacy and Chemistry. In this council the medical journal editor has, what the newspaper editor so much desires, an expert body capable of passing on the merits of proprietary remedies offered to physicians. So saturated in commercialism, however, is the profession of medical journalism, that we find only a comparatively few medical journals — chiefly those owned and controlled by the profession itself — that take advantage of the expert knowledge brought to bear on the proprietary question through the Council on Pharmacy and Chemistry. It is a deplorable fact that the advertising standards of most privately owned medical journals are much below those of the average high-grade lay magazine. This condition of affairs will continue until the medical profession demands a "clean-up." Whether that demand will come spontaneously, through an awakened professional conscience, or will be wrung from the profession by indignant public opinion remains to be seen. But the change is coming, inevitably.

ANXIETY BECAUSE OF CHANGES IN MEDICAL EDUCATION

Since the campaign for the improvement of medical education began in this country, alarm has been expressed by several individuals because of certain possible results of the campaign. Some have worried lest the marked reduction in the number of medical colleges would lead to a dearth of physicians in the United States. Others have noticed the greatly increased cost of medical education, and the moderately increased charges for tuition, and are afraid lest only the "sons of the rich" will be able to secure a medical education, which, they say, will result in a "medical aristocracy." Others show much concern lest the higher standards for admission and the demise of numerous low standard colleges will take away all opportunities from "the poor boy" who wants to get a medical education. Still others have laid stress on the thinly populated and rural districts which, they reiterate, are "greatly in need of doctors." These statements have been made mostly by persons interested in the continuance of low standard colleges. Some, however, have been made by those having no interest in such schools and who are evidently sincere in their expressions of anxiety. There are, indeed, fewer colleges, students and graduates; the cost of a medical education has been greatly increased; there has been also a moderate increase in the charges for tuition; entrance requirements have been raised and a lot of inferior medical colleges have ceased to exist. It is also granted that rural communities do not have many doctors living in them. A right interpretation of these facts will show that there is no cause for

alarm. On the contrary, great benefits have been derived from the campaign for an improved medical education. The chief result is that physicians are being turned out who are better able to serve the public both in urban and in rural communities.

NO DEARTH OF PHYSICIANS

The decided reduction in the number of medical colleges, students and graduates, as a result of the campaign for improvement in medical education, was fully expected. In 1904 this country had 166 — many more than were needed. The use of paid solicitors and the shrewd methods of advertising used by many colleges, and the absence or nonenforcement of entrance requirements, naturally resulted in an enormous enrolment of students. The annual output of physicians was correspondingly large. What was needed was a larger proportion of high grade and well equipped medical schools, and this was the result obtained. Instead of 28,000 medical students and nearly 6,000 graduates each year, only 6 per cent. being from high standard colleges, there are now only about half those numbers; but 80 per cent. of them are in high standard colleges. Even if the output of physicians should be entirely discontinued, there would be no danger of a dearth of physicians for years to come. Figures published recently¹ show that the country still has an abundant supply. There is one physician to every 691 people in the United States, as compared with 1 to every 1,940 in Germany; 1 to every 2,120 in Austria, and 1 to every 2,834 in France, that is, referring to conditions before the war. Instead of cause for anxiety, the reduction in the number of medical colleges and graduates represents a decided improvement. Of the ninety-five medical colleges which remain, the great majority have higher and better enforced entrance requirements; they have stronger staffs of salaried and expert teachers; they have more and better equipped laboratories, and have more abundant and better used clinical facilities. Physicians coming from these medical schools are better fitted to care for the sick, and to do a larger part in the prevention of disease, than the average of those graduated under former conditions.

NO DANGER OF A MEDICAL ARISTOCRACY

The cost of medical education has been greatly increased. The larger number of laboratories, equipped with expensive and technical apparatus which the modern school now possesses, the score of skilled, salaried teachers who devote their entire time to teaching and research, and the greatly increased cost of administration have increased manyfold the cost of conducting a medical school. At present, therefore, as shown in a recent report,² the average cost of teaching a student in eighty-two medical colleges was \$419

1. Proportion of Physicians to Population, THE JOURNAL A. M. A., May 27, 1916, p. 1736.

2. Finances of Medical Schools, THE JOURNAL A. M. A., April 8, 1916, p. 1115. Tuition Fees and the Cost of Teaching Medicine, Current Comment, May 27, 1916, p. 1707.

per year, as compared with \$150, the average amount received from each student in fees. Although the cost has advanced from the point at which there were large profits for those owning the medical schools, to the present situation, where it exceeds the income from students' fees by 280 per cent., during the same fifteen years tuition fees have been increased by only 25 per cent. In eight of the state university medical schools, the fees are very low—less than \$100. The excess of expenditure over income from tuition fees, of course, has been met by state appropriations or by private gifts and endowments. During the last few years the number of free scholarships for deserving but needy students has been rapidly increased, 296 having been reported last year in forty-two medical schools. There is no reason, therefore, to worry lest the greatly increased cost of medical education will result in a "medical aristocracy." It is quite evident also that the opportunities for studying medicine are not going to be "limited to the sons of the rich," but that equal opportunities are going to be open for all, regardless of their financial status.

HIGHER ENTRANCE STANDARDS AND THE POOR BOY

Several years ago the argument commonly used by those seeking to perpetuate the low standard medical college was that "the poor boy" would no longer be able to get a medical education. It is true that higher entrance requirements will keep out of the medical profession students too ignorant to master the complexities of the present day medical curriculum. The opportunities for those who can obtain the needed preliminary education but who are poor in purse, however, have really been increased. These "arguments," meanwhile, do not come from the poor boys themselves, many of whom have worked all or part of their way through our better medical schools. The deserving but poor boy is the one who usually knows a good school when he gets into it, and the one who perhaps is most capable of looking out for his own interests. Meanwhile, he knows, what has repeatedly been shown, that it costs no more in time, and sometimes much less in money, to attend a high grade medical school than it does to attend some of the poorest equipped Class C institutions. Tuition fees are lower in some high grade medical schools, particularly in those connected with state universities, than in several which are of low grade. Again, the high grade, well endowed medical school usually offers more opportunities for students' self-help than do the institutions conducted solely on students' fees—they have more need of their services and more funds with which to pay for it. Finally, it is in the well endowed institutions that the free scholarships, referred to in the preceding comment, are being so rapidly established. The present reform in medical education is, therefore, undoubtedly carrying with it the desire to put the opportunity for obtaining a thorough medical training in the reach of every person who is educationally qualified to obtain it.

BETTER MEDICAL CARE FOR RURAL COMMUNITIES

During the last few years the most common argument against the higher requirements for admission to medical schools—the "poor boy" argument having been proved to be unsound—has been the small number of physicians in rural communities. That there is, and possibly always has been, such a scarcity of physicians in these districts may be granted. It is clear, however, that this lack is not due to the increased requirements of medical schools. As pointed out by Flexner,¹ the existence during a half century of an overwhelming proportion of low standard colleges did not force practitioners to these districts. On the contrary, as pointed out by Heffron,² it is the persistent demand of the public for "specialists" that is driving practitioners from the rural districts. It is clear that no physician will stay in a community in which he cannot make a living. The resident of the small village who can afford to pay for medical service seldom goes to the village physician, but even boasts that he goes to "Dr. So-and-So, the famous specialist," in the city. As a rule, it is only emergency cases, or patients too poor to go to the specialist, who seek the services of the local physician. This tendency has been aided by the advent of the telephone, the automobile and improved roads, now commonly found even in rural districts. At the same time, with the better facilities for communication and travel, physicians in nearby cities have been able to triple or quadruple the radius of their practice, and this has resulted in bringing a more abundant and skilled medical care within the reach of rural communities. It is safe to state that the average rural district has never had as adequate medical care as at the present time. Even where the contrary may still be true, the providing of such service will not be brought about by the continuance of low standard medical schools. If mining districts and sparsely settled communities, in which physicians cannot ordinarily make a livelihood, are to obtain adequate medical service, it will be necessary for salaried medical officers to be sent there, either by national or by state governments. And the people in such communities will undoubtedly have better medical service if these officers have been trained in high grade medical schools.

SCIENTIFIC PRIORITY

Seldom does the true scientist urge a claim for priority in any discovery he may make; the pseudoscientist does. This is especially true in medicine. As soon as any new fact is demonstrated or an original theory advanced, some one will want to rush into print with unconvincing proof that he originally had the same idea months or years previously. Schuster,³ in his presidential address to the British Association for the

1. Medical Education in the United States and Canada, Bull. Carnegie Foundation for the Advancement of Teaching, p. 15.

2. A Review of the Tendencies in the Practice of Medicine, Jour. Social. Med., April, 1916, p. 61.

3. Schuster, A.: The Common Aims of Science and Humanity, Trans. Brit. Assn. for the Advancement of Science, 1916, p. 3.

Advancement of Science, has well stated the psychology of such claims:

New ideas may float across our consciousness, but selecting the wrong ones for more detailed study, we waste our time fruitlessly. We are bewildered by the multitude of roads which open out before us, and like Poincaré when he tries to play chess, lose the game because we make the wrong move. Do we not all remember how, after the announcement of a new fact or generalization, there are always many who claim to have had, and perhaps vaguely expressed the same idea? They put it down to bad luck that they had not pursued it, but they have failed precisely in what, according to Poincaré, is the essence of inventive power. It may be bad luck not to have had a good idea, but to have had it and failed to appreciate its importance is downright incapacity.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

GEORGIA

Personal.—Dr. John A. White, Augusta, has been elected health commissioner of Dougherty County.—Dr. Henry F. Harris, Atlanta, plans to go to Italy at the close of the European War and devote himself to the study of pellagra.

Hospital News.—Mrs. Harry K. Gairdner, Elberton, has offered a building and site for a hospital to the city of Elberton on the condition that the city equip and maintain it for hospital purposes. The building and grounds are valued at about \$10,000.

Premedical Course.—A bill has been introduced in the Georgia legislature which requires two years of a college course as a preliminary requirement for admission to any medical school in the state. The bill also provides that there shall be no appeal from the decision of the Board of Medical Examiners as regards the revocation of a license to practice medicine.

ILLINOIS

Black Entertains Medical Society.—The Morgan-Cass County Medical Society held its annual picnic at the farm of Dr. Carl E. Black, in Cass County, August 17. The special guests of the occasion were Dr. and Mrs. William J. Mayo, Rochester, Minn. Dr. Mayo made an address on "Surgical Treatment of Stone in the Kidney." Dr. William F. Braasch, Rochester, Minn., spoke on "Clinical Observations of Stone in the Kidney." The members of the Central Illinois Clinical Surgical Association were also guests of the society and took part in the proceedings.

IOWA

New Hospitals.—The plans for the John McDonald Hospital, to be erected in Monticello, were let August 3. The building is to be 138 feet long and 48 feet wide and the site covers 4 acres of land. The building will be three stories and basement in height and will be ready for occupancy January 1. —Excavations have commenced for the new Atlantic Hospital.

Personal.—Dr. Donald Macrae, Jr., Council Bluffs, has been made chief surgeon of the Iowa Brigade on duty at Brownsville, Texas.—Dr. Arthur A. Griffis, Tipton, who has been ill with septicemia in a hospital in Iowa City, has recovered and returned home.—Dr. John P. Savage has been elected head of the safety division of the Health Association of Sioux City and Woodbury County.

Work of State Board Laboratories.—According to reports submitted by Dr. Henry Albert, director of laboratories for the state board of health, Iowa City, 40,486 examinations and preventive treatments were given in the laboratories during the last two years. During the last fiscal year, 25,795 examinations were made. Of the examinations made in the biennium, 18,597 were for diphtheria; 4,372 for typhoid fever; 6,681 for tuberculosis; 146 for rabies and 1,221 specimens of water were analyzed. During the same period, ninety-six persons received the pasteur treatment.

MARYLAND

Personal.—Dr. James J. Mills, Baltimore, sailed for France on the *Rochambeau*, August 5, for war service with the French army.—Dr. Howard Bratton, Elkton, has been appointed division physician for the Pennsylvania System during the absence of Dr. Henry A. Mitchell, chief surgeon of the First Infantry, Maryland National Guard, who is now on the Texas border.—Drs. Howard A. Kelly and Thomas S. Cullen, Baltimore, are spending the summer near Magnetawan, Ont.—Dr. C. Howard Moses, Baltimore, has been appointed chief resident surgeon of the Youngstown (Ohio) City Hospital.

Quarantine Is Established.—Carrying out a resolution adopted at a special meeting of the Board of Public Safety authorizing him to take steps to protect the city against infantile paralysis, Health Commissioner John D. Blake will prohibit children under 12 years of age from attending moving picture theaters. He also will establish a quarantine against children from New York, Philadelphia and the Jersey coast. The meeting was held at the instance of Mayor Preston, who told the commissioner of health to call in experts if necessary, and the situation was discussed with Drs. John S. Fulton, C. Hampson Jones and William W. Ford of the state department of health, Dr. C. Frank Jones, acting assistant commissioner of health, and J. W. Mehling, assistant secretary of the Mechanics and Manufacturers' Association. Dr. Ford has just returned from the New Jersey coast and New York. He detailed conditions there and also in Philadelphia. In behalf of his association Mr. Mehling talked against the adoption of such drastic measures as would affect the business interests of the city. Whether to act at once or await developments occupied the attention of the board and its conferences for some little time. Conditions in other places were reported as being bad, and on the theory that "an ounce of prevention is worth a pound of cure," it was decided to act at once. Consequently a resolution was adopted recommending that the commissioner of health take such action as he, in his opinion, thinks necessary, in order to protect the health of the city, and if necessary put in operation quarantine. Dr. Blake announced that his order dealing with moving picture theaters probably would go out today. It will not apply to Sunday schools, churches or other places where children congregate, because atmospheric conditions are not considered as dangerous as in crowded "movie halls." Nor will children be prevented from going to the parks or squares, or other outdoor places of amusement.

NEW YORK

Personal.—Dr. Albert Warren Ferris, formerly the medical expert and "Kur-Direktor" for the commissioners of the state reservation at Saratoga Springs, has gone into practice in that city. No physician is officially connected with the state control of the springs or bath houses.

Cleanup in Nassau County.—There have been 175 cases of infantile paralysis reported from Nassau County, a number of cases occurring on the estates of wealthy residents of the Long Island summer colonies. This has led to a determination to have a thorough cleanup. A subscription of \$40,000 has been raised by the wealthy residents of the county and the work has been inaugurated by deputy state health commissioner, Dr. Linsey R. Williams, Dr. George Draper of the Rockefeller Institute, and a staff of six physicians. Two new isolation hospitals have been opened, one at Hickville and another at Roslyn.

State Health Department and Infantile Paralysis.—Officials of the state health department have completed a list of fairs and meetings at which attendance of children less than 16 years of age will be forbidden and instructions have been given to health officers that these orders be strictly enforced. Plans to hold conferences in the districts in which infantile paralysis has broken out have been completed. The first of these conferences took place at Kingston, August 14, at which time Dr. Henry L. K. Shaw, Albany, instructed health officers on the various phases of infantile paralysis. Dr. Fred M. Meader, Albany, director of the division of communicable diseases of the state department of health, is reported as expressing the opinion that upstate health officers were holding their own in the fight and preventing the disease from spreading. Up to August 12 there have been 895 cases in the state, the largest number of cases reported thus far on one day being 60 cases on August 11.

Psychopathic Clinic at Sing Sing Prison.—The first psychopathic clinic in a state prison began its work at Sing Sing

on the return of Warden Thomas Mott Osborne. The clinic is in charge of Dr. Bernard Glueck, formerly a member of the staff of the Government Hospital for the Insane, Washington, who has made a special study of mental factors in crime and delinquency and who will devote his entire time to the work and will be supplied with well trained assistants. At Sing Sing during the last three years, one in forty-five of the prison population have been transferred to the Dannemora State Hospital for the Insane, whereas the admission rate in other hospitals for the insane among the adult male population of the state was only one in 320. Each of the prisoners will be given a very careful mental examination and the clinic will be at all times at the service of the prison in dealing with mental factors requiring attention. The funds which make this clinic available have been contributed by the Rockefeller Foundation to the National Committee for Mental Hygiene and will be under the immediate supervision of an advisory board of that committee which will consist of Drs. August Hoch, director of the New York Psychiatric Institute; Dr. William Mabon, medical director and superintendent of the Manhattan State Hospital and formerly president of the New York State Lunacy Commission; Dr. William L. Russell, superintendent of Bloomingdale Hospital; Dr. George H. Kirby, clinical director of the Manhattan State Hospital; Dr. L. Pierce Clark, consulting physician for the State Hospital for the Feeble-Minded, Randall's Island; and Dr. Thomas W. Salmon, medical director of the National Committee for Mental Hygiene. The establishment of the psychopathic clinic is the first step in the organization of an efficient medical service to insure the most careful examination and treatment of every prisoner. By this means it will be possible to correct many correctable defects and greatly to improve the mental and physical standard among prisoners.

New York City

Personal.—Dr. Isham G. Harris, formerly superintendent of the Mohansic State Hospital, has been appointed superintendent of the Brooklyn State Hospital, to succeed Dr. Elbert M. Somers, who resigned, August 1.—Dr. Le Roy B. Vail of Flushing, L. I., was removed to the Queensborough Hospital for Contagious Diseases on August 11, suffering from infantile paralysis.

Infantile Paralysis Brace Fund.—Dr. Haven Emerson's request for a fund of \$15,000 for the purpose of providing braces and orthopedic appliances for the victims of infantile paralysis has met with a ready response. Among the larger contributions are \$1,000 from Jacob H. Schiff, \$1,000 from Cleveland H. Dodge, \$500 from Mrs. Hugh H. Thompson, and a large number of smaller contributions.

The Infantile Paralysis Epidemic.—The total number of cases of infantile paralysis reported to the health department, including August 12, is 6,140 and the total number of deaths 1,371. There was a slight falling off in the number of cases reported and in the number of deaths with the break in the hot spell. It has been observed that more children die of the disease on hot days than on the cooler days. It has been announced that thirty-three nurses provided by several cooperating charitable organizations will begin on August 14 making a biweekly house-to-house canvass in two districts of the city—the lower east side of Manhattan and the Central Avenue district of Brooklyn—districts in which the disease has been the most prevalent.—The results obtained from the use of the blood serum of convalescent patients in the treatment of those ill with the disease are said to justify a further extension of this method. The health department will make efforts to extend its use.—The governors of the New York Hospital opened a branch for infantile paralysis cases on August 11, in the old hospital buildings of the New York Orthopedic Hospital at 126 East Fifty-Ninth Street. About 100 patients can be accommodated at the new hospital. It is announced that the same precautions which were taken to prevent New York children exposed to contagion from leaving the city and spreading the disease in rural districts will be taken to prevent children who have been exposed to infantile paralysis in the country from bringing it back to untainted apartment houses and tenements. Regulations governing the return of children who have had the disease in the country are now under consideration. It is thought now that federal authorities will not allow such children to return until after a month's quarantine.

OHIO

Personal.—Dr. William H. Pritchard, Gallipolis, has been appointed superintendent of the Columbus State Hospital,

Columbus, succeeding Dr. Charles F. Gilliam, recently deceased.—Dr. Edmund R. Brush, Zanesville, who has been on duty at Columbus Barracks during the mobilization, has been released and ordered to return to his home.—Mrs. Maranda M. Walker, the wife of Dr. Alonzo B. Walker, Canton, died suddenly from cerebral hemorrhage, July 10.—Dr. Kenneth A. Clouse and Colonel Thurman R. Fletcher, Columbus, and Dr. Edward D. Harper, Guysville, have been certified for appointment to the position of first assistant medical examiner for state institutions by the State Civil Service Commission.—Prof. George Neil Stewart, Cleveland, director of the Cushing Laboratory of Experimental Medicine, Western Reserve University, sailed for Europe, July 22.—Dr. Paul J. Hanzlik, Cleveland, associate in pharmacology, Western Reserve University, gave a lecture, July 6, in the Graduate School in Medical Sciences, University of Illinois, Chicago, on "The Behavior of Salicylate in the Body."—Dr. Arthur A. Eisenberg, formerly pathologic anatomist in U. S. Army Medical Museum and School, Washington, D. C., has been appointed pathologist at Charity Hospital, Cleveland.—Dr. J. J. John has been appointed pathologist to the new St. John's Hospital.

Cincinnati

Lloyd Museum.—Mr. Curtis G. Lloyd, one of the founders of the Lloyd Library and Museum, will put up a new building for the institution at Court and Plum streets. The building will be connected with the present museum.

Permit for New Medical College.—Application for a permit to erect a new medical college building on the new city hospital site has been made by the medical college building commission. The building will have a frontage of 298 feet and will have three wings, the center containing an auditorium. The estimated cost of the buildings is \$250,000.

Personal.—Dr. William A. Gardner has resigned as district physician.—Dr. Edward W. Walker has been appointed a member of the Municipal Board of Health, succeeding Dr. Samuel E. Allen.—Dr. Augustus Ravogli has been commissioned first lieutenant, M. R. C., U. S. Army.—Dr. Dudley Webb has been selected as junior staff surgeon on the genito-urinary service of the General Hospital.—Capt. John D. Spelman, First Ohio Field Hospital, has been ordered to Columbus to take charge of the medical supply depot on the staff of Lieut.-Col. Joseph A. Hall.

PENNSYLVANIA

Infantile Paralysis.—New cases of the disease have been reported from Bristol, Lebanon, Myerstown, Darby, Ursina, Millville, Danville, Middletown, Barnesboro, Hazelton, Claysville and Shade Township in Somerset County. There was a total of 273 cases reported in the state up to midnight, August 12.—Five of the seventeen state health officers for Lancaster County have been detailed by Dr. Samuel G. Dixon, state health commissioners for service on the borders in connection with efforts to stop the spread of the epidemic.—The Bucks County Medical Society will devote an entire day to a conference for the purpose of studying the various aspects of this disease and have indorsed a resolution calling for complete cooperation with the state authorities in the campaign against the epidemic.

Philadelphia

Medico-Chi Buildings and School to Remain.—Students of the Medico-Chirurgical College will not go to the University of Pennsylvania for their medical course in the coming college year as it has developed that the university is hampered for equipment and classrooms. Another problem that is facing the cooperating committees representing the two institutions in the merger is the disposition of the buildings of the present Medico-Chirurgical College. The hospital of the institution, built several years ago at the corner of Eighteenth and Cherry streets, will be the only building of the institution left intact when the Parkway is cut through. The amphitheater, one of the finest in the country, will lose one corner. Director Datesman of public works gave Dr. Edward B. Gleason, professor of eye, ear, nose and throat disease at the college the assurance that the city will be as lenient as possible and that no demolition will be started until the end of the college year.

Infantile Paralysis.—On August 12, the quarantine period for infantile paralysis was changed from twenty-one days to thirty days by special action of the advisory board of the state department of health. This action followed two deaths

and the development of a third case in one block in Philadelphia. This was on Addison Street, between Fifty-Sixth and Fifty-Seventh streets, where guards were placed at each end of the square in addition to those placed at the front and rear of the houses infected by the plague. The advisory board recommended that the commissioner of health communicate with the authorities of cities of other states and arrange for exchange of health certificates whenever such a reciprocal agreement may be deemed necessary. A regulation was also laid down that no shipment of second-hand furniture or household goods will be received in Pennsylvania unless accompanied by a certificate showing that it has not come from a house where infantile paralysis existed. Members of the advisory board were Drs. Charles B. Penrose, Philadelphia; Adolph Koenig, Pittsburgh; Daniel P. Gerberich, Lebanon; Edgar M. Green, Easton, and Samuel G. Dixon. The toll for August 12, in this city was five deaths with ten new cases reported.—The Philadelphia Pediatric Society has made an appeal to wealthy residents for funds to equip and operate a laboratory for the study of this disease and a pathologist whose name is as yet withheld has offered his services free. The committee in charge of the project is headed by Dr. William N. Bradley and is composed of Drs. William B. Dorwarth, Charles A. Fife, A. Graeme Mitchell, Alice W. Tallant, William Hewson, Henry D. Jump and Walter S. Cornell.—Twelve additional sanitation inspectors have been appointed by Director of Health Krusen to make immediate examination of back yards and cesspools and they have been given police power authorizing them to make arrests in case of flagrant violation of the sanitation laws.—The different branches of the Philadelphia County Medical Society held meetings on infantile paralysis during the week of August 14 to 21.

CANADA

Provisional Lieutenants in the Canadian Army Medical Corps.—A large number of doctors in the Toronto military district have passed the examinations of the Army Medical Corps and have become provisional lieutenants.

Beland Still a Prisoner.—The latest news of the former postmaster general of Canada, the Hon. Dr. Henri S. Beland, St. Joseph de Beauce, Que., is that he is still a prisoner in Germany. There have been repeated negotiations to secure his release, but so far without avail. He was allowed to go to visit his wife who was ill in Holland, but had to return.

Personal.—Drs. William Spankie, Wolfe Island, and Herbert S. Griffin, Hamilton, have been appointed by the Ontario Medical Council as their representatives on the Dominion Medical Council.—Dr. H. C. Hazelwood, Toronto, has been appointed medical officer of the One Hundred and Seventy-Sixth Battalion with the rank of lieutenant.—Dr. Peter McGibbon, Bracebridge, Ont., who has been on active service, has received the military cross for distinguished conduct on the field.

Hospital News.—Buxton Hospital, England, was formally opened, August 11. Surg.-Gen. Carleton Jones accepted the hospital as a unit of the Canadian Medical Services. The institution will be under the administration of Maj. Frederick Guest, St. Thomas, Ont. One of its special features will be the treatment of troubles arising through shell shock; rheumatic complaints will also have special treatment. The hospital was established by the Canadian Red Cross.—The Ontario Military Hospital, Orpington, Kent County, England, has been formally taken over by the Canadian Militia Department, and the following have been constituted a board to carry out the transfer: Colonel Bridges, inspector of Canadian hospitals in England, Captain Monks and Captain Carson.—The Hon. Dr. Robert A. Pyne, Toronto, and Premier Hearst of Ontario have gone to England to see if any further aid can be given by the province toward the Ontario Military Hospital at Orpington.—At a recent meeting of the Calgary Hospitals Board a discussion took place whether the public wards of the General Hospital should be made free to the residents of Calgary. It was contended that the financial loss by such arrangement would not amount to over \$10,000 per annum; and that free wards would offer better accommodation and peace of mind to those unable to pay. The medical profession opposed any such arrangement. The following resolution was adopted: "That in the opinion of this board the present financial conditions existing render it inadvisable and practically impossible to impose any further burden on the taxpayers of the city of Calgary by making free the public wards of the Calgary General Hospital."

GENERAL

Army Medical Corps Officers Needed.—The surgeon-general of the army announces that preliminary examinations for appointment of first lieutenants in the Army Medical Corps will be held on Sept. 5, 1916. Full information concerning these examinations can be procured on application to the Surgeon-General, U. S. Army, Washington, D. C.

Bequests and Donations.—The following bequests and donations have recently been announced:

Allentown (Pa.) Hospital, a donation of \$50,000, from Mrs. Sarah C. Hunsberger, Allentown.

Mercersburg (Pa.) Academy, donation of \$3,000 from T. E. Houston, Cincinnati, and \$1,000 from George A. Wood, Chambersburg, Pa., to increase the facilities of the school infirmary.

To found a school for motherhood at Detroit, \$1,000,000, by the will of Mrs. Lizzie Merrill Palmer, Detroit.

Mount Sinai Hospital, New York City, \$2,500, by the will of Matilda Davis.

Lincoln Hospital, for colored patients, Durham, N. C., funds for the equipment of the tuberculosis ward, donated by George W. Watts and W. A. Erwin.

Medical Reserve Corps Legislation.—A bill introduced in Congress by Mr. Gandy (H. R. 17125) contains the following provision: That in increasing the Medical Corps of the Army as provided in the National Defense Act, approved June 3, 1916, the officers of the Medical Reserve Corps on active duty, irrespective of age and subject to the physical examination now required by law, whose services have been satisfactory and who have been in the military service for at least five years, including contract service, volunteer service and enlisted service, shall be, and are hereby, transferred to the Medical Corps of the Army, with the rank of captains, to take relative rank in accordance with the length of their respective services, but next below all captains, Medical Corps, holding that grade at the time of the passage of this act.—There are about fifty officers of the Medical Reserve Corps on active duty who have been in the service since 1898.—The National Defense Act, approved June 3, 1916, reads in part as follows: "One year after the passage of this act the Medical Reserve Corps, as now constituted by law, shall cease to exist."

National Child Labor Bill Passed by the Senate.—Under pressure from the president, the Senate, on August 8, passed the National Child Labor Bill (H. R. 8234). This bill passed the House on Feb. 2, 1916, but the Senate amendments were so radical, making the bill much more drastic, that it has been sent to conference. As it now stands the bill excludes from interstate or foreign commerce any product of any mine or quarry in which children under 16 years of age have been employed and any product of any cannery, mill, workshop, factory or manufacturing establishment in which children under 14 years of age have been permitted to work at any hours whatsoever, or in which children between 14 and 16 years of age have been permitted to work more than eight hours in any one day, or more than six days in any one week, or after 7 o'clock p. m., or before 6 o'clock a. m. The fact that the particular product to be shipped is not the product of child labor is immaterial; it is sufficient that it was produced by an establishment in which children within the defined age periods are employed for any purpose whatsoever. Dealers other than the producers are liable to the penalties of the proposed law unless they have protected themselves by guarantees from the producers that the commodity has been lawfully produced and in event of any such guaranty proving false, the guarantor may be punished. "State medical inspectors" are among the local officers authorized to enforce the law, but the term is not defined. In the course of the debate on this bill, grave doubts were expressed as to its constitutionality.

OUR TROOPS ON THE BORDER

Hospital Train Starts.—The hospital train which has been built and equipped at Pullman for service between Washington, the border posts and San Francisco, started on its first trip, August 15, under the command of Capt. Howard H. Baily, M. C., U. S. Army.

Contracts Let for Field and Hospital Equipment.—Contracts for about \$500,000 work of field and general hospital furniture and equipment have been awarded by Lieut.-Col. Thomas U. Raymond, M. C., U. S. Army, in charge of the Medical Supply Depot, St. Louis. The goods are to be shipped to the border.

Red Cross Units Projected.—Drs. Thad Shaw and Henry H. Ogilvie are arranging for the establishment of a hospital

unit for the management of a base hospital evacuation station in San Antonio. The national headquarters has been asked to endorse the movement and to give official instructions for the perfecting of the organization.—The city of Eagle Pass has appropriated \$16,000 for a Red Cross base hospital and work has commenced on the building. The city has prepared to turn over schoolhouses or other public buildings to the government or the American Red Cross for use as hospitals in case of emergency.

WAR NOTES

American Ambulance Men Honored.—Six members of the American Field Ambulance were given honorable mention in the orders of the day of the French army, August 2. All of these are working in the Verdun region.

Red Cross Hospital Units to Be Reestablished.—Since October last the Red Cross has been vainly endeavoring to obtain permission from Great Britain to send hospital supplies to the central powers. In a communication to the State Department, dated July 28, Great Britain suggests that the American people might accomplish this end by financing American Red Cross hospital units to take the place of those which have been withdrawn from these countries, as the allied governments will permit Red Cross hospital supplies to be shipped to these reestablished units. The American Red Cross thereupon requested permission of the central powers through the State Department to reestablish one or two hospital units of six physicians and eight nurses each in each of the countries of the central powers.

LONDON LETTER

LONDON, July 31, 1916.

The Health of Old Miners

At a general meeting of the Institution of Mining Engineers, Dr. J. S. Haldane read an important paper on the health of old miners in which he pointed out that while up to the age of 50 the death rate from lung disease is much lower among colliers than in the rest of the population, above 50 the opposite holds, and there is a marked excess of deaths from bronchitis. But the deaths from this disease have greatly diminished since 1890, for which improved ventilation seems to be the cause. Fifty years ago miners often worked in air containing so much blackdamp that lamps and candles burned dimly. In such air there is usually 2 or 3 per cent. of carbon dioxid, which enormously increases the breathing during muscular exertion. The breathing is exactly regulated so as to keep an average of about 5.6 per cent. carbon dioxid in the alveolar air; and with 3 per cent. of this gas in the air, a man breathes twice as much air, so as to keep the alveolar percentage right. A man doing moderate muscular work in pure air breathes about five or six times as much air as during rest. In air containing 3 per cent. of carbon dioxid he would be breathing ten or twelve times as much air as during rest, and his breathing would be taxed to the utmost. He would thus be much more liable to contract emphysema. The better ventilation of coal mines is largely a consequence of the greater amount of firedamp and great heat encountered as mines have become deeper.

Dr. Haldane is inclined to think that both the firedamp and the heat have indirectly caused great improvement to the health of miners. Where there is plenty of firedamp there is usually also plenty of fresh and dry air, and no harmful excess of carbon dioxid. The proportion of deaths from bronchitis among old miners was higher in Staffordshire in 1890-1892 and 1900-1902 than in any of the other coal fields; and Staffordshire mines are exceptionally subject to blackdamp. The excess in bronchitis among old coal miners has been attributed to the breathing of dust, and Dr. Haldane was previously inclined to agree with this theory. But it is difficult to see why, if dust is the cause, there has been so great a diminution in the bronchitis mortality in recent years. Coal mines have, on the whole, become drier and more dusty with increasing depth and better ventilation; and, if dust were the cause, one would have expected the bronchitis to increase, whereas it has greatly diminished. Certainly an excess in mortality from bronchitis is associated with the breathing of harmful dust. But this excess is accompanied by a far greater excess in mortality from phthisis, and begins comparatively early in life, unlike the bronchitis mortality in colliers. Experiments on animals carried out by J. M. Beattie show that

both coal dust and the shale dust usually associated with it on mine roads are relatively harmless.

Further experiments on the same subject have been carried out more recently by Dr. A. Mavrogordato in Dr. Haldane's laboratory for the Medical Research Committee under the insurance act, and attention has been concentrated on the process by which dust is eliminated from the lungs. These experiments show that both coal dust and shale dust are readily eliminated by the agency of cells, which collect the dust and then wander out with it into the bronchial tubes, whence it is swept upward by the action of the ciliated epithelium which lines the air passages. This ready elimination does not occur with other dusts known to be dangerous and liable, in particular, to predispose to phthisis. The phthisis death rate among colliers is not only much lower than in nearly all other occupations, but is even lower than in the exceptionally healthy occupation of farm laborer, despite the advantages of pure air and relative segregation in the latter occupation. The low death rate from lung disease among colliers up to the age of 55 is almost entirely due to the relative immunity from phthisis, and this immunity existed in 1850 just as now. Above the age of 55 the increased bronchitis death rate in old age begins to tell heavily. Coal dust certainly does not kill germs, but it seems probable that the cells which clear out the dust particles clear out at the same time other "foreign bodies," such as tubercle bacilli. If this is so, coal dust in moderation is, on the whole, and despite explosions, an advantage to the safety of colliers. Town dwellers and smokers may also take comfort to themselves in the thought that, in introducing smoke particles into their lungs, they are educating their lung epithelium to deal with really harmful "foreign bodies." In any case the evidence does not now bear out the theory that the excessive bronchitis of old colliers is due to dust inhalation. Dr. Haldane does not think that there is any evidence in favor of the idea that the excessive bronchitis in old colliers is due to exposure to changes of temperature. Miners do not appear to take harm in this way, so far as Dr. Haldane has been able to ascertain; and in other occupations associated with exposure to extremes of weather there is no excess of bronchitis among either young or old.

The Treatment of the Wounded in the Great Naval Battle

The medical work of the navy has been planned with a care which has been justified by results. At the beginning of the war everything was ready—hospital supplies, equipment, ships. Within four days from the declaration of war, hospital ships were fully equipped and on their way to join the grand fleet. Had a great battle occurred during those early days, it would have found this department of the navy as well prepared as all the others. When in time the battle came, the work proceeded without a hitch. During the battle of Jutland Bank the naval surgeons performed a terrible task. At first when the enemy was sighted there devolved on them the work of transferring stores and equipment from the sick bays above the armor to the fore and aft distributing stations below it. The emergency was sudden and the time short. With the closing of the armored doors the time for action was come. In their stations they heard the booming of the guns, and soon there crept down to them the fumes of the exploding charges. From that time the stations became scenes of fierce and terrible activity. In one ship smoke filled the surgeons' rooms at the moment when the stream of wounded began to flow down to them, adding suffocation to the other perils of the work. The ship reeled under pounding blows, and staggered in a difficult sea; the concussion of her guns was so great as to preclude the possibility of adequate surgical assistance. Wearing gas masks, the physicians did what they could. Another ship was holed, and had her electric light cut off. The medical station was in darkness; it was foul with the gas fumes from the enemy shells; water poured in by the holes in the vessel's sides. Here single-handed a surgeon toiled by the light of an electric torch until he was ordered to get his wounded away because the ship was sinking. This he achieved so well that not a life was lost. Apart from the treatment of wounds, the most difficult problem was furnished by the terrible burns. These were of two kinds, those due to the ignition of cordite supplies by enemy shells—which are so severe as to amount to an instantaneous mummification—and those due to the flash of bursting shells, which are not usually severe. It is interesting to note that the eyes are not affected by these burns; the eyes are quicker than the flame, for they are able to shut before it reaches them.

Deaths

John Benjamin Murphy, M.D., Chicago; aged 58; died at Mackinac Island, Mich., August 11, from aortitis.

Dr. Murphy was born in Appleton, Wis., Dec. 21, 1857. He was reared on a farm, attended the preliminary schools and was graduated from Appleton High School in 1876, and from Rush Medical College in 1879. After serving an internship in Cook County Hospital, Dr. Murphy entered into partnership with the late Dr. Edward W. Lee. In 1882 he went to Europe where he studied for two years.

Dr. Murphy's career as a medical teacher began in 1884 when he was appointed lecturer in surgery in Rush Medical College. In 1892 he was made professor of clinical surgery in the College of Physicians and Surgeons, Chicago, holding this position until 1901, when he was elected professor of surgery in Northwestern University Medical School, and continued in that position until the time of his death, with the exception of an interregnum of three years from 1905 to 1908, during which he was professor of surgery in Rush Medical College. He was also for many years professor of surgery in the Post-Graduate Medical School, Chicago.

He became chief of the surgical staff of Mercy Hospital on March 21, 1895, and held this position until the time of his death. He was for thirty years a member of the attending or consulting staffs of Alexian Brothers Hospital and was for several years attending surgeon to Cook County Hospital, consulting surgeon to St. Joseph's and Columbus Memorial Hospitals, and the Hospital for Crippled Children, Chicago.

He was a fellow of the American Medical Association, orator in surgery in 1898 and was elected president of the Association at the St. Louis session in 1910. He had also served as president of the Clinical Congress of Surgeons of North America and of the Chicago Medical Society; was a member of the American Association of Obstetricians and Gynecologists; a fellow of the American Surgical Association; a member of the Southern Surgical and Gynecological Association; Western Surgical Association; a life member of the Deutsche Gesellschaft für Chirurgie; an honorary member of the Société de Chirurgie de Paris; an honorary fellow of the Royal College of Surgeons of England, and a member of other scientific bodies.

His contributions to the surgical literature were many. "Cholecysto-Intestinal, Gastro-Intestinal, Entero-Intestinal Anastomosis and Approximation Without Sutures" appeared in 1892. In this paper he first described the appliance commonly known as the "Murphy button." In 1897 he published the reports of his research and clinical work in suture of arteries and veins. This article was entitled "Resection of Arteries and Veins Injured in Continuity; End-to-End Suture; Experimental and Clinical Research." In the annual

Oration in Surgery, delivered at the Denver meeting of the American Medical Association in 1898, his subject was "Surgery of the Lung" and in this paper he advocated the use of nitrogen gas in the production of artificial pneumothorax. His research work in neurologic surgery was published under the heading of "Surgery of the Spinal Cord" in 1907, and his most important recent work on arthroplasty was published in 1912, entitled "Contribution to the Surgery of Bones, Joints and Tendons." On Feb. 1, 1912, appeared the first issue of *Murphy's Clinics* which chronicled his operations and lectures at Mercy Hospital.

In 1902, Notre Dame University conferred on Dr. Murphy the Laetare medal. He was given the degree of LL.D. by the University of Illinois in 1905, and by the Catholic University of America in 1915, and the University of Sheffield, England, conferred on him the degree of M.Sc. in 1908. His

most recent honor was given him in June of this year when the Pope made him a knight commander of the Order of St. Gregory the Great.

He had been in poor health for several months on account of aortitis, which caused him intense suffering, and had spent the early part of the summer at Wheaton, Ill. The extreme heat of the last month affected him so seriously that it was decided to take him north, and on the Monday before his death he went to Mackinac Island. Early on the morning of the day of his death he began to suffer extremely and the attacks of angina continued through the day, his death occurring suddenly at 3:30 p. m. The body was brought to Chicago and a necropsy was made which disclosed the cause of death to be aortitis. Many plaques of lime salts were found in the arch of the aorta and the thoracic and abdominal aorta, and there was pronounced coronary sclerosis.

Dr. Murphy was a man of great administrative ability and was able to associate with him, and to draw to him, young men of great promise in surgery and pathology.

When Dr. Murphy died, the medical profession lost one of the ablest surgical teachers and a clinician of the highest rank, one who had contributed much to medical and surgical science, one whose influence was world wide.

James G. Fergusson, M.D., Forfarshire, Scotland; Johns Hopkins University, Baltimore, 1914; aged 27; who immediately after graduation went to England and on the outbreak of war entered the Royal Army Medical Corps and was stationed at a base hospital for six months; afterward commissioned a subaltern in the "Black Watch"; invalided for several months on account of wounds received in battle; was killed in action while serving with the British Army in France, July 14.

Rowland Cox, Jr., M.D., Paterson, N. J.; College of Physicians and Surgeons in the City of New York; 1898; aged 44; a Fellow of the American Medical Association and New York



JOHN BENJAMIN MURPHY, M.D., 1857-1916

Academy of Medicine; clinical assistant in the Department of Surgery of the Vanderbilt Clinic; for seven years instructor in operative surgery in his alma mater; died in the New York Hospital, August 2, after an operation on the brain.

Carl V. Cole, M.D., Lake City, Minn.; University of Minnesota, College of Homeopathic Medicine, 1904; aged 39; while driving his automobile over a grade crossing of the Chicago, Milwaukee and St. Paul road, near Lake City, August 6, was struck by a train sustaining compound fractures of both legs and crushing injuries of the chest from which he died two hours later.

Angus McKay, M.D., Ingersoll, Ont.; Trinity Medical College, Toronto, Ont., 1872; F.R.C.S., L.R.C.P., Edinburgh, Scotland; aged 68; for several years surgeon in the Royal Navy; in 1886 a member of the Provincial Parliament for the South Riding of Oxford County; in 1910 and 1911 mayor of Ingersoll; died at his home, May 7, from carcinoma of the stomach.

William D. Christy, M.D., Creston, Iowa; Starling Medical College, Columbus, Ohio, 1878; aged 69; formerly a Fellow of the American Medical Association and local surgeon for the Chicago Great Western Railway; who had been ill for ten years as the result of a cerebral hemorrhage, died at his old home in Diagonal, Iowa, August 3.

Thomas Alphonso Kerefick, M.D., New York and Newport, R. I.; College of Physicians and Surgeons in the City of New York, 1885; aged 57; a Fellow of the American Medical Association; for many years attending physician to the Newport Hospital; died at the home of his brother in Lawrence, Mass., July 30.

Oric H. Paxson, M.D., Christiana, Pa.; Jefferson Medical College, 1882; aged 59; for a quarter of a century a druggist and practitioner of Christiana; died at his home, July 24, from the effects of a bullet wound of the head, self-inflicted, it is believed, with suicidal intent, while suffering from melancholia.

Edwin B. Tefft, M.D., New Rochelle, N. Y.; University of Buffalo, N. Y., 1864; a Fellow of the American Medical Association; first health officer of New Rochelle, consulting physician to the New Rochelle Hospital and at one time a member of the state board of regents; died at his home, August 6.

Martin H. Field, M.D., Indianapolis; Medical College of Ohio, Cincinnati, 1871; aged 81; physician to the Marion County Jail; for two years secretary of the Marion County Board of Health and for thirteen years physician to the State School for the Deaf; died at his home, August 7, from senile debility.

Hugh E. Lindsay, M.D., Whitewater, Wis.; Rush Medical College, 1869; aged 75; formerly a member of the State Medical Society of Wisconsin; for more than thirty years a practitioner of Whitewater; died in the Florence Wheeler Hospital in that city, July 31, from cerebral hemorrhage.

John A. Rodman, M.D., Dallas, Texas; Hospital College of Medicine, Louisville, Ky., 1875; aged 68; formerly a member of the State Medical Association of Texas; formerly local surgeon of the Missouri, Kansas and Texas Railroad at Waxahachie, Texas; died at his home, July 29.

William Chester Slough, Jr., M.D., Emaus, Pa.; Hahnemann Medical College, Philadelphia, 1869; aged 70; for several years school director, borough councilman and a member of the local board of health; died at his home, July 30, from cerebral hemorrhage.

Alvin Davis Dalbey, M.D., McConnellsburg, Pa.; University of Pennsylvania, Philadelphia, 1886; aged 52; formerly a member of the Medical Society of the State of Pennsylvania; died at his home, May 9, from chronic interstitial nephritis.

Alston M. West, M.D., Memphis, Tenn.; University of Pennsylvania, Philadelphia, 1876; aged 67; for several years professor of chemistry, pharmacy, toxicology and hygiene in the Memphis Hospital Medical College; died at his home, July 29.

John Bain, Brandon, Iowa (license, Iowa, 1887); aged 73; for more than forty years a druggist and practitioner of Brandon; hospital steward during the Civil War; for many years township clerk and school treasurer; died at his home, July 28.

Charles T. Grivelli, Young America, Minn. (license, Minnesota, 1896); aged 43; formerly a Fellow of the American Medical Association; a member of the Minnesota State Medical Association; died at his home, June 14, from heart disease.

James Monroe Vanderpool, M.D., Calvin, Okla.; Barnes Medical College, St. Louis, 1899; aged 56; formerly a Fellow of the American Medical Association; died in a hospital in Wellington, Kan., July 29, from cerebral hemorrhage.

Ellis Banning Perry, M.D., New York; College of Physicians and Surgeons in the City of New York, 1883; aged 68; a member of the Medical Society of the State of New York; died at his home, July 31, from cerebral hemorrhage.

Luther B. Etheridge, M.D., Wagener, S. C.; University of the South, Sewanee, Tenn., 1899; aged 42; a member of the South Carolina Medical Association; also a druggist; died at his home, June 24, from cerebral hemorrhage.

Eugene A. Spenser, M.D., Cleveland, Ohio; Cleveland College of Physicians and Surgeons, 1905; aged 47; formerly a member of the Ohio State Medical Association; died at his home, August 1, from malignant disease.

Walter John Teasdale, M.D., London, Ont.; University of Toronto, 1885; L.S.A. London, 1886; aged 54; formerly a member of the London Board of Education; died at his home, May 18, from tuberculous meningitis.

Omer C. Snyder, M.D., Chicago; Chicago Homeopathic Medical College, 1884; aged 60; while on a fishing trip in northern Wisconsin, died near State Line, Wis., August 6, from cerebral hemorrhage.

Llewellyn Brown, M.D., Norridgewock, Me.; Harvard Medical School, 1862; aged 81; formerly a member of the Maine Medical Association; died at his home, June 16, from cardiovascular renal disease.

William M. Shankland, M.D., Clinton, Mo.; Missouri Medical College, St. Louis, 1885; aged 57; a Fellow of the American Medical Association; died at his home, July 9, from cerebral hemorrhage.

Alfred Lewis Dennis, M.D., Conneautville, Pa.; University of Pittsburgh, Pa., 1892; aged 52; a Fellow of the American Medical Association; died at his home, May 4, from cerebral hemorrhage.

William Greenberry Lindie, M.D., Sturgis, Ky.; Kentucky School of Medicine, Louisville, 1888; aged 60; died at his home, July 30, as the result of a fall through a defective loft in his barn.

Daniel F. Callaghan, M.D., San Francisco; University of California, San Francisco, 1875; aged 70; died at his home, July 27.

Nicholas Edward Alford, M.D., Augusta, Ga.; Toledo, O., Medical College, 1887; aged 62; died at his home, July 16.

Joe N. Dial, M.D., Mount Pleasant, La.; University of Nashville, Tenn., 1852; aged 87; died at his home, July 17.

Marriages

ENOCH G. KLIMAS, M.D., Philadelphia, to Miss Estella E. Broaitas of Port Richmond, N. Y., at Philadelphia, August 17.

JAMES FREDERICK MUNSON, M.D., Sonyea, N. Y., to Miss Helen Jane Wilkinson of Manistee, Mich., August 2.

CHARLES EDWARD SIMA, M.D., to Miss Anna Dell Johnson both of Baltimore, at Cumberland, Md., August 1.

EDWARD L. CARLTON, M.D., Canal Winchester, Ohio, to Mrs. Josephine A. Daukart of Chicago, July 31.

NORMAN L. McLACHLAN, M.D., to Miss Lena Gertrude Roling, both of Findley, Ohio, July 27.

ELBERT BERKELEY TALBOT, M.D., to Miss Madeleine Wallace Lorain, both of Richmond, June 28.

JOSEPH WILLIAM WALSH, M.D., to Mrs. Irene Viola von Nagy, both of Brooklyn, August 3.

WILLIAM WALLACE LARSEN, M.D., to Miss Ellen Bolzer both of LeMars, Iowa, July 19.

CLARENCE PERCY COOK, M.D., to Miss Frances Hanson, both of Des Moines, Iowa, June 28.

FRANK GILLINGHAM MORRILL, M.D., to Miss Mabel Nortrup both of Havana, Ill., July 29.

BORIS DAVID RAPOPORT, M.D., Boston, to Miss Eda Rothstein of New York, May 21.

PHILIP HARMAN BROUDO, M.D., to Miss Estelle Pruzan, both of Chicago, August 16.

CHARLES E. HYNDMAN, M.D., to Miss Ruth Gilliam, both of St. Louis, August 2.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

ARTICLES REFUSED RECOGNITION

Report of the Council on Pharmacy and Chemistry

Below appear abstracts of the Council's action on articles refused recognition which were not deemed of sufficient importance to require lengthy reports:

Radio-Rem

The Radium Therapy Company, Schieffelin & Co., selling agents, submitted to the Council radium emanation generators called "Radio-Rem Outfits," designed to generate respectively 200, 1,000, 2,000, 5,000 and 10,000 Mache units per twenty-four hours.

Those who are well informed on the subject of radium therapy are of the opinion that the administration of small amounts of radium emanation such as generated by certain outfits is without therapeutic value. It has been stated that at the Radium Institute of London the minimum preliminary dose is 185 microcuries (500,000 Mache units), and as many as 555 microcuries (1,500,000 Mache units) are employed.

In consideration of these facts the Council voted not to accept any radium emanation generator which produces less than 2 microcuries of emanation during twenty-four hours. Accordingly, while accepting Radio-Rem Outfit No. 5, claimed to produce 10,000 Mache units (3.7 microcuries) and Radio-Rem Outfit No. 4, claimed to produce 5,000 Mache units (1.8 microcuries), the Council voted not to accept Radio-Rem Outfit No. 3, claimed to produce 2,000 Mache units (0.74 microcurie), Radio-Rem Outfit No. 2, claimed to produce 1,000 Mache units (0.37 microcurie), and Radio-Rem Outfit C, claimed to produce 200 Mache units (0.07 microcurie).

This report having been submitted to Schieffelin & Co. and their reply considered, the Council authorized publication of the report.

Olio-Phlogosis

Olio-Phlogosis, a liquid preparation to be applied externally by means of a cotton pad, is advertised by the Mystic Chemical Company, Kansas City, Mo., thus:

"Doctor: Don't fail to use Olio-Phlogosis liberally for Pneumonia, Bronchitis and Pleurisy. It works quickly. Olio-Phlogosis is as far ahead of all medicated kaolin plasters as these plasters were ahead of the old-time moist and soggy poultices."

A pamphlet advises the use of Olio-Phlogosis in

"... all cases of Inflammation and Congestion, such as Pneumonia, Bronchitis, Pleurisy, Croup, Boils, Carbuncles, Rheumatism, Swollen Glands, Peritonitis, Ovaritis, as a Surgical Dressing, Mamitis [Mastitis (?)], Vaginitis and Metritis (on cotton tampon to deplete these parts), Septic Wounds, Old Ulcers, Chilblain, Eczema, Neuralgia, Inflammation of the Eyes and Ears, Alveolar Inflammation, Burns, Scalds, Etc."

According to the information sent to the Council by the Mystic Chemical Company, Olio-Phlogosis has the following composition per gallon:

Ol. Gaultheria	drs.	8
Ol. Eucalyptus	drs.	8
Ol. Abies Canadensis.....	drs.	2
Ol. Thyme (white).....	drs.	2
Resublimated Iodin crystals.....	grs.	32
Resorcin	drs.	1
Acid Boracic C. P.....	drs.	2
Quinine Bisulphate	drs.	4
Sodium Thiosulphate	drs.	3 1/2
Glycerin C. P.....	q. s. ad gal.	1

A nonquantitative formula which appears on the label of a sample bottle sent to a physician enumerates the same ingredients except the sodium thiosulphate.

The A. M. A. Chemical Laboratory reports that no free iodine could be detected in the preparation.

Apparently, then, Olio-Phlogosis is essentially a skin irritant applied by means of cotton; it can be expected to be just about as effective as the old-fashioned cotton pneumonia jacket, used in conjunction with an aromatic skin irritant, such as camphorated oil or wintergreen or menthol ointment. The odor may have some psychic effect, and it is possible that some of the oily matter may be absorbed by the skin. That such small amounts, even if absorbed, can produce any considerable systemic effect, however, is highly improbable, and the advice that this preparation be relied on in pneumonia, pleurisy, peritonitis, etc., is pernicious. In the few cases of pneumonia in which heat is indicated, the plain cotton pad will usually be found sufficient. If the physician considers the addition of a skin irritant desirable, it is easy to select one from the official preparations. It will be far more rational to do so than to invoke the aid of a mystic name and a complex formula to which the patient and his family, at least, will be led to give unmerited credit.

The claims made for Olio-Phlogosis are unwarranted; its composition is complex and irrational, and the nondescriptive but therapeutically suggestive name is likely to lead to uncritical use. The Council voted that the product be refused recognition for conflict with Rules 6, 8 and 10, and that this report be published.

FROM A LAY VIEWPOINT

The two items that follow are taken from the New York Tribune. They appeared in a department known as "The Ad-Visor," published in the interest of honest advertising and conducted by Mr. Samuel Hopkins Adams. The first item is a letter to "The Ad-Visor" from Mr. Huse, editor of the Norfolk (Neb.) News. The comments thereon are Mr. Adams':

I am very much interested in your campaign for pure advertising. In the Norfolk News, which is a country daily, I have barred all cancer cures, all rupture cures, all piles advertising, and we exercise quite a rigid censorship in all our medical advertising. We do not allow the word "cure" to be used, and we bar a lot of other similar expressions. In the main I have tried to follow the Chicago Tribune and the Kansas City Star, whose ideals I have always considered high, but they publish a good deal of advertising which some papers refuse.

The whole situation is so confusing that this suggestion has come to my mind—that the newspapers of America select some responsible physician as a national censor to pass fairly and conscientiously upon all copy submitted and thus to establish a uniform basis of censorship.

If this censor were a physician of unquestioned knowledge and equally unquestioned integrity, and at the same time broad-minded and unprejudiced, so much weight could be given to this opinions that newspapers which estimate public confidence would hardly dare run the copy that such a censor should pronounce fraudulent.

Under the present circumstances, one small newspaper can hardly hope to bring about the desired reform and by barring all medical advertising merely sacrifices a very important source of revenue—and revenue which is sorely needed in the publication of a country newspaper.

N. A. HUSE.

Imagine the storm of derision and resentment which would be stirred up in "patent medicine" circles should a suggestion such as this emanate from, for example, the American Medical Association. How bitterly it would be denounced as another plot of the "Medical Trust" to destroy the innocent and public-spirited nostrum trade! But the suggestion of a national censorship does not come from medical sources. It is made by the editor of the Norfolk (Neb.) News, one of the greatest and perhaps the most successful "country daily" in the United States. Like many other thoughtful students of the trend of journalism, Mr. Huse perceives that the time is close at hand when the American press must dissolve partnership with the agencies of fraud, quackery and poison if it is to retain any considerable measure of public confidence and respect. He has made a good start with his own paper, but, as he justly intimates, the burden of decision is too heavy for a single institution of modest resources.

His plan might perhaps be altered and developed to advantage, as most important plans of reform must be to make them effective. For example, it may be argued that the responsibility and authority involved in such censorship would be too heavy for one man, and that a board could better do the work. On such a board there might well be a chemist of unimpeachable reputation and an advertising man representing some national product of recognized merit.

A newspaper which should accept advertising declared deceptive or misleading by such a censorship would, indeed, place itself in an indefensible position.

Whatever the composition of the censorship, Mr. Huse's suggestion is fraught with the broadest and most valuable possibilities of reform. What association of newspapers will have the courage to give it form and substance?

Correspondence

Reversal of Decision in Case of Coffey vs. Tiffany and Howard, 182 S. W. 495

To the Editor:—I regret to notice in THE JOURNAL (July 29, 1916, p. 389) a digest of the decision of the Kansas City Court of Appeals, per Johnson J., in the case of *Coffey vs. Tiffany and Howard*, 182 S. W. 495, without mention of the fact that this decision was reversed and quashed by the Supreme Court of Missouri in *State ex rel Tiffany and Howard vs. Ellison et al. Judges of the K. C. Court of Appeals*, 182 S. W. R. 996, decided last February. Your medicolegal writer was, no doubt, misled by the fact that the quashed opinion of the Kansas City Court of Appeals was sent in for publication in the *Southwestern Reporter* after it had been reversed and set aside, without notation of that fact, in the advance sheets, though it was noted in the permanent edition. I enclose copy of my report of these cases in the *Weekly Bulletin* of the Jackson County (Mo.) Medical Society for March 18, 1916.

As attorney for the defendant oculists I am familiar with the outrageous pursuit of them in this Coffey case, wherein the plaintiff's attorneys have so far been unable to get a single medical witness to support their unfounded and unwarranted claims. In fairness to my clients I think you should promptly state that the decision you reported has been set aside as erroneous and unfounded in its inferences of fact and law.

DENTON DUNN, Attorney, Kansas City, Mo.

[In our Medicolegal Department, this issue, p. 635, appears an abstract of the supreme court decision.—ED.]

Cerates and Ointments in Granulating Wounds

To the Editor:—Apropos of the discussion of the use of a secret nostrum of wax, paraffin and resin in granulating wounds (THE JOURNAL, Aug. 12, 1916, p. 516), it should be said that plain, amber petrolatum, to which is added one part of the ointment of zinc oxid to from six to ten parts of the petrolatum, is far better than any such mixture could be, and cheap enough to be ordered in barrels, as a protective and mild antiseptic covering for granulations if used freely on the dressings. Under this treatment wounds heal quickly and with a minimum of discharge, the epithelium propagating itself over the greater part of the surface without the need of skin grafting. (See my note in the *New York Medical Journal*, April 26, 1913.)

The need for protecting healthy granulations from contact with gauze or other dressing as well as from the air has been neglected somewhat since the era of antisepsis. No matter how sterile the gauze placed in contact with healthy granulations, innumerable wounds will be produced every time the gauze is removed. The granulations remain unwounded if separated from the gauze by a sufficient thickness of the ointment, the whole being covered by the gauze or absorbent cotton and removed once or twice daily. Drainage occurs freely about the edges.

Carrel found amber petrolatum a better preservative of refrigerated living tissue than the colorless variety, doubtless owing to traces of decolorizing chemicals in the latter.

G. BETTON MASSEY, M.D., Philadelphia.

Swallows.—It may take more than one swallow to make a summer, but half a swallow of dirty milk can make a summer complaint.—*Bull. Lincoln (Neb.) Health Dept.*

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

BATH PRURITUS

To the Editor:—I have had for a number of years a personal ailment which has proved intractable. That it is not uncommon I know by the number of cases coming under my observation, some of the patients getting perfect results from proper study and treatment, while others, like myself, experience little or no relief. Having noticed recently several articles in THE JOURNAL bearing more or less on this subject, I thought I might get some help from the study and experience of others.

The complaint is an intolerant itching of the skin, following a bath, noticeable more or less over the entire body, but most severe on the lower extremities and particularly from the knees to the ankles. It comes in a slightly less aggravated form from the slight friction incident to the rubbing with a Turkish towel, particularly when the skin is moist from perspiration. The itching lasts from ten minutes to half an hour, is not influenced by hot or cold weather, and is not increased by the warmth of the bedclothes, as so often seen in old persons. It is most severe when I remain in the water but a short time, and is mitigated or entirely absent when I remain more than fifteen minutes. Cold cream, oil or other protective gives some relief, but this is not pleasant in the hot weather.

A number of years ago I consulted specialists both in this country and in Europe, getting varying opinions as to the cause, but little help. Some called it a neurosis, others a disturbance of the alimentary canal. At the time I suffered much from periodic indigestion and probably some auto-intoxication with some of the little neuroses so commonly coincident. Diet and proper living corrected this, and I am now in perfect health except for now and then a mild recurrence of the intestinal trouble, from which I no doubt have some auto-intoxication. When this comes on it begins with a slight headache, rheumatic pains and loose and imperfectly digested stools. This I correct with catharsis, restricted diet, etc., but with no change in the itching. My habits are and always have been good. I smoke very moderately and use no intoxicants; I eat and sleep regularly, eating only simple foods and sparingly of meat. I work moderately, get several hours' daily mild recreation; am of normal weight, and the most rigid physical examination reveals no noticeable ailment. I use very little tea or coffee, but drink a quart or more milk daily. Abstaining from meat and even heavy vegetable proteins makes no change in the itching, but I notice that at those times when the itching is least noticeable my digestion is always at its best.

There is nothing in the family history to throw any light except a little tendency to muscular rheumatism and eczema, neither, however, at all marked. I have three spots where there is occasional itching irrespective of the use of water: the scalp, where an ichthyol ointment gives satisfactory relief, but must be used regularly, and a spot about an inch square on the knee and one a little smaller on the point of the chin which at times cannot be relieved by anything tried so far. At these points there is nothing to be seen, not even redness, when the trouble is at its worst.

C. H. K., M.D.

ANSWER.—The foregoing is an accurate description of a classical case of bath pruritus. In nearly all cases it is impossible definitely to determine the cause. There are probably two factors in the etiology: (1) a naturally delicate skin that reacts more than the average skin to causes of irritation, and (2) hypersensitiveness of the skin resulting from some internal disturbance. This is probably in most cases a reaction having its origin in the gastro-intestinal tract, for the trouble occurs most frequently in persons who have some disturbance of digestion. These patients discover, as in this case, that the itching varies with the condition of the digestion.

In all cases it is desirable to relieve digestive disturbances as far as possible. In some cases this will control the trouble. For example, it is an occasional experience that a person gets rid of a bath pruritus by the radical change in his food which comes by changing from one eating place to another. Some cases of bath pruritus are utterly intractable and yield to no treatment.

The relief obtained from local measures is very uncertain. Almost any bland application that lubricates the skin and gives it some protection is more or less agreeable. In summer during the hot weather when greases are uncomfortable, a thin tragacanth jelly to which is added an inert powder may be useful. The following formula will give such a preparation:

	Per Cent.
Powdered tragacanth	0.5
Zinc oxid and calamine.....	12
Glycerin	12
Water.....q. s. ad.	100

The tragacanth, glycerin, and about one half of the water should be heated together until the tragacanth is dissolved. The powders mixed with the remainder of the water are then added with stirring. This forms a thick mucilage which dries readily on the surface, and which can be easily painted on, or smeared on, immediately after bathing. To it either camphor-chloral, camphor-menthol, or camphor-phenol can be added in the strength of from 0.5 to 2 per cent. Also the various liquid preparations of tar can be added in the proportion of from 5 to 10 per cent. Sometimes these antipruritics are useful. Sometimes they are not. As to which one will be most useful, or which combination, only trial will show. In winter time greasy applications are usually much more efficient. Patients with bath pruritus naturally have dry skins. This condition is exaggerated in winter, and the patients are usually better off for the application of a fat, such as cold cream, to which an antipruritic has been added.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

MASSACHUSETTS: Boston, Sept. 12-14. Sec., Dr. Walter P. Bowers, secretary of the Massachusetts Board of Registration in Medicine, Room 501, No. 1 Beacon St., Boston.
MISSOURI: Kansas City, Sept. 18-20. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.
NEW YORK: Albany, Buffalo, New York and Syracuse, Sept., 19-22. Mr. Harlan H. Horner, Chief Examinations Division, The University of the State of New York, State Department of Education, Albany.

Illinois January Report

Dr. C. St. Clair Drake, secretary of the Illinois State Board of Health, reports the written examination held at Chicago, Jan. 13-15, 1916. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 64, of whom 41 passed and 23 failed. The following colleges were represented:

College	PASSED	Year Grad.	Total No. Licensed
Bennett Medical College.....	(1914, 3)	(1915, 5)	8
Chicago College of Medicine and Surgery..	(1914)	(1915, 9)	10
Hahnemann Med. Coll. and Hosp., Chicago.....	(1915)		2
Jenner Medical College.....	(1915)		1
Loyola University	(1916)		2
Northwestern University	(1911)	(1915, 3)	4
Rush Medical College.....	(1915)		7
Johns Hopkins University.....	(1914)		1
University Medical College, Kansas City.....	(1907)		1
New York Med. Coll. and Flower Hosp.....	(1915)		1
Meharry Medical College.....	(1914)		1
Marquette University	(1913)		1
University of Toronto.....	(1910)		1
National University, Athens.....	(1895)		1
FAILED			
Bennett Medical College.....	(1915)		7
Chicago College of Med. and Surg.....	(1914)	(1915)	2
Chicago Hosp. Coll. of Med.....	(1915)		3
College of Med. and Surg., Physio-Med., Chicago....	(1910)		1
Illinois Medical College.....	(1910)		1
Jenner Medical College.....	(1915)		1
National Medical University, Chicago.....	(1908)		1
Hospital College of Medicine, Louisville.....	(1904)		1
University of Louisville.....	(1913)		1
Meharry Medical College.....	(1911)	(1914)	3
National Univ. of Arts and Sciences.....	(1914)		1
University of Moscow.....	(1895)		1

Connecticut March Report

Dr. Charles A. Tuttle, secretary of the Medical Examining Board of the State of Connecticut, reports the practical and written examination held at New Haven, March 14-15, 1916. The total number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 18, of whom 12 passed and 6 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Georgetown University	(1913)		75.2
George Washington University.....	(1915)		79.9
College of Phys. and Surgs., Baltimore.....	(1910)		75

Harvard University	(1914)	76.3, 89.4;	(1916)	80.7
College of Phys. and Surgs., in the City of N. Y.....	(1884)			89.6
Columbia University, Coll. of Phys. and Surgs.....	(1905)			85.3
Long Island College Hospital.....	(1912)			84.6
Temple University	(1914)			75.4
University of Vermont.....	(1914)			79.7
University of Virginia.....	(1904)			83.3

FAILED				
Georgetown University	(1911)			73.4
Eastern University *	(1913)			56.9
Maryland Medical College.....	(1913)	56.6,		63.4
College of Phys. and Surgs., Boston.....	(1910)			51.1
Jefferson Medical College.....	(1912)			72.6

* Officially reported as not recognized by the Maryland State Board of Medical Examiners.

Wyoming March Report

Dr. H. E. McCollum, secretary of the Wyoming State Board of Medical Examiners, reports the written examination held at Laramie, March 14-16, 1916. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 7, including 1 osteopath, all of whom passed. Seven candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Colorado.....	(1911)		88.8
Chicago College of Med. and Surg.....	(1909)		76.7
Rush Medical College.....	(1891)		84.6
Baltimore Medical College.....	(1900)		82.3
University of Michigan Medical School.....	(1883)		75.1
University of Toronto.....	(1914)		87

LICENSED THROUGH RECIPROCITY			
College	Year Grad.	Reciprocity with	
Bennett Medical College.....	(1911)	Illinois	
Chicago Coll. of Med. and Surg.....	(1909)	Illinois	
Northwestern University	(1913)	Utah	
Rush Medical College.....	(1914)	Utah	
Lincoln Memorial University.....	(1910)	Tennessee	
Wisconsin College of Phys. and Surgs.....	(1905)	Wisconsin	

Book Notices

A MANUAL OF SURGICAL ANESTHESIA. By H. Bellamy Gardner, M.R.C.S., L.R.C.P., Honorary Anesthetist to the King George Hospital. Second Edition. Cloth. Price, \$2.25 net. Pp. 220, with illustrations. New York: William Wood & Co., 1916.

The subject is presented in thirty-five chapters which deal with the various phases of anesthesia. The predominant impression made by the book is the recommendation of chloroform alone or combined with ether. To those who still use chloroform the manual will prove satisfactory, but to those who believe that there are both immediate and remote dangers in the use of this drug, the recommendation will materially lessen the value of the book as a guide or help to the student, anesthetist or surgeon in the selection of an anesthetic.

Following a chapter on the history of surgical anesthesia a clear, concise review of the duties of the anesthetist is given. This chapter deserves the consideration of the experienced anesthetist as well as the novice in anesthetic work. The chapter on cardinal principles for the conduction of anesthetic administrations, in which the author clearly states the dangers of obstructed breathing and emphasizes the importance of maintaining a clear airway, combined with the succeeding chapter on anoxemia and asphyxia, is perhaps the most valuable part of the book.

Chapter V deals with the signs of anesthesia. A description of the method of touching the cornea for lid reflexes is minutely described and recommended as the best indication as to the degree of narcosis. Severe corneal ulcerations frequently develop from such an unjustifiable practice. With reference to the pupil the author says: "The size of the pupil of the eye in the different degrees of anesthesia is subject to variations from so many causes that the simple observation of its diameter at any given moment is insufficient evidence of the existing depth of narcosis." The author fails to grasp the fact that it is not the diameter of the pupil which should form the basis of our conclusion as

to the degree or depth of narcosis, but its activity to light when the lid is suddenly raised. In the same chapter respiration, color of the skin, pulse, muscular system and surface temperature are well defined, as is also the physical type and temperament of the patient in the succeeding chapter. Pathologic conditions are well dealt with. The same chapter discusses the choice of the anesthetic. No doubt the latter will receive the most adverse criticism from American anesthesiologists and surgeons (the author is a London anesthetist), because of the constant recommendation of chloroform either alone or combined with ether. Several pages are devoted to nitrous oxid and the different methods of its administration for general and dental surgery.

A short description of the open method of etherization is given, and attention is called to its advantages. The closed method and rebreathing are given considerable space, and attention is called to an inevitable anoxemic element due to the rebreathing of expired air.

Chloroform alone and combined with ether, and various methods and appliances for its administration, are exhaustively dealt with.

The method of producing spinal analgesia is described, and the sane comment is made that "a low rate of mortality from this method of analgesia can only be expected from the greatest care and skill in technic." It is doubtful if shock is produced by the "removal of the breast from the pectoral muscles" or by the "use of the mallet and chisel during mastoid operations," and consequently if shock occurs at such a time it is probably due to hemorrhage. The statement that "the effect of shock on the respiratory center produces deep crowing inspiration and laryngeal spasm" must be questioned. Such a condition is produced by a too concentrated vapor, and is present when there is no evidence of shock. The remainder of the chapter on shock is in other respects in keeping with the general high order of the manual.

Nine pages are devoted to adenoids, and attention is called to the dangers associated with anesthesia in this condition. Twilight sleep is described but not recommended. The closing chapter deals with acidosis. Local anesthesia is made conspicuous by its absence.

HIPPOCRATES JONES. His First Confinement Case and What Came of It. An Alleged Poem in Thirteen Cantos. By Walter Graves, M.D. Paper. Price, 50 cents. Pp. 50, with illustrations. Wichita, Kansas: The Author, 1916.

This is a satirical, sarcastical near-poem, describing the brief medical career of an egotistical, superscientifically educated young doctor, who, however, lacked common sense and practical medical knowledge. He located in a western town, which was his initial mistake. His first and only confinement case was his undoing. The nurse—one of the practical kind—finally eliminated the young doctor by "besoming" him out of the room, and assumed charge. In the later developments, he is taken in charge by the vigilance committee, and is nursed back to health by the nurse, who finally, for pity's sake, marries him. The reading of this "poem" will prove to be a soothing and cool way of passing a half hour.

POST-MORTEM METHODS. By J. Martin Beattie, M.A., M.D., Professor of Bacteriology, University of Liverpool. Cloth. Price, \$3.25. Pp. 231, with illustrations. New York: G. P. Putnam's Sons, 1915.

This is one of the Cambridge Public Health Series, the editors of which have wisely recognized that promotion of frequent and well conducted necropsies is an important function of public health work. The author has produced a book which can be used to advantage especially by practicing physicians and others whose chief activities are not those of the pathologist. The directions are clear, the methods simple and sound, the advice eminently practical. Special chapters are devoted to medicolegal examinations and to histologic and bacteriologic methods. It is an unpretentious work, which fulfils its aims excellently, and it can be recommended especially to those who have occasionally to make a postmortem examination.

Miscellany

Improvement in Medical Statistics

Last year the Netherlands Medical Association appointed a committee to study the question of medical statistics, and their first report was recently published in the organ of the association (*Nederlandsch Tijdschrift voor Geneeskunde*, 1916, p. 1661). The committee relates that in an examination of the books of the sixty-four hospitals in the Netherlands, chaotic differences were found between the data recorded and the methods of compiling them in the different hospitals. Their records therefore cannot be compared, and thus are not a source for dependable statistics. The committee deplores this, and makes some suggestions which would remedy this state of affairs. In the first place, however, it deprecates any attempt to force uniformity in hospital records. The liberty of each institution to record and publish what seems to it important must not be interfered with. But certain data should be recorded, and these the committee thinks should be called to the attention of every hospital with the request to conform to the suggestions. The committee adds that the suggestions have been restricted to what is absolutely necessary, so as not to add to the *beslommeringen* of the hospital director. (This useful and untranslatable Dutch word *beslommeren* means "to involve in all sorts of difficult affairs.") The committee suggests, therefore, that the records of each hospital should state:

Number of patients January 1, classified by sex.

Number of patients admitted during calendar year, classified by sex.

Number of patients discharged during calendar year, classified by sex and by age groups.

Number of patients died during calendar year, classified by sex and by age groups.

Number of patients died within from two to twenty-four hours after admittance, classified by sex and by age groups.

Number of patients, December 1, classified by sex and by age groups.

The classification by sex should include both adults and children.

Total number of days of hospital treatment of the patients discharged during the year and also of those who died, including the number of days of hospital treatment during their entire sickness, classified by sex.

The last diagnosis of the sickness of the discharged patients, classified according to Bertillon's smaller list, specifying sex and age groups (0 year; 1-4; 5-13; 14-19; 20-49; 50 and over).

Ditto for those that died.

Number of available beds December 31.

Number of prescriptions filled during the year.

Number of necropsies during the year.

Number of attendants, male and female, December 31.

The report of the committee tabulated data along the suggested lines from the few hospitals where they were available for the year 1914. The tables show the simplest methods for keeping the records in this manner, and a glance at them demonstrates its advantages. A later issue of the *Tijdschrift* contains an earnest plea for the great value of medical statistics when interpreted with understanding (see Abstract 62 in THE JOURNAL, July 29). They are liable to prove misleading when viewed from the mathematician's standpoint alone.

Salicylates in Scarlet Fever

The many analogies between scarlet fever and acute rheumatism seem to have been confirmed by the benefit from salicylic medication in the experience of F. Ramond and G. Schultz with scarlet fever in soldiers. They give 6 gm. a day, occasionally even more, fractioned throughout the day and night, commencing as early as possible, and keeping it up until the fever and general symptoms have subsided. This is usually within three days, but, to be safe, the drug is kept up for another two days. It is resumed again the fifteenth day, the dose being reduced by 1 gm. a day. This wards off the complications which are so liable to develop from the fifteenth to the twentieth days, especially tonsillitis and nephritis. If the heart gives symptoms of trouble, the salicylate should be given more cautiously and its elimination in the urine supervised even for this. The mortality under this treatment dropped to 0.25 per cent. and complications were exceptional and mild.—*Bull. de la Soc. méd. d. hôp. de Paris*, 1916, xxxii, 866.

Medicolegal

A Silence Not Deemed an Admission of Negligence

(*State ex rel. Tiffany et al. vs. Ellison et al., Judges of the Kansas City Court of Appeals (Mo.), 182 S. W. R. 996*)

The Supreme Court of Missouri, in this original action in certiorari, as it is called, by agreement of four members of the court, two others dissenting and a third not sitting, orders the record of the court of appeals quashed in the malpractice case of *Coffey vs. Tiffany et al. (Mo.), 182 S. W. R. 495*, reported at some length in *THE JOURNAL*, July 29, 1916, p. 389, under the heading "Class of Errors for Which Physicians and Surgeons Are Liable." The supreme court says that, in the disposition of this case, it is not necessary to tread on any disputed ground. During the course of the trial the process server, who served the summons on Dr. Howard, was permitted to testify to facts which the trial court considered equivalent to an admission of negligence by Dr. Howard, stated as follows: Plaintiff Coffey brought her suit six months after the alleged injury. "The summons was served by a deputy sheriff who was introduced as a witness by plaintiff, and testified to what occurred at defendant's office when Dr. Howard was served. Dr. Tiffany was not in, and after the papers were served on Dr. Howard he and the witness went downstairs (the offices were on two floors), when Dr. Howard called upstairs to the clerk who had received plaintiff, and asked if she 'had a record of the Mary Coffey case.' The clerk answered that she had, and that plaintiff 'was the schoolteacher that he dropped iodine in her eye and put it out.' Dr. Howard, who was standing by the side of the witness, said nothing. Each defendant objected to this testimony and the court sustained the objection of Dr. Tiffany, but overruled that of Dr. Howard." The supreme court has no hesitancy in saying that the admission of this evidence was error, nor has it any doubt that its admission contravened the announced law by this court, as well as by other courts. Under the facts and rules of law, Dr. Howard was under no obligations to engage (at long range and with party out of his sight and presence) in a dispute with the girl over a voluntary statement of hers, and one wholly irresponsible to the question asked. She was not asked what the record would show, but merely if she had kept a record. Her remark amounted to a charge of criminal negligence, it was true, but because Dr. Howard, situated as he was, chose to treat such a charge, coming from that particular source, with silent contempt, should not permit such remarks to go in as evidence of an admission of guilt. The court added that it did not believe that the verdict could have been got without this testimony of the sheriff, and that if he overheard anything it must have been about *dionin*, and not *iodine*, of which there was no evidence in the case. The court also commented on the lack of showing of any causal connection between the treatment and the blindness, which latter was presumably due to the disease in the absence of competent proof to the contrary.

Expert Testimony and Hypothetical Questions

(*Kentucky Traction & Terminal Co. vs. Humphrey (Ky.), 182 S. W. R. 854*)

The Court of Appeals of Kentucky, in reversing a judgment entered against the company, holds that there was error in admitting a faulty hypothetical question the effect of which it says was almost to force an answer from the witness establishing the plaintiff's cause of action, and without which her miscarriage could not be connected with the accident. The court says that expert testimony is regarded by the law as the weakest character of testimony. It is a species of hearsay testimony forming an exception to the general rule forbidding the introduction of that character of testimony because of the necessities of the case, and the tendencies of the courts are constantly inclining in the direction of narrowing the rule permitting its introduction, rather than extending it. The expert witness, as latter-day experience has taught, always colors his testimony for the side

introducing him, and, indeed, we learn from the history of the country that in great centers of population there exist experts following the business of bartering their expert or scientific knowledge to the litigant who can pay the highest price, and while there was nothing to show that the testimony of any of the physicians in this case was influenced by any such considerations, yet it is because of the existence of the facts which the court has stated that the rule of law permitting the admission of expert testimony has been brought to its present condition. With this character of evidence being regarded by the law as stated, it is the more important that the circumscribing rules permitting its introduction should be the more strictly enforced. The hypothetical question grouping therein the facts forming the premises on which the answer of the witnesses must be based must include no facts not shown by some of the testimony to have existed; nor must it omit any relative fact shown by some of the testimony to have existed. This is the universal rule. From the authorities it will be found that the rule requires the examiner to incorporate into the hypothetical question, not necessarily facts which have been conclusively proven, but that he must incorporate therein facts only which the testimony tends to establish and such as the jury may be authorized under the testimony to find. Nor can his question omit in its incorporation proven facts, or those which the testimony tends to prove which are material and would have a bearing on the principal facts sought to be established or refuted.

City Not Liable for Injury from Defective Condition of Pesthouse

(*Butler vs. Kansas City (Kan.), 155 Pac. R. 12*)

The Supreme Court of Kansas says that the city maintained a pesthouse where persons afflicted with smallpox were taken for isolation and treatment. The plaintiff's petition alleged that he became sick with smallpox and was taken by employees of the city and confined in one of the rooms or wards of the pesthouse, where each morning he was obliged to start a fire, and that blood poisoning resulted from a splinter of the flooring which entered his bare foot as he walked from the bed to the stove. The petition alleged that the city was negligent in maintaining the floor of the room in a defective and dangerous condition. The plaintiff recovered a judgment for damages, but that is reversed by the supreme court, which holds that the petition failed to state a cause of action against the city, and the latter's demurrer must be sustained. The duty of a municipal corporation to conserve the public health is governmental, and it is not liable for injuries inflicted while performing such duty. Where a municipal corporation maintains a pesthouse for the treatment and isolation of persons who have been exposed to or affected with smallpox, it performs a governmental duty, and the rule that the governmental agencies of the state are not liable in an action of tort for either misfeasance or nonfeasance applied to this case.

Distinction Between Boils and Abscesses

(*Midland Casualty Co. vs. Mason (Okla.), 154 Pac. R. 1171*)

The Supreme Court of Oklahoma, in reversing a judgment obtained by Plaintiff Mason, holds that a special accident and health insurance policy, providing for the payment of indemnity in the event the insured under certain conditions suffers from boils, is clear and explicit, and does not cover disability occasioned by a disease designated as "ischio-rectal abscess"; and the courts have not the right to enlarge on the plain provisions of such a policy. The court says that the plaintiff, so insured, alleged that he suffered from "deep-seated" boils. There was evidence offered by him that he was suffering with a disease designated as "ischio-rectal abscess," and that this expression was synonymous with "boils." The trial court, however, found that there is a distinction between a boil and an abscess; that the term "ischio-rectal" merely determines the locality of the abscess; that an abscess is a condition wherein the internal portions of the anatomy are affected, as an abscess of the liver or of the brain, but that a boil is external in involving only

the skin; that by a preponderance of the testimony it was shown that there is a good reason why insurance companies should include boils and exclude abscesses in a health indemnity policy, the reason being that boils rarely prostrate or disable the patient, while abscesses usually do; that the one is included and the other excluded as a matter of economy. Yet, after making these special findings of fact, the trial court proceeded to render judgment in favor of the plaintiff on the ground that an insurance policy should be construed liberally in favor of the insured, and, inasmuch as the plaintiff paid the premium in good faith and thought he was protected by the policy, he should not be bound by technicalities. Was the question presented a technical one? The supreme court thinks not. The language of the policy was clear and explicit. It insured against boils, not against abscesses. If the finding was correct that abscesses are internal, while boils are external, afflictions, involving only the skin, and this court is bound by that finding, the policy conveyed a clear and explicit meaning, which involved no ambiguity or absurdity. It insured against boils, and the courts have not the right to enlarge on the plain provisions of the policy and insure against abscesses.

Taking Scrapings from Beneath Finger Nails to Test for Blood

(*State vs. McLaughlin (La.)*, 70 So. R. 925)

The Supreme Court of Louisiana, in affirming a conviction of murder, says that the Bertillon operator in the office of the chief of detectives of the city of New Orleans was permitted to testify, over objection, that on the day of the defendant's arrest, which was the day of the homicide, he (the operator), with the assistant chief of detectives, visited the defendant, then in prison, and "took the scrapings from his finger nails, between the flesh and the finger nails, the dirt of the left and right hands"; that he placed the scrapings from the two hands, respectively, in separate envelopes, identified the envelopes, and turned them over to the assistant chief. The court holds that the testimony was properly admitted, and its admission violated no constitutional right of the defendant. A person charged with murder, by cutting the throat, is denied no constitutional right in having the scrapings from beneath his finger nails, and his clothing taken, though against his will, with a view to their being tested for the presence of human blood. Again, the court says that the defendant had no reason to complain, as he offered evidence to show that he had had a fight on the night of the homicide, and that his hands were covered with blood and his shirt a little stained therewith. And the testimony of the official chemist of the city was properly admitted to show that the envelopes mentioned above were delivered to him; that he analyzed their contents and found human blood in the "scrapings" indicated as having been taken from the right hand.

When an Injury Occurs

(*Johansen vs. Union Stockyards Co. (Neb.)*, 156 N. W. R. 511)

The Supreme Court of Nebraska had in this case the question as to when an injury to one of the plaintiff's eyes occurred, as determining whether he had given notice and made his claim within the time prescribed by the employers' liability act. The court says that the act defines the words "accident" and "injury" as used therein, and distinguishes between them. An accident produces "objective symptoms of an injury," and an injury includes violence to the physical structure of the body and the natural results therefrom. When an accident to an eye, which at first appears not serious, results, after a week or more, in a diseased condition of the eye which destroys the sight, the "injury occurred" within the meaning of the statute, when the diseased condition culminated. Here the plaintiff, while he was engaged in preparing a tar mixture for roofing purposes, had some of it strike him in the eye, December 18. The evidence was without contradiction that the employees who were working with him at the time treated the boiling over of the tar and its effects on those working over it in the nature of a joke, not realizing that anyone had been seriously injured. Moreover, the plaintiff himself was not aware of the effects

that would naturally result therefrom, but went to his home the night after the accident and washed his eye with warm water, and continued so to treat it, without realizing what might result from the accident, for several days, until about December 25, when he was induced to consult a physician, who advised him to go to a hospital and consult an expert. This he accordingly did, and was informed that the eye was in a serious condition which might result very unfavorably. During this time apparently, from this evidence, the injury resulting from the accident gradually became developed, and it could not be said that the injury resulted from the accident, within the meaning of the statute, before the time it was discovered that it might become permanent, which was some time after December 25. This evidence clearly justified the finding of the trial court, under this statute, that the accident resulted in a total disability to the plaintiff, December 25.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Public Health, Boston

July, VI, No. 7

- 1 Place of Nuisances in Law. L. W. Feezer, Boston.—p. 655.
- 2 Occupational Mortality Experience of 94,269 Industrial Workers. L. I. Dublin, New York.—p. 663.
- 3 Experience of New York City in Grading Market Milk. L. P. Brown, New York.—p. 671.
- 4 Reliability of Statements of Cause of Death From Clinical and Pathologic Viewpoints. H. Emerson, New York.—p. 680.
- 5 Comparative Bacteriologic Examination of Shell Liquor and Meats of Oysters. L. A. Round, Washington.—p. 686.
- 6 Live Little Longer; Triple Alliance Between Public, Physician and School. M. E. Bingeman, Rochester, N. Y.—p. 694.
- 7 Inoculation Against Typhoid in Maryland. F. W. Hachtel and H. W. Stoner, Baltimore.—p. 703.
- 8 One Year's Experience with New Model Vital Statistics Law in South Carolina. J. A. Hayne, Columbia, S. C.—p. 707.
- 9 Analysis of Appendicitis Statistics. K. Stoumann, Newark, N. J.—p. 714.
- 10 Bacillus Carrier and Restaurant. A. I. Kendall, Chicago.—p. 726.
- 11 Public Health Publicity. E. A. Moree.—p. 730.
- 12 Proposed Score Card for Refrigerators. W. A. Evans, Chicago.—p. 743.

American Journal of Roentgenology, New York

July, III, No. 7

- 13 *Use of Oxygen in Cystography with Preliminary Report on Use of Oxygen in Pyelography. A. Granger, New Orleans.—p. 351.
- 14 Segmentation in Diagnosis of Stomach Lesions. P. Eisen, Chicago.—p. 354.
- 15 *Cause and Prevention of Constitutional Symptoms Following Deep Roentgentherapy. S. Lange, Cincinnati.—p. 356.
- 16 *Roentgen Treatment of Epithelioma. J. H. Edmonson, Birmingham, Ala.—p. 358.
- 17 Roentgenographic Study of Pericolic Membrane Involving Splenic Flexure. A. M. Cole, Indianapolis.—p. 362.
- 18 Diaphragm as Index of Pathology. M. J. Hubeny, Chicago.—p. 364.
- 19 1. Phenomenon of Water Street. 2. Dilatation of Duodenum in Chronic Appendicitis. 3. Motility Phenomenon in Some Cases of Gastric Ulcer. A. Bassler, New York.—p. 365.
- 20 Easy and Accurate Pelvimetry by Roentgen Ray. H. W. Van Allen, Springfield, Mass.—p. 367.
- 21 Case of Associated Gastric and Duodenal Ulcer. R. D. Carman, Rochester, Minn.—p. 369.
- 22 Broncho-Esophageal Fistula. R. D. Carman, Rochester, Minn.—p. 370.
- 13 and 15. Abstracted in THE JOURNAL, Nov. 6, 1915, pp. 1669 and 1670.
16. Abstracted in THE JOURNAL, Oct. 30, 1915, p. 1581.

Boston Medical and Surgical Journal

August 3, CLXXV, No. 5

- 23 *Results Obtained in Treatment of Diabetes Mellitus. E. P. Joslin, Boston.—p. 147.
- 24 *Definition and Detection of Acidosis in Diabetes Mellitus. A. A. Hornor, Boston.—p. 148.
- 25 *Blood Sugar in Diabetes Mellitus. O. F. Rogers, Jr., Boston.—p. 152.
- 26 Nephritis; Tests of Renal Function. F. W. Peabody, Boston.—p. 158.
- 27 Eye Changes in Kidney Diseases; Their Diagnostic and Prognostic Value. P. H. Thompson, Boston.—p. 161.

- 28 Physiologic Point of View and Necropsies. F. H. McCrudden, Boston.—p. 167.
29 Corsets vs. Backache and Fatigue. A. S. Cutler, Westborough.—p. 168.

23. **Treatment of Diabetes Mellitus.**—The average duration of life of 408 fatal cases under Joslin's observation has been five years, and that of 490 living cases has already reached six years. During the year ending May 1, 1915, 211 cases of diabetes came under observation, and of this number 31, or 15 per cent., died; during the subsequent year 314 cases were seen and 37, or 11.7 per cent., died. A study of the 37 fatal cases seen this last year shows that death might have been deferred in about one half of these if the methods of treatment now in general use had been adopted. In a study of the causes of death of the 408 fatal cases, it was found that two out of every three (66 per cent.) died of coma, that 87 per cent. of all those who succumbed during the first year of the disease died of coma, and that this was the case in 100 per cent. of the fatal cases in children. Therefore, Joslin concludes, if the mortality of diabetes is to be reduced, our energies should be directed first toward the avoidance of coma, because the treatment of coma is so unsatisfactory; and, second, particular attention should be exercised in the management of cases of diabetes in the first year following the detection of the disease. Furthermore, all cases should be persistently followed up, and the good effects of treatment not be allowed to lapse by indifference or neglect.

24. **Detection of Acidosis in Diabetes Mellitus.**—By a study of the carbon dioxid content of alveolar air Hornor found that normally the tension of carbon dioxid varies between 38 and 45 mm. of mercury. Among diabetics with slight acidosis, the carbon dioxid tension varies between 32 and 38 mm. of mercury; with moderate acidosis between 28 and 32 mm. of mercury; severe acidosis less than 25 mm. of mercury. Nineteen mm. of mercury is the lowest tension observed in a patient ultimately recovering from acidosis. Nine mm. of mercury is the lowest observed in this present study. That was in a comatose patient only a few hours ante mortem. The acidosis of diabetes mellitus, aside from its clinical picture of exaggerated respiration, drowsiness and rapid pulse, is defined by Hornor as a condition in which the carbon dioxid tension in the blood and, consequently, in the alveolar air is reduced; the acetone bodies in the blood and urine are increased and associated with this is a rise in the excretion of ammonia; glycosuria is marked, and, saving exceptional cases, toward the end of prolonged coma, the carbohydrate balance is markedly negative.

25. **Blood Sugar in Diabetes Mellitus.**—The blood sugar among patients treated at the Massachusetts General Hospital who had diabetes but who had had no previous treatment, or whose treatment had not been efficient, that is, they were still excreting considerable sugar, Rogers says, was about 0.26 per cent. for an average, with variations from 0.76 to 0.16 per cent. The highest value that was found (0.76 per cent.) was in a man in coma and the next highest was 0.36 per cent., in a very severe diabetic on the verge of coma. Values above 0.30 per cent. seem to be uncommon unless there is some difficulty on the part of the kidneys in accomplishing excretion. On the other hand, the blood sugar determinations done on patients at the time they left the hospital, when they were sugar free, and had been so generally for some days or weeks, showed variations from 0.07 to 0.18 per cent., and averaged 0.12 per cent.

Delaware State Medical Journal, Wilmington

March, VII, No. 4

- 30 Treatment of Fractures. H. Springer, Wilmington.—p. 3.

Florida Medical Association Journal, Jacksonville

July, III, No. 1

- 31 Acidosis in Infancy and Childhood. J. D. Love, Jacksonville.—p. 1.
32 Acidosis. R. H. Knowlton, St. Petersburg.—p. 4.
33 Acidosis in Children. J. M. Grantham, Tampa.—p. 8.
34 Pyelitis of Infancy. J. W. West, Live Oak.—p. 10.
35 Importance of Muscle Repair in Perineorrhaphy. A. C. Ives, Tampa.—p. 11.

- 36 Diagnosis and Treatment of Chronic Gonorrhea in Female. G. A. Lassman, Tampa.—p. 13.
37 Bacteriology and Channels of Invasion in Acute Otitis Media. F. J. Walter, Daytona.—p. 16.

Journal-Lancet, Minneapolis

August 1, XXXVI, No. 15

- 38 Semeiotic Significance of Pathologic Findings in Adult Feces. C. P. Robbins, Winona.—p. 435.
39 *Varicose Veins. D. C. Balfour, Rochester.—p. 439.
40 Endoscopic Surgery of Esophagus and Respiratory Tract. F. Roost, Sioux City, Iowa.—p. 445.
41 Relation of Internal Secretions to Neurology and Psychiatry. E. M. Hammes, St. Paul.—p. 449.
42 Gastric Diseases; Diagnosis. J. W. Shuman, Sioux City, Iowa.—p. 453.
43 Wallingford Investments. J. J. Lambrecht, Minneapolis.—p. 455.

39. **Varicose Veins.**—Of 256 patients operated on by Balfour and others according to the Mayo method, letters were received from 161. In no case has the lapse of time since operation been less than one and one-half years. In 68 patients the condition was associated with varicose ulcer; in 93 there was no ulcer. Thirty-nine (57.4 per cent.) of the 68 patients having ulcer were cured, that is, the ulcer had healed, the veins had disappeared, there was no swelling of the feet, and the patients were able to carry on their work without pain; 16 (23.6 per cent.) reported great improvement, the ulcer having healed in the majority, but minor complaint of occasional swollen feet after a long day's work, or of some aching in the legs, so that 80 per cent. were either cured or improved. In 13 (19 per cent.) the results were definitely unsatisfactory. The ulcer had either failed to heal or there had been periods of complete healing, then pain and swelling sufficient to make the prolonged erect posture uncomfortable. Elastic bandages kept some of these patients in a fair degree of comfort, but the operation itself had failed. In the 93 patients without ulcer, better results were obtained; 67 (72 per cent.) were quite cured, 16 (17 per cent.) were improved, while 10 (11 per cent.) were unsatisfactory, so that in practically 90 per cent. of this group the results were good.

Balfour suggests that the causes of failures in the series may have been due in part to the selection of cases, incomplete operation, or lack of care in after-treatment. A serious complication occurring with some frequency in the long standing cases is that the chronic congestion and disability incident to ulcer formation undoubtedly predispose these patients to flatfoot, and the breaking down of the plantar arch is associated with the familiar pain common to this deformity. The removal of varicose veins in such cases may be successful to the extent of getting rid of the veins, but the expected relief from pain is not derived.

Journal of Experimental Medicine, Baltimore

August, XXIV, No. 2

- 44 *Chemotherapy of Tuberculosis. G. Koga.—p. 107.
45 Id. G. Koga.—p. 149.
46 Treatment of Tuberculosis with Cyanocuprol. M. Otani.—p. 187.
47 Treatment of Leprosy with Cyanocuprol. R. Takano, Tokyo, Japan.—p. 207.

44. See Current Comment in THE JOURNAL, Aug. 5, 1916, p. 443.

Journal of Infectious Diseases, Chicago

August, XIX, No. 2

- 48 Nitrogen Metabolism of Bacteria. H. J. Scars, San Francisco.—p. 105.
49 *Myxoma-Like Growths in Heart Due to Localizations of Spirocheta Pallida. A. S. Warthin, Ann Arbor, Mich.—p. 138.
50 Experimental Cholera Carriers. O. Schöbl, New York.—p. 145.
51 *Bacteriologic Findings in Ozena. H. C. Ward, Detroit.—p. 153.
52 Comparative Study of Colon Bacilli Isolated From Horse, Cow and Man. T. J. Murray, Lafayette, Ind.—p. 161.
53 *Immune Reactions in Scarlet Fever. G. F. Dick and G. R. Dick, Chicago.—p. 175.
54 Anaphylaxis Reactions Between Proteins From Seeds of Different Genera of Plants. Biologic Reactions of Vegetable Proteins. H. G. Wells and T. B. Osborne, New Haven, Conn.—p. 183.
55 Cases of Generalized Fatal Blastomycosis. Including One in Dog. C. C. MacLane, Chicago.—p. 194.
56 Application of Pure Line Concept to Bacteria. L. J. Cole and W. H. Wright, Madison, Wis.—p. 209.
57 Different Types of Streptococci and Their Relation to Bovine Mastitis. G. Mathers, Chicago.—p. 222.

- 58 *Hemolytic Streptococci Found in Milk. Their Significance and Their Relation to Virulent Streptococci of Human Origin. D. J. Davis, Chicago.—p. 236.
- 59 Certain Nonspecific Reactions Obtained with Antigens Made From Bacteria Grown on Serum Media. P. K. Olitsky and E. Bernstein, New York.—p. 253.
- 60 *Bacillemia in Tuberculosis as Shown by Examination of Post-mortem Clots From Heart. U. F. Wilson, Ann Arbor, Mich.—p. 260.
- 61 *Tubercle Bacilli in Heart Clots in Acute Miliary Tuberculosis Complicating Chronic Lymphatic Myelogenous Leukemia. R. R. Dieterle, Ann Arbor, Mich.—p. 263.
- 62 Multiple Pipet for Complement Fixation Test. J. M. Buck, Washington.—p. 205.

49. **Myxoma-Like Growths in Heart.**—In five cases of congenital syphilis of infants referred to by Warthin, round translucent nodules were found in the myocardium, appearing to the naked eye as myxoma-like growths. Three cases were newborn infants dying a few days after birth, one was a child 14 months old, and one a child 18 months old. Of these cases four presented signs of syphilis and showed the presence of spirochetes in other organs and tissues; while one showed syphilis only in the myocardium. The myxoma-like nodules occurred in all cases in the anterior wall of the left ventricle, either near the apex or near the ventricular septum. In one case a similar nodule was found on the posterior wall of the left ventricle. In three cases there were two distinct nodules in the anterior wall of the left ventricle, one just above the apex, the other higher, over the septum. The nodules, which appeared to be nearly round or ovoidal, spherical on section, were all elevated above the general level of the epicardium. The largest were 1 cm. in diameter; the smallest was 5 mm. They extended entirely through the heart wall from epicardium to endocardium, projecting inwardly as well as outwardly on the epicardial surface. In all respects they resembled small myxomas, and the first ones seen were at first sight so regarded. The hearts of the five infants were much enlarged, dilated and hypertrophic, the walls of the left ventricle being two or three times thicker than normal. On microscopic examination these round translucent areas were found to consist of an edematous gelatinous connective tissue, showing remains of atrophic muscle fibers, especially at the periphery.

51. **Bacteriologic Findings in Ozena.**—Fifty well authenticated cases of typical atrophic rhinitis, the majority of which presented ozena conditions were studied bacteriologically by Ward with the following results: Diphtheroids, 43 cases; staphylococci, all varieties, 37 cases; *B. mucosus-capsulatus*, 30 cases; Perez' bacillus, 22 cases; streptococci, all varieties, 20 cases; *B. proteus*, all varieties, 20 cases; pneumococci, 20 cases; *B. pyocyaneus*, 12 cases. The author is not ready to accept Perez' bacillus as being the most important etiologic factor in ozena.

53. **Immune Reactions in Scarlet Fever.**—Complement deviation and cutaneous tests made by Dicks failed to demonstrate any specific scarlatinal virus or antigen in the blood serum or in extracts of spleen or lymph glands. Fixation tests with throat mucus as antigen gave in one instance a weak fixation of complement with the serum of a convalescent scarlatinal patient. The toxicity of human blood serum for guinea-pigs is increased during the acute stage of scarlatina. Positive Wassermann reactions in scarlet fever obtained with the acetone insoluble portion of alcoholic heart extract, the author believes, are strongly suggestive of syphilis.

58. **Hemolytic Streptococci Found in Milk.**—Hemolytic streptococci having a wide clear zone, Davis says, occur commonly in both pasteurized and unpasteurized (certified) milk. These strains vary among themselves. They are more resistant to heat than human strains of hemolytic streptococci, and possess little or no virulence for rabbits, therefore in all probability none for man. They rapidly acidify and coagulate milk and grow well at 20 C. They form short or long chains, but as seen in milk often appear in pairs or a chain of few elements. While they are definitely hemolytic (Type B. Smith and Brown), the characteristics of the hemolytic zone on plates may vary in certain respects. The milk strains are different from certain strains of hemolytic

streptococci found at times in diseased udders in cows. These latter resemble the strains of hemolytic streptococci from human sources, and are virulent for rabbits. In Davis' opinion there is no reason to consider that these organisms have any sanitary significance. The importance, however, of certain types of hemolytic streptococci in relation to epidemics of sore throat makes it necessary to study carefully all such organisms in milk. By itself the hemolytic property has no more value for identification purposes than many other characteristics, but is greatly important on account of the practical value of the blood-agar-plate method as a means of initial separation of human type strains from the many strains of nonhemolytic and feebly streptococci found in milk.

60. **Bacillemia in Tuberculosis Shown by Postmortem Clots from Heart.**—Wilson examined blood clots from the heart in a case of generalized miliary tuberculosis in which the dissemination was extreme and the tubercles relatively young. The patient, a woman of 52 years of age, became ill about Oct. 21, 1914, with a feeling of unusual fatigue, fever and slight chilly sensations, increasing toxemia, rapidly progressing anemia, weakness and dyspnea, without any signs of localized disease. Death took place on November 29. (Many lesions of tubercle bacilli were found at the necropsy.) The white clots and blood found in the right side of the heart were fixed in mercuric chlorid, carefully washed, and embedded in paraffin. The sections were floated on warm carbolfuchsin without removal of the paraffin, decolorized, and counterstained with methylene blue, washed, dried on the slide, the paraffin removed by warming and the use of xylene, and the sections mounted in balsam. These stained sections were then carefully searched for tubercle bacilli. Only four typical slender and beaded acid-fast bacilli were found in the blood clot sections. Sections of the tuberculous lesions in the organs stained in the same manner showed the presence of similar acid-fast bacilli in enormous numbers in the focal necroses. If the other nine-tenths of the heart blood and clot not examined contained tubercle bacilli in the same proportion as the one-tenth examined, then the entire number contained in the heart blood at time of death would be forty or less. In this case, as the disease was in a most acute and severe form and the organisms were being generalized throughout the body in large numbers, the number of bacilli found in the blood at any given moment would have to be relatively small, and the chances for demonstrating their presence by stained smears, cultures, or animal inoculation could not be very favorable. In milder cases, and in cases of chronic pulmonary tuberculosis, Wilson says, the chances for such a diagnostic demonstration of the bacilli in the circulating blood would seem to be very small indeed.

61. **Tubercle Bacilli in Heart Clots in Miliary Tuberculosis.**—A case of primary tuberculosis of the cervical lymph nodes and a widely disseminated miliary tuberculosis (skin, endocardium) was examined by Dieterle. The case was one of chronic lymphatic myelogenous leukemia with secondary tuberculosis. Four tubercle bacilli to sixty slides, or 1 to 15, were found in the venous blood of the right heart.

Journal of Medical Research, Boston

July, XXXIV, No. 3

- 63 *Changes in Superior Cervical Sympathetic Ganglia Removed for Relief of Exophthalmos. L. B. Wilson and L. Darante, Rochester, Minn.—p. 273.
- 64 *Bacteriologic Aspect of Abderhalden Test. D. Rivas and A. C. Buckley, Philadelphia.—p. 297.
- 65 Cytologic Analysis of Shock. D. H. Dolley, St. Louis.—p. 305.
- 66 *Organic Depression of Nerve Cell Produced by Prolonged Ether Anesthesia. E. E. Butler, St. Louis.—p. 325.
- 67 *Experimental Nephropathy From Some Bacterial Poisons. J. L. Stoddard and A. C. Woods, Boston.—p. 343.
- 68 *Studies on Paratyphoid Enteritidis Group. Xylose Fermentation for Differentiation of *B. Paratyphosus* "A" From Other Members of Paratyphoid Enteritidis Group. C. Krumwiede, Jr., J. S. Pratt and L. A. Kohn, New York.—p. 355.
- 69 Double Primary Abdominal Pregnancy in Dog. E. W. Goodpasture, Boston.—p. 359.
- 70 Use of Brilliant Green and Modified Endo's Medium in Isolation of *Bacillus Typhosus* From Feces. H. C. Robinson and L. F. Rettger, New Haven, Conn.—p. 363.

- 1 *Classification of Streptococci. W. L. Holman, Pittsburgh.—p. 377.
- 2 *Iodin Content of Foods. E. B. Forbes, F. M. Beegle, C. M. Fritz, L. E. Morgan and S. N. Rhue.—p. 445.
- 3 *Is *B. Abortus* (Bang) Pathogenic for Human Beings? L. H. Cooledge.—p. 459.
- 4 *Injection of Hemoglobin in Man and Its Relation to Blood Destruction, with Especial Reference to Anemias. A. W. Sellards and G. R. Minot, Boston.—p. 469.
- 5 Fracture of Arteries. O. Klotz, Pittsburgh.—p. 495.

63. **Changes in Cervical Sympathetic Ganglia.**—This investigation is based on a study in fixed tissue of the pathologic changes in cervical sympathetic ganglia removed at operation from sixteen patients with hyperplastic toxic goiter. It appears that definite histologic changes do occur in the cervical sympathetic ganglia in hyperplastic toxic (exophthalmic) goiter. These histologic changes consist of various stages of degeneration, namely: (a) hyperchromatization, (b) hyperpigmentation, (c) chromatolysis and (d) atrophy; (e) granular degeneration of the nerve cells. All of these are but successive steps in degeneration, which, if uninterrupted, proceed to the complete destruction of the ganglion cells affected. Not all of the ganglion cells in any of the ganglia examined were so completely destroyed as to render probable their return to normal under favorable conditions. There is some evidence that in ganglia from cases surgically improved some of the cells have partially or wholly recovered. Some of the ganglia contain cells resembling the partially differentiated cells in the ganglia of infants. Accompanying the more advanced changes in the ganglion cells are similar degenerative changes in the nerve fibers, and an increase of connective tissue throughout the ganglion, especially in the outer and middle coats of the vessels, and in the periganglionic tissue. In general, the pathologic changes in the cervical sympathetic ganglia are parallel to the stage and intensity of the symptoms of hyperthyroidism, and to the hyperplastic and regressive changes in the thyroid.

64. **Bacteriologic Aspect of Abderhalden Test.**—Analyzing the results of the work done by Rivas and Buckley it would seem as if the ferment claimed by Abderhalden to be present in the serum of pregnant woman, if present at all, has no appreciable power of digesting placental tissue. The irregularity and the unreliability of the test in the hands of others is due to technical errors; the more exact the technic comes, the greater the number of negative results obtained, and the more evidence of the fallacy of the test.

65. **Organic Depression of the Nerve Cell.**—According to Little ether anesthesia produces certain definite anatomic changes in nerve cells of dogs. The severity of the anatomic changes in the nerve cell appears to be in direct relation to the length of the anesthesia, allowance being made for individual variations. An anesthesia of several hours' duration or several successive days produces almost the same degree of depression in the nerve cells as a continuous one of the same number of hours. A state of collapse results from ether anesthesia of eight or more hours' duration. This state of collapse is coincident with profound depression, and is considered to represent the end of constitutional effect of diffusely acting depressant.

66. **Experimental Nephropathy from Bacterial Poisons.**—In a course of experiments to test the possibility of producing nephritis in rabbits by the intravenous injection of some bacterial poisons, kidney lesions were discovered by Stoddard and Woods. Staphylococci and streptococci were injected. They produced a type of epithelial degeneration in the kidney, usually regarded as very acute. A tendency to a disintegrative degeneration of the epithelium of the first division of the proximal convoluted tubule may be common to all cases in which the products of destruction of bacteria reach the blood stream.

67. **Studies on Paratyphoid Enteritidis Group.**—In a series of cultures representing nearly all the pathogenic types of the paratyphoid enteritidis group, a group of cultures, including all the types agglutinatively, *B. paratyphosus* A failed to ferment xylose. The authors suggest, if the study of other strains shows that this is a constant characteristic, that the xylose negative types from man be considered the

paratyphoid A group on cultural grounds. Within this cultural group are encountered strains, presumably pathogenic, which differ agglutinatively from the normal A type.

71. **Classification of Streptococci.**—The classification of streptococci made by Holman is based on the reactions on blood agar and the fermentation or nonfermentation of the carbohydrates, lactose, mannite, salicin, and inulin in serum broth. The first main division is made by the reactions on blood agar into the hemolytic and nonhemolytic forms. These are then redivided into the lactose and nonlactose fermenters. Each group is again divided into the mannit and nonmannit fermenters, and finally into those that ferment salicin and those that do not.

72. **Iodin Content of Foods.**—The data collected by Forbes and Beegle show that iodine is not by any means a constant constituent of foods, that when present it is usually found in exceedingly minute proportions, and that, in general at least, it must be regarded as an accidental constituent in the sense of standing in no vital relation to the growth of the food products. The presence of iodine in most vegetable food products clearly depends on the fact of its presence in the soil, and the lack of a selective capacity in the feeding of plants.

73. **Is *Bacillus Abortus* Pathogenic for Human Beings?**—Cooledge says he has no proof that *Bacillus abortus* (Bang) is pathogenic for human beings, although it is possible to cause antibodies for *Bacillus abortus* to appear in the blood serum of adults by feeding a milk which is naturally infected with *Bacillus abortus* and which contains the *Bacillus abortus* antibodies. Antibodies appearing as above apparently indicate a passive immunity due to the absorption in the large intestine of the antibodies present in an infected milk.

74. **Injection of Hemoglobin in Man.**—The results reported by Sellards and Minot merely demonstrate that the injection of hemoglobin offers a safe and satisfactory method for studying the metabolism of the blood pigments in man. Hemoglobin in solution was injected intravenously, in sufficient quantity to produce a marked hemoglobinuria in the first specimen of urine voided after injection. The amount did not produce subjective symptoms in the cases which developed hemoglobinuria, thirteen in number, except in one instance in which an unusually large injection was given. As compared with the normal distinctly less hemoglobin was required to produce hemoglobinuria in patients in whom there was evidence of increased blood destruction, more especially in pernicious anemia. In secondary anemia due to hemorrhage, or in cases in whom there was no evidence of excessive blood destruction, as a rule no hemoglobinuria resulted after the injection of amounts which regularly caused marked hemoglobinuria in active cases of pernicious anemia. In the cases which have been studied, the tolerance to hemoglobin, namely, the amount of hemoglobin required to produce hemoglobinuria, bore no relation to the red blood count, but it did bear a direct relation to the amount of blood destruction taking place within the body.

Journal of Parasitology, Urbana, Ill.

June, II, No. 4

- 76 Significance of Certain Natural Flagellates of Insects in Evolution of Disease in Vertebrates. H. B. Fantham and A. Porter, Cambridge.—p. 149.
- 77 Revision of Genus *Arhythmorhynchus*. H. J. Van Cleave, Urbana.—p. 167.
- 78 Encysted Larva of Lung Distome. S. Yoshida.—p. 175.
- 79 *Cylindrotenia Americana* Nov. Spec. From Cricket Frog. M. E. Jewell.—p. 181.
- 80 Effect of Tick Bites on Man. D. McCaffrey, Princeton, B.C.—p. 193.

Laryngoscope, St. Louis

July, XXVI, No. 7

- 81 Abscess of Lung Following Operation on Tonsils and Upper Air Tract. C. W. Richardson, Washington.—p. 1001.
- 82 Lung Abscess Following Tonsillectomy. C. G. Coakley, New York.—p. 1008.
- 83 Indications for Labyrinth Operation; Report of Three Cases of Meningitis. C. E. Perkins, New York.—p. 1012.
- 84 Value of Roentgen Rays in Diagnosis of Diseases of Accessory Sinuses, With New Technic for Sphenoid. G. E. Pfahler, Philadelphia.—p. 1018.

- 85 Report of Three Cases of Salivary Calculi. W. H. Haskin, New York.—p. 1031.
86 Accessory Sinuses of Nose in Their Relation to Cranial Nerves. L. G. Kaempfer, New York.—p. 1034.
87 New Method of Opening Drum Membrane in Purulent Otitis Media by Means of Trephine. I. Guttman, New York.—p. 1043.

Medical Record, New York*August 5, XC, No. 6*

- 88 Clinical Methods of Measuring Acidosis. J. R. Williams, Rochester.—p. 223.
89 Connecticut, Student of Tuberculosis. S. J. Maher, New Haven, Conn.—p. 229.
90 Complement Fixation in Pulmonary Tuberculosis. A. Meyer, New York.—p. 232.
91 Syphilis of Bladder. J. Pedersen, New York.—p. 235.
92 Drug Addicts and Their Treatment. T. D. Crothers, Hartford, Conn.—p. 238.
93 Painless and Shockless Childbirth. M. W. Kapp, San Jose, Calif.—p. 241.

Nebraska State Medical Journal, Omaha*July, I, No. 1*

- 94 Leukocyte Extract. J. S. Simms, North Platte.—p. 8.

New Mexico Medical Journal*July, XVI, No. 4*

- 95 Renal Infections. F. F. Fadeley, Albuquerque.—p. 113.
96 Status of Physician Under Laws of State of New Mexico. L. O. Fullen, Roswell.—p. 117.

New Orleans Medical and Surgical Journal*August, LXIX, No. 2*

- 97 *Practical Method of Minimizing Pain of Labor. H. W. Kostmayer, New Orleans.—p. 89.
98 Tetanus Experience in Charity Hospital for Ten Years. H. B. Gessner and D. Adiger, New Orleans.—p. 91.
99 Certain Phases of Syphilis in Negro Female From Standpoint of Medical Diagnosis. S. C. Jamison, New Orleans.—p. 96.
100 Case of Polymazia. J. A. Storck, New Orleans.—p. 98.
101 Clinical History of College of Medicine of Tulane University of Louisiana. J. Holt, New Orleans.—p. 101.
102 Résumé of Present Knowledge of Functions of Menstruation with Reference to Internal Secretion. M. A. Shlenker, New Orleans.—p. 105.
103 Pyelo-Ureterography as Aid in Diagnosis of Obscure Surgical Conditions of Kidney and Ureter. H. W. E. Walther, New Orleans.—p. 115.
104 *Schönlein's Disease. M. F. Meyer and H. T. Simon, New Orleans.—p. 120.

97. **Method of Minimizing Pain of Labor.**—The method used by Kostmayer is as follows: As soon as the pain of the first stage becomes definitely annoying, chloral is given in 10-grain dose and repeated in forty-five to sixty minutes, as indicated, as much as three doses being given, if necessary. When the character of the pain changes to the "bearing down" of the second stage, $\frac{1}{8}$ grain of morphin is given as soon as this pain is severe enough to warrant it. It is rarely necessary to repeat the morphin, though this may safely be done after an hour or two. If labor is retarded in the least, or if in the judgment of the physician labor might safely be hastened, pituitary extract is given in graduated doses. As the presenting part begins to dilate the vaginal orifice, ether is given by the open-drop method at the beginning of each pain, and continued until the pain subsides.

104. **Schönlein's Disease.**—In the case cited by Meyer and Simon the arthritis, purpura, urticaria and angioneurotic edema occurred at practically the same time.

New York Medical Journal*July 29, CIV, No. 5*

- 105 Medical Women. (To be concluded.) M. S. Macy, New York.—p. 193.
106 Anaphylactic Food Reactions in Skin Diseases. A. Strickler, Philadelphia.—p. 198.
107 Predisposing Factors in Infantile Paralysis. M. Talmey, New York.—p. 202.
108 Early Pulmonary Tuberculosis. R. Abrahams, New York.—p. 204.
109 Urinary Toxemia. W. H. Kinney, Philadelphia.—p. 208.
110 Tuberculosis Infection and Tuberculous Immunity. A. C. Geyser, New York.—p. 211.
111 Early Syphilis. O. L. Levin, New York.—p. 212.
112 Six Months' Work in Anesthesia. A. Vedin, New York.—p. 214.
113 Bursitis Subacromialis. H. F. Wolf, New York.—p. 217.
114 Unilocular Cyst of Kidney. M. Schulman, New York.—p. 218.
115 Laboratory Facts in Poliomyelitis. S. R. Klein, New York.—p. 219.

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- 116 Shoes, Physiologic and Therapeutic. D. D. Ashley, New York.—p. 241.
117 Herpes Cornea Febrilis. S. Theobald, Baltimore.—p. 247.
118 Management of Complications of Pregnancy. J. A. McGlinn, Philadelphia.—p. 248.
119 Syphilis and Tuberculosis in Same Lung. R. A. Keilty, Philadelphia.—p. 252.
120 Removal of Interstitial Fibromyoma. J. J. Sheehy, New York.—p. 253.
121 Nephritic Toxemia of Pregnancy. A. H. May, Buffalo.—p. 253.
122 Pathogenesis of Psoriasis. A. H. Cook, Hot Springs, Ark.—p. 255.
123 Medical Women. M. S. Macy, New York.—p. 257.
124 Some Orthopedic Principles in Pediatric Practice. S. W. Boorstein, New York.—p. 259.
125 Some Eye Symptoms of Diagnostic Value. J. J. Decker, New York.—p. 262.

Ophthalmology, Seattle*July, XII, No. 4*

- 126 Miscellaneous Experiments on Efficiency of Eye Under Different Conditions of Lighting. C. E. Ferree and G. Rand, Boston.—p. 593.
127 State Legislation Concerning Wood Alcohol. F. Allport, Chicago.—p. 618.
128 Swimmers' Conjunctivitis. H. S. Gradle, Chicago.—p. 652.
129 Value of Accurate Localization of Steel in Eye and Orbit. C. C. Clement, Chicago.—p. 655.
130 Case of Contusio Bulbi. E. E. Blaauw, Buffalo.—p. 660.
131 American Method of Cataract Extraction. J. Santos-Fernandez, Havana, Cuba.—p. 667.
132 Intracapsular and Capsulotomy Operation for Senile Cataract. W. A. Fisher, Chicago.—p. 672.
133 Color Sense in Relation to Emotion of Sex. G. H. Taylor, Sydney, Australia.—p. 688.
134 Two Thousand Cases of Refraction Analyzed with Reference to Average Frequency and to Astigmatic Axis. H. C. Parker, Dubuque, Iowa.—p. 691.

South Carolina Medical Association Journal, Greenville*July, XII, No. 7*

- 135 Five Successful Cases of Broncho-Esophagoscopy. E. W. Carpenter, Greenville.—p. 196.
136 Rupture of Uterus; Report of Case. W. L. Kirkpatrick, Pacolet.—p. 200.
137 Foreign Bodies in Nostrils and Ears of Children. L. O. Mauldin, Greenville.—p. 201.
138 Roentgen Ray in Diagnosis of Focal Infection. R. W. Gibbs, Columbia.—p. 206.

Vermont Medicine, Rutland*June, I, No. 6*

- 139 Relation of Ductless Gland Activity to Health. J. H. Blodgett, Bellows Falls.—p. 157.
140 Chronic Rhinitis. W. G. Ricker, St. Johnsbury.—p. 165.
141 Treatment of Chronic Interstitial Nephritis. F. W. Harriman, Montpelier.—p. 189.
142 Study of Fifty-Five Cases of Malignant Disease of Breast Treated by Operations. J. B. Wheeler, Burlington.—p. 192.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London*July, XXI, No. 2*

- 1 Cases of Bone Injuries Caused by Bullets, Shell Fragments and Shrapnel. J. D. Morgan.—p. 41.
2 Appendicitis: Its Roentgen Diagnosis. G. Vilvandré.—p. 49.
3 Reaction of Degeneration in Medical Literature. N. H. Burke.—p. 54.

British Medical Journal, London*July 15, II, No. 2898*

- 4 Some Principles and Problems Related to Treatment of Gunshot Fractures. H. Groves.—p. 65.
5 Reconsideration of Principles and Methods of Hugh Owen Thomas. (To be continued.) J. L. Thomas.—p. 71.
6 Extension Splint for Fractures of Humerus. D. Hingston.—p. 74.
7 *Method of Treatment of Shell Shock. E. T. C. Milligan.—p. 74.
8 Gunshot Wound of Spinal Cord and Trachea; Recovery. G. Thompson and G. W. Stanley.—p. 74.
9 Eusol and Other Methods of Wound Treatment. C. W. Duggan.—p. 74.

7. **Treatment of Shell Shock.**—During chloroform administration there is a stage before the involuntary struggling stage when a patient is highly susceptible to suggestion. It is while the patient is in this stage that, Milligan says,

table suggestion and stimulation should be used. The treatment must be conducted in a quiet room, apart from other patients. Chloroform is slowly administered, and suggestion carried out by the anesthetist when the patient has reached the required stage.

Dublin Journal of Medical Science

July, III, No. 535

- Camp Jaundice. T. G. Moorhead and G. D. Harding.—p. 1.
Metabolism of Senile Decay. E. Wootton.—p. 9.
Clinical Report of Rotunda Hospital for One Year, Nov. 1, 1914, to Oct. 31, 1915. W. J. Smyly, R. D. Purefoy and E. H. Tweedy.—p. 21.

Lancet, London

July 15, II, No. 4846

- Natural History of Septic Wounds. K. Goadby.—p. 89.
Digitalis in Aortic Incompetence. S. Taylor.—p. 96.
Case of Abdominal Pregnancy, Probably Primary. F. J. McCann.—p. 98.
Indications and Contraindications in Pneumothorax Treatment of Pulmonary Tubercle. C. Riviere.—p. 101.
Case of Oblique Hemianopia from Wound of Optic Chiasma. P. Stewart and A. D. Griffith.—p. 104.
Early Ether Analgesia. D. P. D. Wilkie.—p. 106.
Two Cases of Thoracic Aneurysm. G. J. Conford.—p. 107.
Case of Perforated Typhoid Ulcer Operation; Acute Obstruction; Operation, Recovery. F. M. Neild.—p. 107.

4. **Digitalis in Aortic Incompetence.**—Aortic incompetence itself, Taylor says, is not only a most serious lesion, but gravity and its discomfort are enhanced if the mitral valve is holding and competent. He claims to have records of many cases, in early middle age, who have led, and who still lead, lives of comparative comfort, they having the mitral lesion; while, on the contrary, others having only aortic incompetence, suffer dyspnea, faintings and other discomforts, and are incapable of any beyond the slightest exertion. Taylor records a number of cases having aortic regurgitant disease who have survived to old age and to whom digitalis has never been given since he has had them under observation, now some ten to fifteen years.

5. **Abdominal Pregnancy, Probably Primary.**—McCann records the case of a woman, aged 35, tertipara, who had an abdominal pregnancy that went to term. The waters were said to have come away. There had been very slight labor pains. She complained of pain in the epigastrium. There was a hard mass in the left side which suggested the fetal head. No movements of a fetus could be felt, although she said that she felt movements distinctly up till the preceding day. On vaginal examination the os was only enough felt to admit the tip of one finger. No presenting part could be felt and there was no external hemorrhage, her chief complaint being epigastric pain, vomiting and sleeplessness. Finally, about two teaspoonfuls of blood passed per anum. No decidua had been expelled. The abdomen was much distended and there was considerable venous engorgement visible in the abdominal walls. The abdomen was extremely tender on palpation, especially on the left side over the position of the fetal head and at other points where the os was palpable. It was however, difficult to make a detailed examination of the abdomen because of the extreme hardness as well as the intestinal distention. The outline of the uterus could not be defined. The breasts were somewhat atrophied and in appearance were not suggestive of pregnancy, and no fluid could be expressed from either nipple. On vaginal examination well marked venous distention and discoloration were noted. The cervix was much softened and drawn upward, and the os uteri readily admitted the finger. No presenting part could be felt on vaginal examination.

An offensive purulent discharge issued from the vagina. The general condition of the patient suggested the presence of a severe toxemia. A free median incision was made, as soon as the peritoneum at the upper part of the incision was opened a small quantity of black blood clot was presented. On enlarging the incision the umbilical cord, of dark slate color, bulged into the wound. The hand was introduced and a rapid exploration made. The fetus was pushed by the legs and withdrawn without difficulty. The fetus was found to be enlarged to about the size of a five

months' pregnancy, with a well-developed placenta, to which the umbilical cord was attached, firmly inserted in its posterior surface slightly to the right side. A strong odor of ammonia was perceptible during the operation suggestive of the presence of urine in the peritoneal cavity, although the amount of intraperitoneal fluid was inconsiderable. The intestines were carefully packed off with sponges and a rapid supravaginal hysterectomy performed, leaving the appendages in situ. The placental attachment seemed to fade away gradually on the lower part of the uterus, leaving the floor of Douglas' pouch covered only by the remains of the amniotic sac. Further remnants of the amniotic sac, brownish black in color, were found on the posterior abdominal wall, the uterovesical pouch, the descending and pelvic colons, the transverse colon and omentum, the ascending colon, and the peritoneum lining the abdominal wall. Although the fetus was dead, yet there were no adhesions of intestine or omentum to prevent its rapid and easy extraction.

The fetus of a female weighing 7 pounds had reduced full development within the abdominal cavity of the mother. It measured 14 inches from the vertex to the coccyx. The trunk and limbs were perfectly developed, but the head was enlarged, suggesting early hydrocephalus. The umbilical cord, 15 inches in length, was normally developed and was attached to a large well-formed placenta. The main placental mass was perched like a cap on the upper and back part of the uterus, while it spread laterally outward and still more downward so as to hide completely the uterine surface.

Practitioner, London

July, XCVII, No. 1

- 21 Effects of Recent Legislation on Sickness and Accident Claims. J. Collie.—p. 1.
- 22 Treatment of Diabetes Mellitus by Alimentary Rest. O. Leyton.—p. 24.
- 23 Recent Work on Ophthalmology. L. V. Cargill.—p. 44.
- 24 Reaction of Child to Faulty Environment. H. C. Cameron.—p. 61.
- 25 Methods Employed in Roentgenologic Department in Military Hospital. R. J. Reynolds.—p. 73.
- 26 Treatment of Infected War Wounds, with Special Reference to Use of Antiseptics, Warmth and Fresh Air. P. R. Cooper.—p. 80.
- 27 Extreme Case of Dropped Transverse Colon in Young Girl. J. F. Rey.—p. 85.
- 28 Symmetry in Disease. F. Tresilian.—p. 88.
- 29 Bullet Wound of Thorax, Presenting Unusual Features. R. J. G. Parnell.—p. 92.

Bulletin de l'Académie de Médecine, Paris

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- 30 Prophylaxis of Venereal Diseases. (Sur la lutte contre les maladies vénériennes et la syphilis.) Gaucher and others.—p. 761.
- 31 *Disturbances in Vision with War Wounds of the Orbit Sparing the Eyeball. (Des désordres de l'appareil visuel dans les traumatismes de l'orbite par armes à feu, avec conservation du globe oculaire; leur pathogénie.) Lagrange.—p. 771.
- 32 Contamination of Oyster Beds at Marseilles. (Analyse bactériologique des huîtres vendues à Marseille.) A. Gigon and C. Richet.—p. 781.
- 33 Treatment of Hay Fever. (Le traitement du rhume des foins.) P. Bonnier.—p. 785.
- 34 Standardization of Clinical Thermometers. (Note sur l'exactitude des thermomètres médicaux et leur contrôle.) P. Woog.—p. 787.

31. **Injury of the Orbit Sparing the Eyeball.**—Lagrange analyzes the various factors at work as he studied them in 179 cases of fracture of the orbit, citing a number of typical cases from the five principal groups of such injuries.

Lyon Chirurgica

March-April, XIII, No. 2, pp. 213-404

- 35 *Pathologic Anatomy of Direct Lesions from Fracture of the Skull in War. (Anatomic pathologique des lésions immédiates dans les fractures pénétrantes du crâne, par projectiles de guerre.) A. Latarjet.—p. 213.
- 36 *Importance of Early Operative Treatment of War Wounds of the Skull. (Sur les plaies du crâne par projectiles de guerre, à l'avant.) L. Sencert.—p. 283.
- 37 *Treatment of War Wounds of the Skull. (Considérations sur le traitement des blessures du crâne par projectiles de guerre.) X. Delore and L. Arnaud.—p. 328; (Traitement des plaies du crâne dans les formations de l'avant.) G. Cotte.—p. 358; (Les plaies pénétrantes du crâne à l'avant.) G. Tisserand.—p. 380.
- 38 Indications for Operating for War Wounds of the Skull. A. Rendu.—p. 387.

35. Gunshot and Shell Wounds of the Skull.—This entire issue is devoted to penetrating wounds of the skull. Latarjet devotes sixty-nine pages to a study of the direct and immediate injury of the skull, showing that this is almost invariably so extensive that there may be severe injury of the brain when the skull does not seem to have been much damaged. His forty-nine illustrations show the various types of wounds, comparing the lesion found in the brain with the aspect of the skull before it was opened. The sequesters from an anteroposterior or oblique fracture were generally driven in deep; some were found 8 and 10 cm. from the surface. With a tangential fracture the sequesters were close to the surface. In all the cases the extent of the brain injury is greater than the injury of the skull. A fissure is liable to be found wider and deeper farther along. In one case a fissure started 3 cm. beyond the trephine hole and curved forward below, while another fissure was 8 cm. long. Neither had been discovered at the trephining done for a nonpenetrating fracture of the parietal bone. The man died from meningitis a week later; evidently infection had entered by the fissures.

Latarjet advises to open up the beginning of the fissure and work a wick wet with tincture of iodine between the dura and the skull, following the track of the fissure for some distance, and thus excluding them from the main focus. The fissures are formed more or less by the tearing open of the sutures. Subarachnoid hemorrhage is another reason for ample trephining, at least to the peripheral limits of the brain lesion. His practice now is to make the trephine opening not according to the injury of the dura but according to the damage done to the brain, that is for 2 or 3 mm. beyond the limit of the lesions of the pia. Visible sequesters are removed and the brain is explored very delicately and lightly tamponed with a tampon wet with weak tincture of iodine. He then seeks to wall off the focus by working very thin wicks, wet with the same, between the skull and the dura. In case of fissure the wick is worked along under it as far as possible. Another set of wicks is then worked between the dura and the brain, to form a complete wall around the focus and for more than 1 c.c. beyond. This crown of wicks aids in draining subarachnoid hemorrhage while it keeps septic matters from spreading from the focus, and starts the formation of adhesions to limit this still further. Gauze is then spread over the whole. The next day the dressing is renewed but the wicks are not disturbed. They are merely moistened anew with the weak tincture of iodine on a tampon; merely the central gauze over the focus is renewed. The wicks are not changed until the sixth or eighth day. None of his patients thus treated have died from primary meningitis.

36-37. Operative Treatment for Wounds of the Skull.—Sencert analyzes his experiences with 234 gunshot and shell wounds of the skull during the first ten months of the war. An operation was done and the case traced in 163. All but 59 left the hospital in good condition, but the present status could be ascertained only in 71 instances. Of these 71 patients 25 per cent. died, practically all within three months after the operation. Of the 47 (75 per cent.) living, 5 have returned to active service at the front and 2 are doing barrack service. This 75 per cent. of permanent cures came to Sencert as a very comforting surprise, confirming him in the conviction that immediate and systematic intervention should be the invariable rule for wounds of the skull as affording the only chance for recovery.

Delore and Arnaud affirm the same, adding that immediate intervention, to forestall infection, is the only means of salvation. Tardy intervention should be formally rejected. A deep wound in the brain should be drained, but not with gauze. Gauze favors retention, sticks to the brain substance and permits meningo-encephalitis to develop; a small rubber drain is better to clear out the products generated in the depths of the wound. Recovery is by no means infrequent with this provided the skull is not fissured too extensively and that the cavity of the ventricles has not been damaged. If meningitis or encephalitis develops, lumbar puncture has both a diagnostic and therapeutic influence, and roentgen-

oscopy will reveal any foreign bodies present. Both the point where the projectile entered and where it left the skull should be trephined. If the dura is intact but the brain does not pulsate there is a hematoma below. If there is no pulsation with change of position, the dura should be incised at once. Secondary opening of the dura is risky, but immediate incision wards off compression of the brain and secondary irritation of the meninges. War wounds of the base of the skull are like those in civilian practice.

Cotte is also a partisan of immediate incision of the intact dura when contusion or hemorrhage below is suspected or seems probable. Tisserand reiterates that, aside from actual destructive lesions and fulminating hemorrhage, infection is responsible for the fatalities from skull wounds. Hence the wound should be made surgically clean at the first-aid station and an operation should follow at the earliest possible moment. In his 100 operative cases only one died of the 36 with intact dura, but 25 died of the 64 with the dura opened, including 2 whose dura he had incised as there was no pulsation in the brain. This has converted him to the view that the intact dura should be respected.

Paris Médical

July 8, VI, No. 28, pp. 37-52

39 *Epidemic Pneumococcus Septicemia in Persons from the Tropics. (La pneumococcie épidémique des tropicaux.) P. Carnot and de Kerdrel.—p. 37.

40 *Abortive Treatment of Infection in War Wounds. (Le traitement abortif de l'infection des plaies de guerre.) R. Gaultier.—p. 43.

41 Tardy Localized Tetanus in Muscles of Abdomen and Chest. P. L. Marie.—p. 49.

July 15, No. 29, pp. 53-68

42 Transportation of Wounded in Aeroplanes. R. Blanchard.—p. 53.

43 *Paratyphoid Ulceration and Proliferating Colitis. F. Rathery.—p. 55.

44 Putrid Infection with Multiple Gangrenous Embolism; Two Cases. Deguy.—p. 62.

45 *Mental Derangement in Paratyphoid A Infection. (Sur les déterminations psychiques des paratyphoïdes.) P. Merklen.—p. 64.

39. Epidemic Pneumococcus Septicemia.—Carnot and de Kerdrel comment on the peculiar susceptibility to pneumococcus infection of persons in the tropics or recently leaving there. Among the troops now in France from the French colonies in Annam and the Senegal, they have encountered over a hundred cases of what seems to be a pneumococcus syndrome about half way between ordinary pneumonia and experimental pneumococcus septicemia. It is evident that this pneumococcus septicemia is one of the dangers to be reckoned with in transplanting persons from the tropics. Special and general measures to ward off the pneumococcus should be enforced. It affects such persons differently from Europeans. (This article has several long gaps—one is over half a column long—showing merely blank paper where certain statements had been suppressed by the censor.)

40. Modern Treatment of War Wounds.—Gaultier has been studying with the microscope during the last four months the clinical evolution of wounds under the various methods of treatment in vogue. His research has confirmed the assumption that every war wound is infected to start with, and has further demonstrated that the clinical findings, the aspect, etc., are not enough to tell what is going on in the wound. Its course cannot be estimated without the aid of the microscope, and this is an essential element in Carrel's technique. The originality of his method consists in constantly renewing the disinfectant used, ensuring that it reaches every point of the wound, with repeated bacteriologic control. This shows the exact moment when it is safe to close the wound and this hastens the healing immeasurably and restores conditions to approximate normal much more completely. Gaultier gives an illustration of his improvised laboratory such as can be fitted up anywhere in connection with a surgical service, with a microscope and some slides and stains. He was unable to give Delbet's pus-culture method a thorough trial as the wounds healed without suppuration under the Carrel treatment, and no pus could be obtained for examination.

43. Paratyphoid Colitis.—Rathery had over 1,000 paratyphoid cases in his service during the past year, and over

100 cases of typhoid (Zuydcoote hospital). Ulcerative and proliferating colitis was observed in some of the paratyphoid cases. The mucomembranous form was most common, but there occurred also a dysenteriform colitis, and the ulcers sometimes perforated. All the cases observed were of the B type. In the mild and moderate cases, enemata of ethylene blue or silver nitrate answered the therapeutic purpose but all measures failed in the more serious cases. The two men with the dysenteriform type died four or five months after the close of the paratyphoid fever, the persisting diarrhea wasting each patient to a skeleton. In some of the cases the colitis first made itself manifest by perforation of the ulcer. In others the clinical picture was that of dysentery.

5. Paratyphoid Delirium.—Merklen also has encountered a number of cases of paratyphoid with as severe a course and as threatening complications as he has ever known with genuine typhoid. In a group here described there was actual delirium or at least complete delirium and loss of memory. The paratyphoid was of the A type in all these four acute toxic-infectious psychoses. All the patients recovered. Merklen noticed, however, that there was some predisposing mental defect or taint in each case. "Cultivation of the blood revealed the microbe, but it was the microbe that revealed the mental defect."

Presse Médicale, Paris

July 3, XXIV, No. 37, pp. 289-296

*Encysted Form of Amebas in the Stools, and Their Importance in the Diagnosis and Pathogenesis of Dysentery. (Les kystes amibiens.) P. Ravaut and G. Krolunitski.—p. 289.

Serodiagnosis of Typhoid and Paratyphoid. A. Cade and E. Vaucher.—p. 291.

*Preventive Treatment and Dangers of Talipes Equinus after War Wounds of the Legs. (Notes sur le traitement préventif et l'importance de l'équinisme chez les blessés de guerre.) P. Audion.—p. 292.

July 6, No. 38, pp. 297-304

*Abscess of Liver and Trench Diarrhea. (Abscès du foie et diarrhée des tranchées.) F. Rathery and L. Bisch.—p. 297.

First Aid for Wounds of the Skull. (A propos du traitement primitif des plaies du crâne.) B. Cunéo.—p. 299.

*Extraction of Projectiles in the Lungs. (Règles de l'extraction des projectiles intrapulmonaires à la pince, sous écran.) P. de la Villéon.—p. 300.

July 13, No. 39, pp. 305-312

Principles for the Rational Diagnosis of Pulmonary Tuberculosis. E. Rist.—p. 305.

Localization and Extraction of Projectiles in the Brain. E. J. Hirtz.—p. 307.

6. Ameba Cysts in Diagnosis of Dysentery.—Ravaut remarks that amebas are found in the stools only during a comparatively brief phase of the dysentery, and they are able to escape detection. On the other hand, the encysted form of ameba is found constantly in the stools through the whole course of the disease. They are readily shown up by microscope when a scrap of stool is examined, or the scrap of stool can be stained with hematoxylin after fixation with fumes of osmic acid. Several may be found on one slide and many slides may have to be examined before one is discovered. Their elimination may be hastened with a purgative by intravenous injection of 0.01 or 0.04 gm. cyanid of mercury. The cysts persist intact in the stools for at least several days and they can be kept longer by diluting the scrap of stool with formaldehyd. They are small globules with a mother-of-pearl reflection and from one to four nuclei in diameter. The protoplasm is limpid but with a dull reflection like opal, and it usually contains groups of rods or irregular masses of a refracting substance that has been described under the name chromidium. Two illustrations show these rods and those of the colon ameba which are very much larger and have from one to eight nuclei. Among the 169 cases of dysentery at the hospital in his charge in the north of France, living amebas were found in forty-seven, and cysts in ten cases. The cysts did not appear in the stools until between the third and the sixteenth day and only on frequently repeated examination. Most of these patients had been under treatment for years for supposed different ailments. The discovery of the parasites and appropriate treatment soon cured the whole trouble. Watching out for cysts is also of great assistance in estimating the effect of treat-

ment from day to day. He has found a combination of arsenic and emetin more effectual than the latter alone. In examining the attendants and patients at the hospital, for carriers, ameba cysts were found in thirty-four and only ten of these were free from dysenteric symptoms. Thus there were 5 per cent. healthy carriers. The figure for healthy carriers in the tropics is only 10 per cent. Before the war, amebic dysentery was rare in France. Landouzy could find in 1914 only fourteen cases recorded in the course of nine years, but Ravaut has personally encountered twenty-five cases in the last few weeks, all in persons who have never been out of the country. The ameba proper is frail and short-lived but in the encysted form it is hardy and can long lie latent, resisting the digestive juices, and when favorable conditions appear it changes into the ameba proper and thus generates dysentery. Not only those who have had dysentery and those with abortive attacks but the healthy carriers of ameba cysts have been sowing them during the war, the conditions of warfare contributing to propagate the infection as these persons—wounded, sick, convalescent, on furlough, etc.—may have spread the parasites all over the country.

48. Talipes Equinus as Sequel of Wound of the Leg.—Audion calls attention anew to the grave deformity almost certain to be entailed if men wounded in the leg are allowed to walk on the toe of the foot and hold the foot at other times in this pointed position, which speedily becomes permanent talipes equinus. He says that if we look at our own feet in a mirror as we walk, we will see that at every step the foot takes the talus position more or less. This is the position that should be fostered, the foot immobilized or being spared should be held in a medium talus, and none should be allowed to step on the toes of the foot. If the talipes equinus has become incorrigible, a course of plaster casts may be necessary to overcome the deformity.

49. Trench Diarrhea.—Rathery and Bisch relate that emetin has a surprisingly favorable action in trench diarrhea. This sustains the assumption that the trouble is actual dysentery, and this was further confirmed by the discovery of abscesses in the liver in four of their cases. The clinical picture was that of ordinary dysenteriform colitis dragging along from one to four months, and no amebas were found in the stools or pus from the liver. Two of the four men had lived in northern Africa but the others had not. Roentgenoscopy gave instructive findings in each case, showing in one an accumulation of fluid both below and above the diaphragm, the abscess in the liver being accompanied by a pleuritic effusion. The men all promptly recovered after evacuation of the abscesses.

51. Projectiles in the Lungs.—De la Villéon reports fifty-one recoveries in fifty-one cases in which he removed the projectile from the lungs under roentgenoscopy. This success was due, he thinks, to his taking the seven precautionary measures which he here describes: locating the projectile with precision; using bullet-seizing forceps with fenestrated blades; introducing them at an angle never less than 45 degrees in relation to the shadow cast by the projectile; working in sound tissue, and avoiding the danger points of the intercostal vessels and the hilus. If the projectile is in the hilus, it is better to incise the lung without wasting time on the forceps, and this is preferable also when the projectile is very large. The parenchyma of the lung is so soft and so elastic that the blood and air vessels yield and spread apart of themselves as the blunt-edged forceps enters the tissue. The vessels spread apart, their contents are expelled, and the empty vessel collapses as the instrument advances. All his operations were done after some time had elapsed and the wound had quite healed. The projectile was found from 2 to 12 cm. below the surface, and the wound healed without fever. The patients were up and about by the third day.

Progrès Médical, Paris

June 20, XXXII, No. 12, pp. 93-104

54 *Disinfection of War Wounds. P. Barbarin.—p. 93.

55 *Protracted Cerebrospinal Meningitis Requiring Trephining-Puncture. F. Ramond.—p. 95.

56 *Treatment of Ulcers and Wounds that Refuse to Heal. (A propos des plaies atoniques.) F. Masmonteil.—p. 96.

- 57 Contributions of the Military School and Hospital of Val-de-Grâce to Medical History, especially to Internal Pathology. Bonnette.—p. 100.

July 5, No. 13, pp. 105-116

- 58 *Epidemic Cerebrospinal Meningitis. F. Ramond.—p. 105.
59 Mycosis from Scopulariopsis Koningi. A. Sartory.—p. 107.
60 Plaster Bed for the Limb to Permit Removal after Compound Fracture. ("Le Plâtre circulaire" pour l'évacuation des blessés.) A. Bernard.—p. 108.
61 *Intravenous Injections of Isotonic Physiologic Solution Made with Sodium Citrate. M. Chaton.—p. 110.

54. **Disinfection of War Wounds.**—Barbarin has served during the war at a base hospital from 20 to 40 kilometers back from the front, and has had opportunity to note the effect of the disinfectants applied at the first dressing station, as well as in his own service. He insists on draining from the lowest point; this nullifies the action of the Carrel continuous irrigation technic, and he seeks to accomplish the same purpose in another way. He lays a pile of scraps of agar on a square of gauze, making a very loose bag of it by drawing up the edges and tying them together. This bag of agar is then fitted into the wound, the corners of the gauze projecting above and spreading out over the surface. A drain tube projects below at the lowest point of the wound. The agar is then profusely watered with Dakin's solution or other disinfectant. It swells and thus spreads the wound and opens up the recesses while bringing and holding the disinfectant against the tissues. The disinfectant is poured in anew every two or three hours or can be supplied by the drip method with a Carrel tube, one end set deep in the agar, the other projecting above the wound. He says in conclusion that the early disinfection possible with this simple means, which does not interfere with the transportation of the wounded, realizes results beyond the fondest dreams, the wounds healing infinitely earlier and more completely.

55. **Protracted Meningitis.**—Ramond has found that methylene blue injected by lumbar puncture scarcely ever finds its way, or only with difficulty, into the ventricles, and vice versa. He has tested this on the cadaver and on the living subject. Hence antimeningococcus serum injected by lumbar puncture cannot be expected to reach the ventricles in amounts sufficient to destroy the meningococci there. The infectious process continues to develop in the ventricle and keeps up the meningitis indefinitely, as in a case described. After a period of improvement under serotherapy, the symptoms returned, with progressive stupor, generalized rigidity, and sphincter and eschar troubles, suggesting involvement of the ependyma. After the forty-fifth day of prolonged meningitis, Ramond trephined and evacuated about 30 c.c. of an opalescent fluid from each ventricle, and injected 10 c.c. of antimeningococcus serum. There was marked improvement at once and the patient's mind was clear, he slept well and asked for food. But the torpor returned the next day, with death in coma the day after. Necropsy showed that the pus originated in the fourth ventricle but sank down by gravity, bathing the under surface of the cerebellum and spreading downward back of the spinal cord.

56. **Treatment of Torpid Wounds.**—Masmonteil's analysis of the phenomena of healing shows that the terminal fibers of the sympathetic nerve which respond to measures to induce revulsion are the same terminals which are responsible for the healing of wounds. If this is not occurring properly, measures to induce revulsion may start the wound to heal normally. The organism represents a neutral or slightly alkaline medium, of a given temperature and osmotic tension, in which are bathed the terminals of the sympathetic nervous system. Every substance which differs in temperature, in osmotic tension and in chemical composition from the conditions in this medium has an exciting action on the nerve terminals. This action, however, occurs only in a narrow range, varying with each substance, and also with the individual susceptibility at the moment; above this it injures the protoplasm. The sympathetic nerve fibers accompanying the vessels have been incriminated recently as a factor in causalgia, and this distressing form of neuralgia is being cured now by severing the hyperexcitable sympathetic vascular plexus involved. Masmonteil is convinced that a similar nerve trouble is responsible for the nonhealing

of torpid ulcers, only here the difficulty is that the nerve is hypo-excitable, practically paralyzed, and no vascular reactions occur. The same patient may present causalgia in one region with a torpid ulcer at another. Sympathetic paresis is thus the secret why certain ulcers fail to heal and why the measures liable to be effectual for them are all in the line of nerve stimulants. This conception, he declares, explains likewise the mechanism of the phenomena of inflammation, and links together the various measures against atonic conditions, while explaining the mechanism of trophic ulceration—all falling under the workings of one law of general biology.

58. **Epidemic Meningitis.**—Ramond relates that in about third of his cases of epidemic meningitis in soldiers, the disease runs the classic course and recovery seems to be impending, but then symptoms develop indicating involvement of the ventricles or ependyma. He has trephined the ventricles in twelve cases of this, in nine from the top, in two from the side and once from the back. In three cases complete recovery followed and marked improvement was evident in every case, but the intervention came too late in the other cases and all died in from three to fifteen days except one patient, who survived for three months. He uses silver trocars, 7 cm. long and from 1 to 1.5 mm. in diameter with two side holes at the tip. The trocar is introduced for 4.5 or 5 cm. As the guide is withdrawn, fluid usually spurts. It may have to be cautiously aspirated out or rinsed out by injecting 2 c.c. of the antiserum. Then the antiserum is introduced in an amount corresponding to two-thirds of the fluid evacuated. The patients bore the operation well and he declares that it is "absolutely inoffensive." He applied this trephino-puncture, as he calls it, only as a last resort, but his experience has encouraged him in future to apply it earlier.

61. **Sodium Citrate in Physiologic Solution.**—Chaton was much impressed by the death of two women, one a few hours after childbirth, the other after hysterectomy for fibroma, both of which had been accompanied by severe hemorrhage. The symptoms indicated that death was due to cardiac thrombosis, the blood having evidently acquired abnormal coagulating properties as a defensive reaction to the repeated hemorrhages. Neither the loss of blood nor surgical shock could be directly incriminated for the fatality. In connection therewith he has been experimenting with sodium citrate, instead of sodium chlorid, in the physiologic solution. His results have been encouraging and experiments on the dog have confirmed the harmlessness of intravenous injection of a solution of sodium citrate after much loss of blood. It seems promising, especially after childbirth, when the blood naturally shows increased coagulating power. In these cases it might be well to associate it with a stimulant for the heart. Injected in small doses, and early enough, it might check coagulation in the veins and throw ward off or arrest phlebitis.

Policlinico, Rome

July 9, XXIII, No. 28, pp. 865-892

- 62 Early Diagnosis of Pulmonary Tuberculosis. C. Martelli.—p. 865.
June, Medical Section No. 6, pp. 161-192
63 *Serologic Diagnosis of Tuberculosis. (Ricerche serologiche nella tubercolosi.) L. Datta.—p. 161.
64 Culture Mediums to Substitute Petruschky's Whey Medium (Substrati di cultura artificiali in sostituzione del siero di latte di Petruschky.) M. Pergola.—p. 177.

63. **Serologic Diagnosis of Tuberculosis.**—Datta devoted six pages to parallel tabulation of the findings in sixty tuberculous patients with the skin tuberculin reaction, agglutination and precipitin tests, and fixation of complement by the different technics. Most of the patients had pulmonary tuberculosis, but a few had tuberculous meningitis, Addison's disease or polyserositis. The tuberculin reaction was the most constant of all the tests in pulmonary tuberculosis except in the most advanced cases. The fixation of complement reaction came next in order of frequency, and was the most constant in the graver cases. This renders it useful in prognosis. The agglutinin and precipitin tests never gave

dependent positive findings but trailed the others, giving positive findings in the milder cases, the precipitin reaction occurring a little more frequently than the other. In diagnosis, therefore, and in prognosis, especially in pulmonary tuberculosis, he advises applying both the skin tuberculin test and the complement fixation test, with possibly the precipitin reaction as a subsidiary test.

Riforma Medica, Naples

XXXII, No. 19, pp. 501-528

Soldier's Heart. (Le nevrosi di cuore e la guerra.) A. Ceconi.—p. 501.

Diplococcus Pleuropulmonary Congestion. U. Baccarani.—p. 505.
No. 20, pp. 529-556

Chronic Myeloid Leukemia with Hematomyelia in Woman of 34. R. Rummo.—p. 529. Concluded in No. 21.

No. 21, pp. 557-584

Tuberculous Process in Tonsil with Secondary Pleurisy and Apical Lesion on Same Side. S. Pusateri.—p. 562.

Semana Medica, Buenos Aires

XXIII, No. 20, pp. 547-574

*Leprosy in Argentina. (La lepra. Su origen, difusion y profilaxis. Lo que se debe hacer en la Argentina.) J. Penna.—p. 547.

Cesarean Section in Lower Segment of the Uterus. (Cesarea segmentaria.) N. P. Costa.—p. 552.

*Postoperative Accidents. E. P. Siri and G. Borra.—p. 568.

No. 21, pp. 575-596

Organic Dementia with Pseudobulbar Syndrome. F. F. Morixe.—p. 575.

Sexual Perversion. (Anomalias y aberraciones del instinto genésico.) A. Stucchi.—p. 581.

The Chemical Properties and Biologic Role of Filotion, the Albuminoid Substance which Produces Sulphuretted Hydrogen in Presence of Sulphur. J. de R. Pailhade.—p. 591.

Leprosy.—Penna is chief of the National Public Health Service as well as professor of epidemiology at the University of Buenos Aires, and he here discusses the prevalence of leprosy in Argentina and what should be done to combat it. He relates that there are no ordinances preventing lepers from traveling from place to place and thus spreading infection, and no institutions to isolate them even if legislation could be taken to enforce segregation. Cases are known in greater or less numbers in every province, the absence of any attempt at isolation having resulted in the spread of this disease in recent years into regions previously exempt from it. Recent proposed legislation to combat leprosy and other avoidable diseases was voted down for reasons of economy, the "million pesos" this would require being regarded as extravagance. No one seemed to take account of the sixteen million pesos spent by the country caring for the sick, to say nothing of the thirty thousand lives that might have been saved. There is no public institution where lepers can find treatment and shelter. When will legislators realize, he exclaims, that the best mentioned decrees and ordinances and laws are not enough to prevent diseases nor to treat them; all their provisions, most altruistic and the most scientific, are of no use whatever when no funds are forthcoming to enforce them. Argentine government summoned a conference of medical experts in 1906 to discuss the question of leprosy. Resolutions were adopted and presented to parliament, and appeals have been made since by Penna and others, but no attention has been paid to them by the legislators. A leper can board a train or mingle with the populace at will and no one has a right to interfere. Even private violence has done nothing for lepers with the exception of a small endowment at one hospital which supplies tobacco and other minor luxuries to the lepers that come for treatment to that hospital. A colony was planned on an island by private initiative ten years ago. Penna would like to see leper asylums organized near the main foci of the disease, not at remote points expensive to reach.

Postoperative Convulsions.—In the case reported a large hernia required resection of omentum in a man of 29. The wound was closed except for a gauze drain and the patient seemed to be doing well when he developed sudden contractions of the whole body. They were so abrupt and

so violent that the body sprang up from the bed at brief intervals. These convulsions gradually grew less violent, but the man died the third day from secondary hemorrhage brought on by the violent movements.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

July 8, II, No. 2, pp. 97-192

75 Experience and Deductions in the Practice of Medicine. (Ervaring en bespiegeling in de geneeskunde.) A. Sikkel.—p. 98.

76 *Cyclitic Myopia, Optic Myopia and Infantile Glaucoma. (3 bijzondere vormen van bijziendheid.) W. Koster.—p. 113.

77 Endonasal Treatment of Frontal Sinusitis. (Endonasale behandeling bij aandocningen der voorhoofdsholten.) A. De Kleijn.—p. 124.

78 Present Status of Question of Etiology of Pregnancy Toxicoses. (Over de aetiologie der zwangerschaps-toxicosen.) B. Slingenberg.—p. 125.

July 15, No. 3, pp. 193-276

79 *Thyroid Insufficiency a Factor in Epilepsy and Migraine. (Het klinisch ziektebeeld der genuine epilepsie: psychische epilepsie, poriomanie, migraine.) G. C. Bolten.—p. 200.

80 The Tonsils and Respiration. (De weg van den inademiingsstroom door den pharynx in verband met de functie der tonsillen.) P. J. Mink.—p. 225.

81 Importance of Occult Blood in Excluding Simple Neurosis. (De waarde van het onderzoek der ontlasting op blood.) W. Hoogslag.—p. 236.

76. Unusual Forms of Myopia.—Koster has noticed that the forms of myopia which cannot be classed as school myopia or progressive myopia can be grouped under three headings as a rule: the myopia from cyclitis, that left by spontaneously subsiding glaucoma in childhood, and the congenital or genuinely optic myopia. He gives the details of a number of typical cases in each group, emphasizing the differentiating points and expatiating on the importance of a correct diagnosis both for treatment and to ward off further harm. The prognosis of the cyclitic type is bad, whatever treatment may be applied. It begins in youth, in otherwise healthy children. Heredity is unmistakable also in these cases, generally a congenital predisposition, and the affection is moderately progressive. The chronic cyclitis commencing so early interferes with the nutrition and growth of the eye. The eyeballs are large, the conjunctiva injected and rather dry, with a tendency to lie in folds, the pupil is not wide, the vitreous humor early becomes troubled. The fundus shows a small crescent on the temporal side of the disk but there are no special signs of choroiditic changes. Complications are liable and manifold. In two cases cited, in men of 50 and 35, the affection had progressed to detachment of the retina. Mercurial treatment was then instituted and vision was retained in the other eye enough for the men to get around in the street.

An inherited predisposition was evident in the cases of stationary buphthalmos, as a consequence of glaucoma in childhood, which he reports. In one the mother was hypermetropic and the canal of Schlemm in the child must have been defectively developed, entailing the buphthalmos and the myopia. An infant in the family moves its right upper lid as it sucks. In another family two sisters had had glaucoma or stationary buphthalmos while two other sisters and the father had the congenital or optic form of myopia. The myopia in the glaucoma case had evidently been aggravated by too strongly negative glasses for near work. In a third family a boy of 13 has still manifestly progressing buphthalmos, while it is stationary in a girl of 8. In the congenital or optic myopia type the eye is as sound as an emmetropic eye but optically presents myopia from birth. It is important to differentiate this rare type, as no treatment is needed and the prognosis is better than with other forms of myopia of equal degree. He cites cases in which the myopia increased somewhat at puberty and decreased in others, and discusses the mechanism involved.

79. Thyroid Treatment of Epilepsy.—Bolten's long article is an argument in favor of the assumption that in many cases the primal source of epilepsy and migraine is in the perverted or insufficient functioning of the thyroid or parathyroids. This allows abnormal processes in the digestive tract, with chronic autointoxication as the result. Certain cases of migraine, like the cases of genuine epilepsy, are the consequence of hypothyroidism and hypoparathyroidism, the

migraine in these cases representing merely a rudimentary form of a genuine epileptic seizure. These thyrogenous cases are benefited by systematic thyroid treatment. He gives it in the form of fresh juice pressed out of the organs in question, injecting the pressed juice into the rectum. The attack of migraine, like the epileptic seizure, is a phenomenon from toxic action, a reaction on the part of the organism to cast off the toxins that have accumulated in the cerebral cortex.

He emphasizes that the clinical picture of epilepsy is not so uniform as generally assumed, although the manifestations in the individual patient usually show great uniformity. Besides the common type, petit mal, typical seizures and change of character, the psychic type includes the maniacal, the paranoid and the melancholia cases on one hand, and epileptic delirium and somnambulistic conditions on the other. This psychic epilepsy occurs almost exclusively with the severe forms of cerebral epilepsy, traceable to some old meningo-encephalitis or something of the kind. In all his experience he has encountered only one case in which two attacks of psychic epileptic phenomena developed in genuine epilepsy, each lasting three or four days and each terminating with profuse sweating. The patient was a man of 32. Bolten protests against calling these psychic manifestations "epileptic equivalents." The epileptic seizure, and likewise the attack of migraine, is a phenomenon indicating that the toxins acting on the cortex have reached their bearable maximum, and the organism reacts with the seizure. Ulrich found an inherited predisposition in 200 out of 500 migraine patients and it was probable in 80 more, thus in over 50 per cent. In 12 per cent. the patients had both migraine and epilepsy, and 38 other migraine patients had epilepsy in the family.

Bolten's thyroid treatment, based on these and other arguments which he presents, have given good results in 6 cases of cerebral epilepsy with alternating attacks of migraine; also in 2 cases of genuine epilepsy with attacks of migraine, and in 2 of uncomplicated thyrogenous migraine. One watchmaker of 32 who had had migraine since early manhood and epileptic attacks for six years, gradually increasing in frequency until they occurred once or twice a month, improved under eight months of thyroid treatment until he had practically no further symptoms and his brain was much clearer. Another man of 45 has been under Bolten's charge for five years and has had no further attacks of either migraine or epilepsy since his course of thyroid treatment, when previously he had come to have two or three seizures a night. His migraine had developed about the age of 20 and genuine epileptic seizures at 38.

Hospitalstidende, Copenhagen

July 12, LIX, No. 28, pp. 673-696

- 82 *Experiences in Military Hospital in France Last Winter. (Krigsskirurgiske Indtryk fra Frankrig.) P. Guildal.—p. 673. Commenced in No. 27.
- 83 Pedunculated Sarcoma on Small Intestine. (Stilket Sarkom fra Tyndtarmens Serosaside som Aarsag til Ileus.) P. Møller.—p. 679.

82. With the Danish Medical Mission in France.—Guildal reviews the impressions of his five months of service in an ambulance in France and from his visits to other hospitals. He comments on the extensive sifting of the wounded; those wounded in the head, for instance, being sent to a hospital near the front caring exclusively for this class of wounds. Another thing that impressed him particularly was the celerity and skill with which at the Compiègne Hospital the 1,700 wounded were moved down into bomb-proof cellars when bombarding began. Infection occurs in a more malignant form, even with minor wounds, than we see in peace, even with the largest accidental lesions. He says of Carrel's method of aborting infection that it may clear up the wound more promptly than other technics, but that it is a long and tedious task to apply it, and it can be done only by well trained attendants. The results have not been so good in other hands. Guildal is inclined to ascribe the benefit from it to the preliminary thorough mechanical opening up and cleaning out of the wound, under general anesthesia, usually

with ethyl chlorid. Gas gangrene is not seen any more when this thorough *débridement* of the wounds is a routine measure, unless the interval since the injury has been too long, as in one case he saw where the man with a wound in the knee had lain between the trenches for four and a half days.

The hospital in charge of Gaudié made a peculiar impression, as he prefers methylene blue for his disinfectant and the patients and physicians, the beds and the whole hospital were stained blue. He treats a wound like a malignant growth, excising in every direction into sound tissue, and flooding with an aqueous solution of the blue, with an alcoholic solution for the skin. The method certainly gives good results.

The trend on the whole as the war progresses is more and more to operative intervention and all efforts are devoted to have it done early. One flying ambulance for laparotomy work consists of eleven automobiles and fifteen surgeons, permitting continuous work. Underground bomb-proof laparotomy rooms, less than 900 meters from the enemy's trenches, are not uncommon.

Hygiea, Stockholm

LXXVIII, No. 12, pp. 801-880

- 84 Morgagni as Pioneer in Pathologic Anatomy. (Den patologisk-anatomiska vetenskapen och Giovanni Baptista Morgagni.) G. Hedren.—p. 801.
- 85 *Treatment of Tuberculosis on Partial Antigen Principle. (Om behandling av tuberkulos med partialantigen enligt Deycke-Much.) S. Berg.—p. 811.
- 86 Necropsy Confirmed Disputed Diagnosis of Paralytic Dementia in Case with Litigation. (Ett omstritt interneringsfall. Epilog.) O. Kinberg.—p. 858.

85. Treatment of Tuberculosis on the Partial Antigen Principle.—The details of fourteen cases are given, as also the quantitative intradermal reaction in eleven healthy persons. No positive influence on the course of the disease from the partial antigen treatment could be detected.

Ugeskrift for Læger, Copenhagen

June 29, LXXVIII, No. 26, pp. 1079-1118

- 87 Pantopon. (Om Sahli's Pantopon.) H. Jacobæus.
July 6, No. 27, pp. 1119-1150
- 88 Specificity of the Precipitin Reaction in Diagnosis of Syphilis. (Undersøgelse over Fældningsreaktioner.) H. I. Bing and P. Schmitz.—p. 1119.
- 89 *Laryngostomy. L. Mahler.—p. 1125.
- 90 Extensive Eczema Marginatum after Application of Compresses. M. B. Pedersen.—p. 1131.
- 91 *Cardiospasm; Four Cases. Kramer-Petersen.—p. 1133.

89. Laryngostomy.—Mahler applied laryngostomy for chronic stenosis and also in a case of recurring papillomas, and expatiates on the comparative simplicity and ease of the operation and the fine results. His first patient was a girl of 17 who had been tracheotomized for croup at the age of 4 and had been compelled to wear a cannula since. The larynx had grown up below the vocal cords and she had no voice. The larynx was slit on the median line and the fibrous tissue obstructing it was all excised. The wound was drained and after healing of the old fistulas and a Glück plastic operation, clinically normal conditions were restored, the girl being able to breathe and speak normally by the end of a year. Various other measures had been tried before to relieve her of the cannula, but all had failed. In the second case a girl of 8 had already had five operations for recurring polyps in the throat, and had been wearing a tracheotomy cannula for three years. The larynx was thoroughly curetted through a median incision, and there have been no further signs of papillomatous excrescences during the months since. The incision could be closed in twenty-five days after the laryngostomy. Fontaine has a record of twenty-three laryngostomies with one death, for which the operation was not responsible.

91. Cardiospasm.—Petersen reports four cases of cardiospasm with secondary dilatation of the esophagus, in all of which conditions were restored to clinically normal by systematic dilatation with an inflatable bag. The patients were all adults and the cure was complete and permanent.

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CONGENITAL DEFORMATION AND DEFUNCTIONALIZATION OF THE CAUDAL ILEUM AND COLON*

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The descending colon of the embryo, on account of the width of its mesentery, is at first freely movable and lies well over to the left side of the abdominal cavity. In consequence the left layer of its mesentery lies in contact with the parietal layer of the peritoneum. Subsequently fusion of these two peritoneal layers takes place. The fusion begins near the median line, that is, near the root of the mesentery, and extends outward. The fused layers eventually become converted into loose connective tissue. Thus, this portion of the colon loses its mesentery and becomes fixed to the abdominal wall.

This fusion extends usually in the caudad direction as far as the medial border of the left psoas muscle, and takes place to a variable extent in the iliac fossa. Owing to irregularities in the fusion of the mesocolon descendens to the mural peritoneum, transverse folds or septa are developed and small paracolic fossae are formed. At the lowest level of normal fusion, that is, at the proximal or cephalad end of the sigmoid, a distinct band, marking the edge or lower border of the fusion, tethers the sigmoid to the abdominal wall. This bandlike margin is the linea terminalis, which stands out conspicuously when the sigmoid is drawn ventrally, giving added depth to the recessus intersigmoideus. As the sigmoid mesocolon does not as a rule fuse with the parietal peritoneum, but remains freely movable, it is readily seen that acute angulation may occur at this level as it does at other fixed points of flexure or angulation, as at the hepatic flexure or splenic angle. If normal embryologic fusion of the two peritoneal surfaces in this region is excessive, that is, if the fusion extends so far laterally as to obliterate the space between the mural peritoneum and the tunica serosa of the distal descending colon and

proximal sigmoid, fixing the intestine itself to the abdominal wall, such excessive fusion is to be looked on as a predisposing factor in stagnation in this segment.

A similar fusion of the outer lamina of what is at first a free and loose mesentery of the ascending colon with the contiguous mural peritoneum also takes place on the right side. Excess of this fusion gives rise to the condition noted but not explained by Byron Robinson and observed with great frequency since, the condition in which a longitudinal plica of peritoneum seems to have been pulled up from the bottom of the paracolic trough and fused like a patch on the lateral

surface of the colon sometimes as high as the tenia libera or median longitudinal band. Inequalities of normal fusion on the right side give rise to transverse bands or folds dividing the paracolic space into fossae as on the left side. Such transverse folds are so constant as to be considered anatomic. The peritoneum of the abnormal or excessive fusion folds is usually whitish, and being supported by loose connective tissue, it is usually rather firm in texture. These structures bear very little resemblance to the hyperemic or vascular diaphanous membrane described by Jackson. Such extensive fusion not rarely fetters or angulates the lower extremity of the descending colon and the proximal end of the sigmoid. If during abdominal operations one has in mind the normal embryologic fusion here mentioned, it will not be difficult to understand the frequent presence of adhesion bands fixing the sigmoid to the parietal serosa in such an excessive degree as to embarrass its function.

It should be noted that the sigmoid colon is still relatively long and freely movable at birth.

Frommer, Curschmann and Concetti recognize in the elongated, sagging, redundant sigmoid a persistence of the fetal

and infantile condition in which the mesentery is broad and free and this portion of the large intestine relatively long. The letter M sigmoid often observed in the adult is a common finding in the fetus.

There is another important embryologic factor in the etiology of sigmoidal stagnation, this being the presence in the fetal and postnatal abdomen of a fold of peritoneum extending from the mesentery of the proximal sigmoid downward and outward in the direction of the internal abdominal ring. This persisting

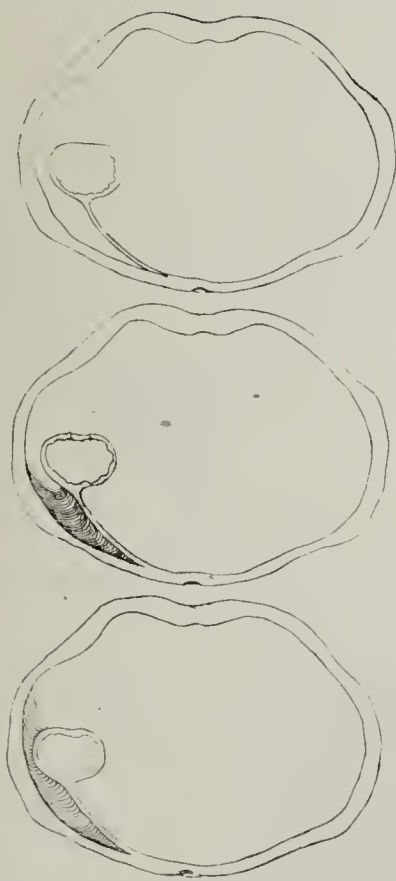


Fig. 1.—Diagram showing cross-section of colon of embryo: above, with long mesentery before fusion; middle, normal fusion of mesentery of colon to parietal peritoneum; below, excessive fusion extending over ventral surface of colon.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

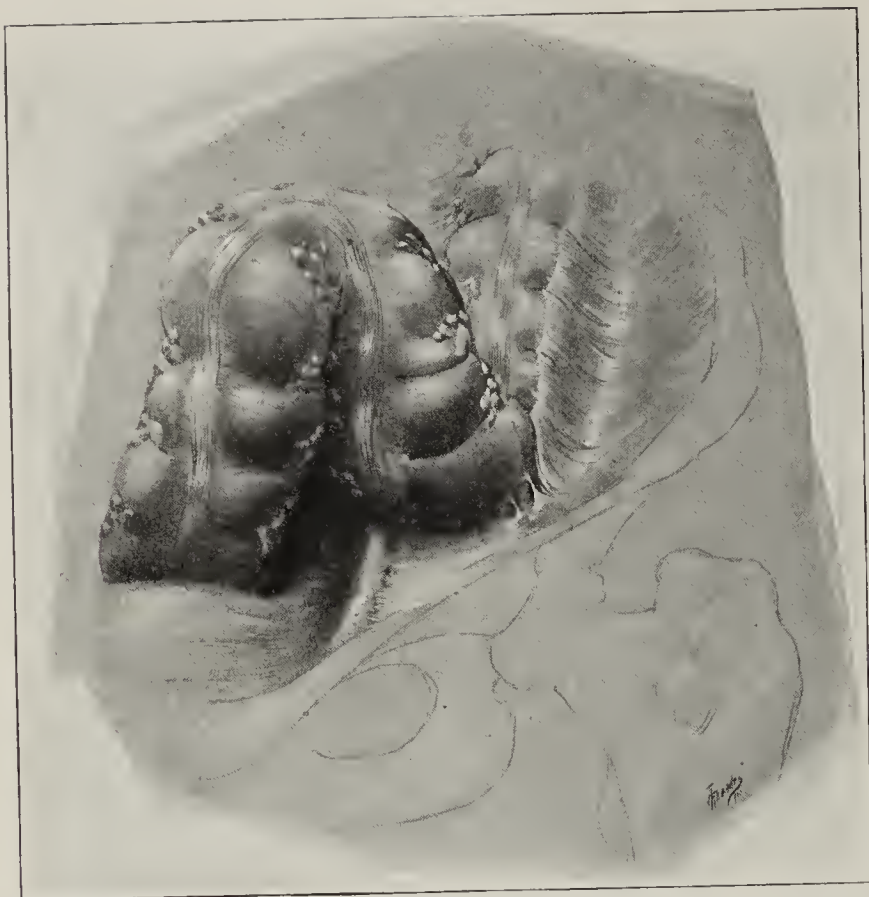


Fig. 2.—Postnatal condition probably the result of excessive fusion of colon mesentery to parietal peritoneum as shown in Figure 1.

fold takes the same course as the plica vascularis of the descending testis or ovary. There is perhaps sufficient reason to believe that the postnatal fold on the right side of the abdomen extending from the mesentery of the terminal ileum to the genital gland, which has been called the ileopelvic band by Lane and which in the female may by traction on the appendix be drawn up as the appendiculo-ovarian ligament, are but remnants of the very conspicuous fetal fold of peritoneum which is drawn out by traction of the inguinal ligament on the descending genital gland, the inguinal ligament becoming in the male the gubernaculum testis and in the female the round ligament.

Douglas Reid described a fold which in the fetus takes the same general course. He called it the genito-mesenteric fold. Thus, it will be seen that on the right side a distinct tendency for the development of folds extending from the ileocecal region down to the genital gland has been rather clearly shown. Excessive fusion in embryo of the mesenteries of the ileum and cecum with the folds just mentioned, and downward traction of the descending genital gland, may be suspected fairly of producing displacements and deformities of the terminal ileum and cecum. On the left side of the abdomen as well, the descent of the testis and ovary draws out a very distant fold, the course and attachments of which are similar to those of the fold on the right side, except that on the left it is the mesentery of the sigmoid which is concerned instead of the mesentery of the terminal ileum and cecum. Conditions with respect to this fold do not vary greatly in the two sexes. The inguinal ligament in the female extends from the primitive position of the ovaries in the lumbar region of the abdominal cavity to the groin, where it passes through the abdominal

wall, traversing the inguinal canal to terminate in the labium majus. It should be recalled that as the ovary and testicle, developing in their primitive position behind the peritoneum, increase in size, they project toward the peritoneal cavity. The peritoneum covering them forms a mesentery which anchors them to the posterior wall of the abdomen. By the time the genital glands reach the pelvis of the embryo, the mesorchium or mesovarium continues downward to the internal abdominal ring as the inguinal ligament. The peritoneal fold thus developed may by very slight traction on the ovary or testis be exhibited in embryo as a ridge as high as 6 cm. or more. In operation for inguinal hernia in the male adult, downward traction on the neck of the peritoneal sac often brings into prominence the remnant of this fetal fold, traversing from the inguinal canal to the mesentery of the cecum on the right and from the internal abdominal ring to the mesentery of the proximal sigmoid on the left. The presence of this fold may help to explain the frequency with which the cecum and sigmoid descend into the sacs of inguinal hernia.

As fusions of mesenteries to the fold of the descending gland produce deformities in the ileocecal region on the right, so similar fusions and contractures may fix or angulate the proximal sigmoid on the left. Many clinicians have noted the tendency of deforming bands and folds to dispose themselves between the proximal sigmoid and the left internal abdominal ring.

No doubt the principal factor in the arrest of intestinal contents in the sigmoid is an anatomic one. In many individuals, particularly in the new-born, the sigmoid begins with a sharp turn upward or obliquely to the right and upward from the line terminalis. Frequently there are other sharp angulations, as in the letter M sigmoid, rather common in the fetus and adult. Occasionally a sharp curve is seen at the third sacral vertebra where the sigmoid goes over into the rectum.

It has been known for many years that the feces remain normally and physiologically in the sigmoid and



Fig. 3.—Erratic fusion membranes in layer arrangement binding proximal sigmoid.

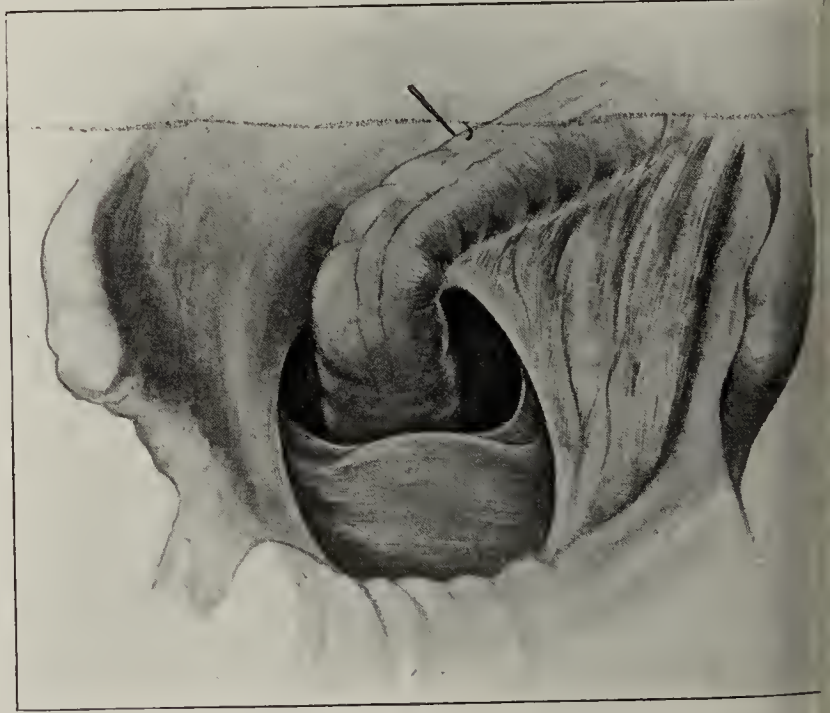


Fig. 4.—Linea terminalis or lower border of normal fusion between descending colon and abdominal wall (after Sobotta and McMurrian).



Fig. 5.—Linea terminalis (or lower border of fusion on left side) and proximal sigmoid (after Piersol).

do not descend into the rectum between one defecation and the next. Stasis of excrement in the sigmoid beyond physiologic limits leads to colitis in this part of the large intestine, as elsewhere. Ulceration may appear as the result of long retention of colon contents. Inflammation of the mucous membrane is a natural result of stagnation of bowel contents. The serosa reacts to the irritation of high-grade localized distention, a condition which may be called colitis infiltrativa chronica is established, and fixation adhesions of the peritoneum of the sigmoid are almost constant consequence.

Thus, embryologic, anatomic, physiologic and pathologic factors which are inherent in the sigmoid itself lead to sigmoidal constipation. Deforming adhesions lead to a pathologic condition extrinsic to the bowel, and of uterine adnexa, may also of course defunctionalize the sigmoid.

Those abnormal attachments of the sigmoid which are due to excesses or irregularities of embryologic fusion are usually not so firm but that they can be broken up by gauze dissection, by wiping, so to speak, with gauze the sigmoid away from the parietal peritoneum. Fortunately, the almost complete absence of blood vessels in the fusion membranes makes sharp division of these structures simple and safe; thus, the linea terminalis may be put on the stretch and divided upward with scissors or knife without bleeding. Not infrequently such irregularities of fusion take the form of manifold layerlike adhesions in the neighborhood of the linea terminalis, and often one layer or septum of adhesions after another can be wiped away. However, the firmer bands which follow the course of the fetal fold developed by the descent of the genital gland usually require the knife or scissors-spreading dissection for their division. On liberation of the sigmoid

from the restraint of such excesses or irregularities of fetal fusion, the return of more nearly normal function is evidenced frequently by the passing of flatus, and if the deformities of the sigmoid thus induced are not associated with deforming and obstructing intestinal lesions elsewhere, the prospect of relief of stasis with its consequent ills may become good as the result of a very simple measure.

As is well known, another common site of deforming defunctionalizing adhesions is about the cecum and terminal ileum. Up to the fourth month of embryonic life, this, like other parts of the large intestine, hangs by an ample mesocolon. Subsequently, however, this mobility becomes lost, owing to the fusion between the outer lamina of the mesocolon and the neighboring mural peritoneum. It should be noted that this fusion takes place in varying degree, and thus we can account for many irregularities in the attachments of the cecum and ascending colon. After normal fusion, the mural serosa becomes continuous with the tunica serosa of the ascending colon. The fused layers behind the colon disappear as such, and the posterior wall of the latter no longer has a peritoneal covering.

Instances of retrocecal and retroperitoneal appendix may be explained rationally by assuming that before fusion occurs the appendix becomes caught between the coalescing peritoneal surfaces of the cecal mesentery and the abdominal wall.

In cecal descent and torsion the appendix might readily be arrested at an abnormally high position and between the serous surfaces mentioned. Thus a true retroperitoneal position of the appendix could be established. This truly retroperitoneal position of the appendix is obviously different from that condition in which, after fusion has occurred, the appendix is buried under a membrane developed by adhesions of small folds about the ileocecal region to the mural serosa, which adhesions are drawn out as membranes over the caput coli and appendix during normal cecal torsion.



Fig. 6.—Traction of fold or adhesion of sigmoid at B, causing sharp angulation at A.



Fig. 7.—Fusion of terminal ileum and peritoneal fold of descending testis resulting in postnatal angulation of terminal ileum.

The normal fusion of mesentery to mural serosa as a rule does not extend down to include the cecum, but it may do so. At the lower termination of the fusion there is a sharp border of foldlike margin called the plica caecalis or subcecal fold, to the medial side of which under the free unattached caput coli and lower cecum is the fossa caecalis. Excesses and abnormalities of this process of peritoneal fusion may, it is clear, lead to deformation of the cecum and ascending colon. I have noted in an adult an instance in which excessive fusion had occurred between the mural peritoneum and the tunica serosa of the ascending colon continuing mediad in places as far as the tenia libera or longitudinal muscle band. Not rarely the fusion extends so far downward that the plica caecalis or lower margin of the fusion is firmly attached to the caput coli, interfering with its movements and functions.

On the right side we must add to the abnormalities mentioned those folds and membranes which are developed by adhesions between the terminal ileum or cecum and the parietal peritoneum before normal cecal torsion has taken place. Thus, the plica ileocaecalis, a fold of varying size, extending under normal conditions from the mesenterium of the vermiform process to a line on the terminal ileum opposite its mesentery, may become adherent to the mural serosa before cecal torsion takes place, and later, as the terminal ileum rolls mediad, be drawn out into a membrane covering the caput coli and appendix. In a similar manner sheets of peritoneum may be drawn over the cecum and ascending colon as a result of adhesion between the two contiguous peritoneal surfaces before cecal torsion occurs. Such anomalous peritoneums persisting from fetal life often interfere with the drainage of the cecum, the terminal ileum and the vermiform appendix. It is usually not a difficult matter in the adult to divide such fusion adhesions or separate them by gauze or scissors-spreading dissection.

At this point it is desirable to call attention to the difference in origin, in histologic construction and clinical effects between these abnormalities, the result of irregularities or accidents of fetal fusion, and the vascular loosely attached weblike, diaphanous membrane which covers the cecum in the condition of membranous pericolicitis. Fetal fusion bands and membranes show as a rule no signs of inflammation, are apparently almost bloodless, and have the appearance of thin connective tissue. The diaphanous membrane of pericolicitis or perityphlitis is characterized by abundant,

somewhat parallel coursing vessels which, it should be noted, correspond in their course, division and distribution with the branches of the ileocolic artery. This vascular veil of apparently detached peritoneum cannot often, if ever, be completely removed without leaving a raw bleeding surface. This is obviously an affair of prenatal or postnatal hyperemia, congestion and inflammation, a reaction of the peritoneum to irritation often beginning in an inflamed mucous membrane of the appendix or cecum.

Summers observed such a condition following trauma to the abdomen. It is rare that a chronic appendicitis is not associated with this pericolicitis membranosa vasculosa. The vascular web of membranous pericolicitis may hamper peristalsis and occasionally may deform or dislocate the appendix vermiformis and interfere with its drainage; but by virtue of its loose disposition over the peritoneal surfaces, it being the hyperemic tunica serosa itself, it is not so often found

as a deforming factor as is the fold or band resulting from accidents of fetal peritoneal fusion. It is worth nothing that, whereas the vascular coat of membranous pericolicitis cannot be removed, the excess of fusion can be broken down by gauze and scissors-spreading dissection, and, being almost avascular, they do not readily reform. To attempt to strip off the vascular membrane of membranous pericolicitis results in new adhesion formation, whereas the division of the white fusion bands is often an excellent purpose in releasing the tethered segment of intestine and does not leave behind bleeding surface to unite in fresh adhesions.

In a general way the transverse mesocolon fuses with the parietal peritoneum about the beginning of the fifth month of the embryo, as does the mesocolon of the ascending and descending portions. That is, the posterior layer of the transverse mesocolon fuses with the parietal peritoneum. On the left the transverse mesocolon fuses on both its upper and lower surfaces with the peritoneal covering of the great omentum. This fusion of the transverse mesocolon with the peritoneum of the great omentum is subject to marked variations.

I have observed in the adult two instances in which the fusion of the mesentery of the transverse colon with the peritoneum of the great omentum continued downward on the right as far as the cecum, and on the left as far as the sigmoid. In another instance, the tunica serosa of the ascending colon was covered with a double layer of extra peritoneum made by fusion

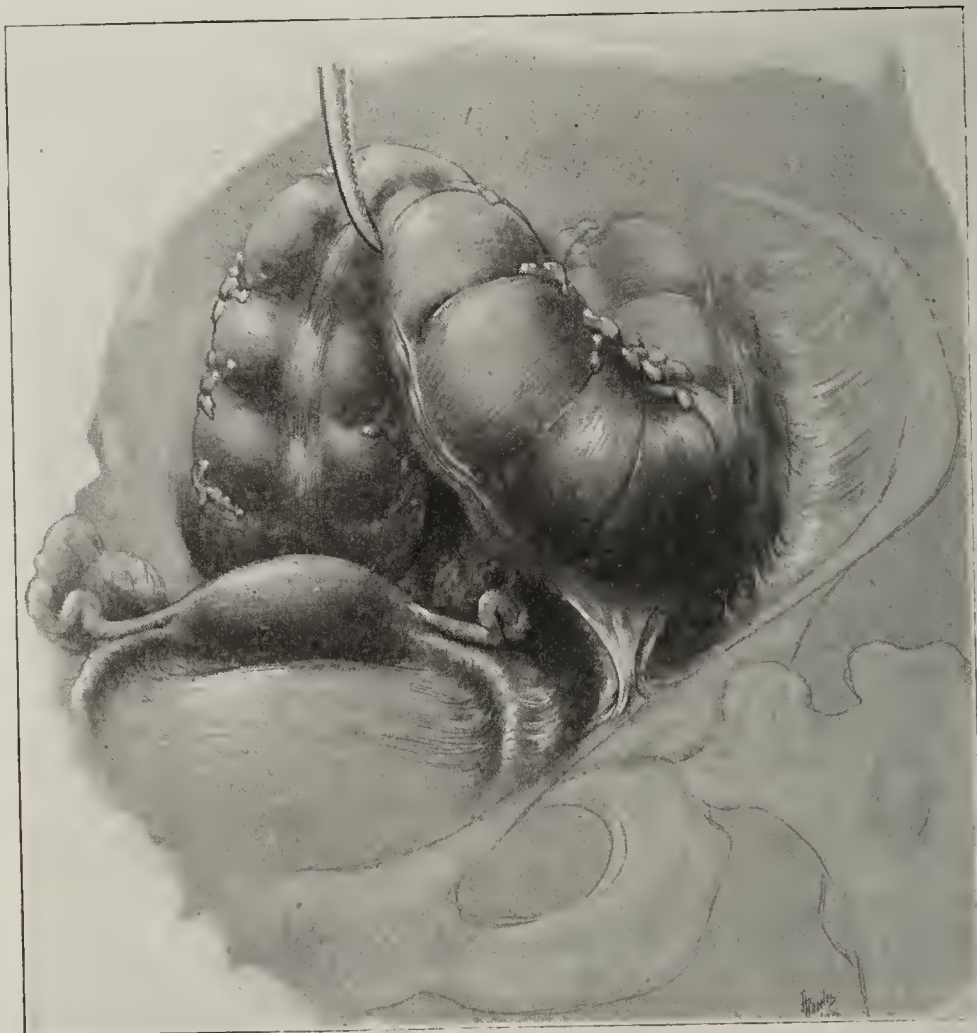


Fig. 8.—Fusion of mesentery of proximal sigmoid and plica vascularis or fold of descending genital gland resulting in postnatal band tethering sigmoid to internal abdominal ring.

the anterior and posterior lamina of the great omentum, the double layer being in turn fused with the serosa of the ascending colon. In these instances, the tethering of the ascending colon to the transverse colon through the medium of this abnormal fusion was apparently responsible for a double-barrel relationship



Fig. 9.—Appendix bound to angulated ileum by abnormal ileocecal adhesion.

of the upper ascending colon to the right colon transversum. On the left side I have seen a somewhat similar double-barrel relationship secured by an exaggerated ligament of Toldt, that is, an excessive fusion of the great omentum with the proximal end of the descending colon.

331 North Delaware Street.

ABSTRACT OF DISCUSSION

DR. A. GOLDSPOHN, Chicago: Dr. Eastman mentioned the extraperitoneal appendix. Of course, we know of such a thing occurring back of the cecum in the ordinary location of the latter; but eighteen days ago I operated on a vigorous young man who had an extraperitoneal appendix lying wholly within the small pelvis beyond the cecum. Externally he had a painful indurated mass, about 2 by 6 cm. in size, that could be felt distinctly about 3 cm. inward from the right iliac crest parallel with it and extending down to near the outer end of Poupart's ligament. There were no signs of any intraperitoneal aggregation or inflammatory swelling beneath it, as from a circumscribed appendicitis. The diagnosis was very much confused by the fact that six days previously he had been injured by the end of a wagon pole that struck him above the symphysis pubis a little to the right, about the location of the external abdominal ring. This did not disable him from continuing with his work. About four days after this injury, however, he called a doctor because he had fever and nausea and pain in the region of the present swelling in the abdominal wall. The doctor naturally associated the sickness with the trauma which, however, probably had nothing to do with it. At my first examination it looked very much as if an internal and incomplete inguinal hernia were present, with strangulation of mental contents. Cutting down into this mass about 3 cm. from the border of the crest of the ilium, I found several

pus foci in its deeper strata, while making my way by blunt dissection extraperitoneally into the small pelvis, along the track of a violent infection, down to the spermatic cord, in which I traced the vas deferens to the vicinity of the bladder. The peritoneum was elevated intact throughout and was mostly discolored dark bluish from contact with the infected area. After getting to the bottom of this I discovered, tied off and removed a mass that looked like gangrenous fatty tissue as large as my thumb, about 3 inches long, that could be gathered up and traced to a pedicle running upward. I did not at that moment recognize it positively as the appendix, because I did not expect to find such a thing there; but by postoperative dissection it was found to be the appendix. Desiring to inspect things within the peritoneal cavity, I cautiously did so through a small temporary incision in the parietal peritoneum. There was some accumulation of clear fluid in it but no redness of serous surfaces. Having opened up all the infected connected tissue areas in the pelvis and upward in the loin toward the right kidney, all extraperitoneally, the expanded cavities were thoroughly packed with gauze to drain out a generous incision left mostly open. The man continued to have some temperature for several days but afterward convalescence was normal and his recovery is assured, with a secondary closure of the wound to prevent a hernia.

DR. F. GREGORY CONNELL, Oshkosh, Wis.: The causes of the conditions described by Dr. Eastman have heretofore been classified as (1) inflammatory, and (2) congenital. After this I believe we may consider only the congenital. In corroboration of Dr. Eastman's point relative to the ileopelvic ligament of Lane and a similar ligament on the left side I should like to mention an instance in which I found no evidence of previous inflammation within the abdomen, but an extreme ptosis and redundant sigmoid with an adhesion, a fusion of the free omentum to the round ligament on the left side. The distinction which Dr. Eastman makes between this excessive fusion which may be demonstrated by the

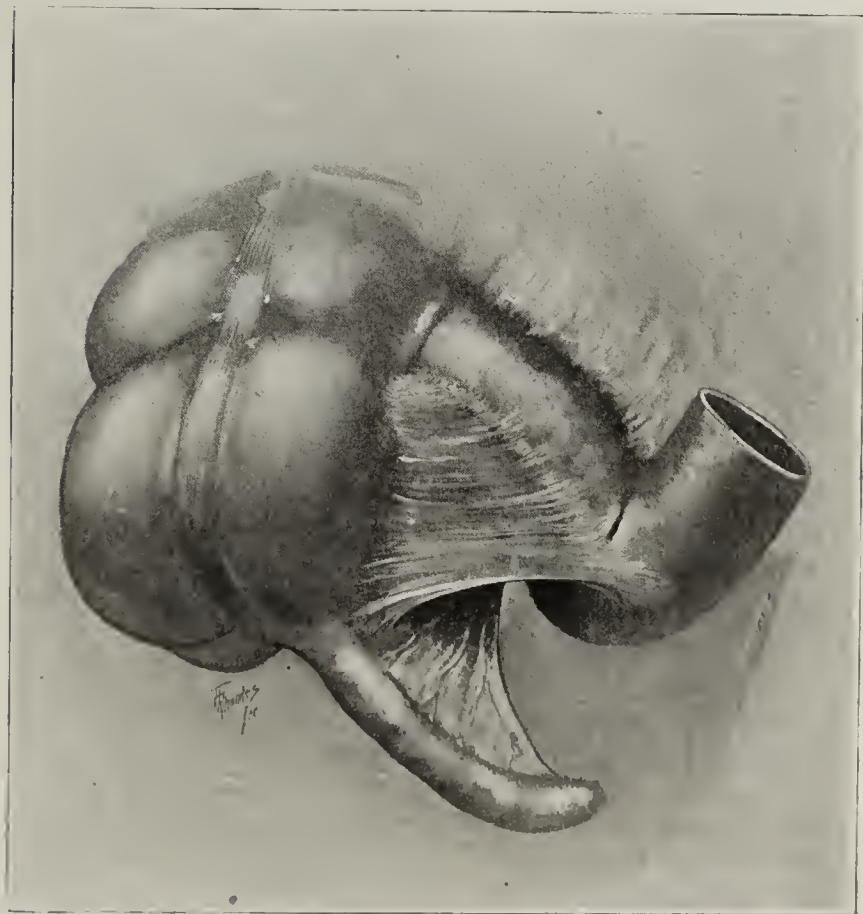


Fig. 10.—Abnormal fold of Treves angulating cecum.

"white line" that Summers has emphasized, and these vascular affairs is very important, and should be kept in mind; by so doing, further discussion of the subject will be greatly simplified. The pericecal and the pericolic membrane must likewise be differentiated in a consideration of this subject. The picture thrown on the screen by Dr. Eastman, as typical of Jackson's membrane, is a pericecal membrane and not the pericolic membrane as described by Dr. Jackson.

DR. JEROME MORLEY LYNCH, New York: Of special interest is the statement that we may have in these congenital deformities no such thing as perfect fusion, that any two layers of the peritoneum may become separated and delaminated and cause deformity. I do not believe, however, that raw, healthy peritoneum ever is harmful. It is the subsequent inflammation that destroys the endothelium and leaves

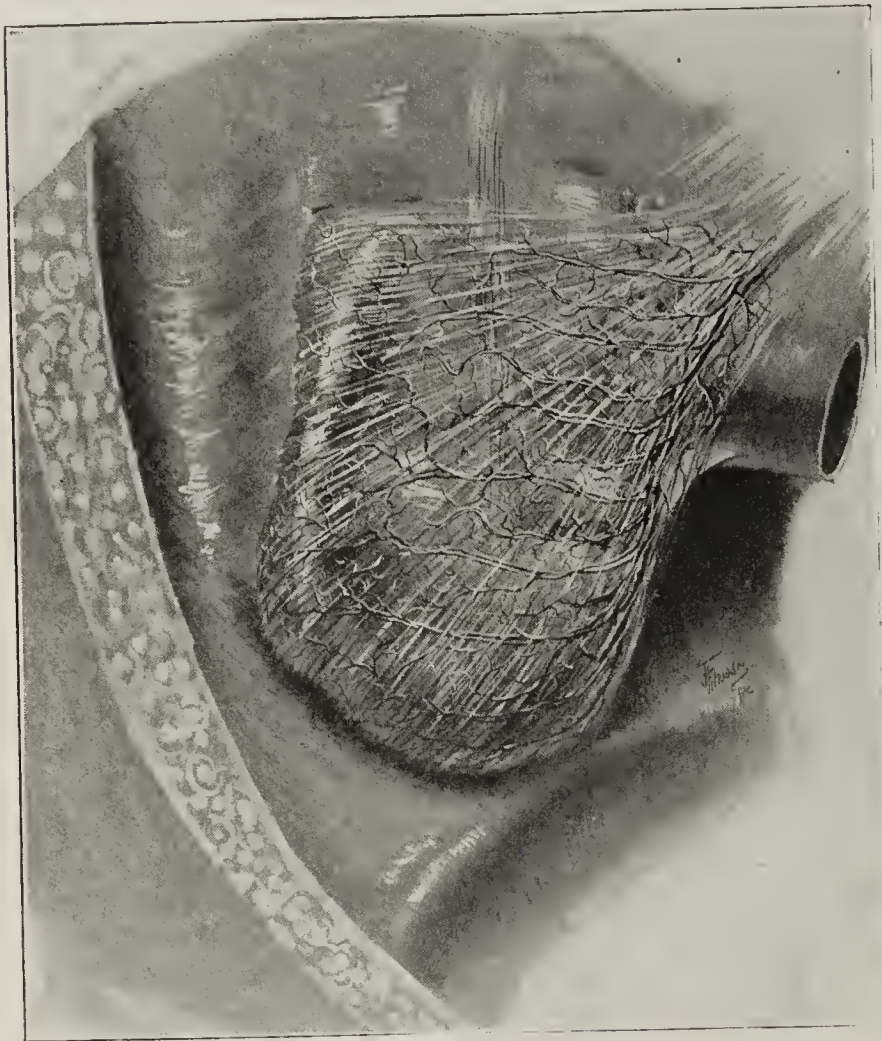


Fig. 11.—Difference in appearance between Jackson's pericolicitis membranosa vasculosa (covering cecum) and a fetal fusion patchlike membrane lateral to ascending colon. In the vascular pericolicitis or perityphlitis there is hyperemia of the branches of the arteria ileocolica.

fibrous connective tissue. Unless this change has taken place dissection is unnecessary.

DR. J. N. JACKSON, Kansas City, Mo.: This is a subject which has interested me considerably in the few years since I first described what has since been termed "Jackson's membrane." It is something I have not said much about in the last few years, because so much that I have said has been misinterpreted. Many of these abnormalities exist because of fusion, transpositions, etc. I am of the opinion that we have two distinct types of conditions clinically. Undoubtedly there are a great many of these in which the clinical symptoms depend on the congenital malformation alone. Contractions and angularities produce symptoms which disappear when the conditions are corrected mechanically. Many of these cases have been relieved by division of the adventitious bands. On the other hand, after considerable experience, I am inclined to believe with Dr. Lynch that in a greater percentage there must be added infection. If these patients must be treated surgically, they must be treated subsequently by attention to the colon. I am coming to believe that in these advanced cases of membranous pericolicitis the membrane never comes in contact with the cecum. There are few adhesions and probably no absorption from the ascending colon. I believe that most of these cases give rise to the old chronic symptoms due to chronic infection. In some cases resection of the entire ascending colon is indicated.

DR. JOSEPH RILUS EASTMAN, Indianapolis: With the utmost respect for what Dr. Jackson has just said, I should like to say that not once, but a hundred times I have seen over the cecum and caput coli that thin veil, and I believe most of the gentlemen here interested in these anomalous membranes

about the cecum and ascending colon will say that he has seen precisely what Dr. Jackson describes as membranous pericolicitis on the cecum and caput coli many times. I did not undertake to say that these irregularities in fusion occur in every case, nor frequently, but that occasionally we find irregularities of this normal fetal fusion between the outer lamina of the peritoneum, mesentery and abdominal serosa in definite association with an arrest of the action of intestinal contents in that section, in association with stasis in that zone. It has not rarely been observed that the separation of this excessive fusion will permit the passage of extravasated abdominal contents, giving relief to the stasis. I do not say that it happens often; it certainly does occasionally. It oftentimes comes to pass that by the wiping away of these adhesions we can restore the function of the descending colon. I did not go into the relation of these anomalies to the various syndromes mentioned in the paper, because there was not sufficient time. I did try to emphasize that there is such a thing as decided excessive fusion between the mesenteries of the large intestine and the abdominal peritoneum and that such excessive fetal fusion may extend around to the front to the longitudinal mural band and even across it in a medial direction, and that such fusions will interfere with the function of the large intestine. It is well to remember the possibility of the appendix becoming arrested between the outer lamina of the mesentery of the large intestine and the abdominal wall so that when the layers are obliterated the appendix can again occupy the retroperitoneal position. Then, too, it is worth while to recall that the postnatal inflammatory adhesions of the great omentum to the large intestine may represent a relationship of excessive fusion to the great omentum at the hepatic flexure and splenic flexure and may not represent adult pathology at all. We are greatly indebted to Dr. Jackson for what he has told us. I doubt whether any of us ever understood what he meant by the membranous pericolicitis which he described. I can think of no reason why an inflammatory process evidenced by the dilation of the capillaries and in other way



Fig. 12.—Erratic fusion of contiguous fetal peritoneal surfaces.

suggestive of inflammation should be limited to the ascending colon. I can understand how with the descent of the cecum the peritoneum might be pulled over the descending or ascending colon from the mural serosa, but this membrane pulled over would not have the appearance described by Dr. Jackson, that of the parallel crossing vessels. In the condition which Dr. Jackson describes as having partially separable membrane, it is like shaving smoke and when

membranes are removed the condition is favorable to the formation of new adhesions. I think that we do find these two distinct types about the cecum and ascending colon. One is represented by the persistence of the excessive fusion between the large intestine, the mural bands and serosa of the fetal period; the other by the inflammatory condition of the ileocolic artery.

INDICATIONS FOR CHOLECYSTECTOMY *

DONALD GUTHRIE, M.D.

SAYRE, PA.

The operation of cholecystectomy has been accepted by experienced surgeons as the one of choice for most cases of gallbladder disease that in former years were simply drained. The literature of late has been filled with articles by many surgeons, the enthusiastic advocating cholecystectomy for all cases, the conservative decrying its general adoption.

Believing it would be of interest and profit to find out the profession's attitude in regard to the indications for cholecystectomy, I have reviewed the literature extensively and have been in correspondence with forty-five experienced abdominal surgeons. In the letters sent out the following information was asked:

1. What percentage of cases of cholecystostomy have had a recurrence of trouble following operation?
2. Are you performing cholecystectomy more frequently than in the past?
3. Have the results been better than when simple drainage was used?
4. In what cases do you consider cholecystectomy the operation of choice?
5. What are the contraindications for its employment?
6. As a rule, how do you treat empyema of the gallbladder?
7. How does the mortality of cholecystectomy compare with cholecystostomy in your work?

Question 1: What percentage of cases of cholecystostomy have had a recurrence of trouble following operation? This question has been a difficult one to answer accurately. It was not answered by five men; the remaining forty reported as follows:

Very few recurrences.....	5
Few recurrences	3
Small percentage of recurrences.....	5

13

Other replies were: Many, exact number unknown; uncomfortable percentage; many bitter disappointments.

The numerical percentage given by twenty-nine men varied from 1 to 33 1/3 per cent. of failures. The average was 9.5 per cent.

Coffey reports infrequent recurrences. LaPlace gives 33 1/3 per cent. Judd writes, "impossible to state, but we have had a large number of recurrences." Stanton, who has carefully investigated Ochsner's cases and his own, reports recurrences of trouble in 14.5 per cent. of cases. Kehr estimates there have been 15 per cent. of failures in his work.

Question 2: Are you performing the operation of cholecystectomy more frequently than in the past? There were forty-five answers: thirty-six answered in the affirmative, nine in the negative. Among the thirty-six affirmative answers some of the replies are of interest. Bevan and Frazier perform cholecystectomy in from 80 to 90 per cent. of their cases. Elting in 60 per cent., Gibbon in 50 per cent., and Clark in 33 1/3 per cent. Martin employs cholecystectomy more

frequently, but considers it a more dangerous operation; Deaver, more frequently than formerly, but not so often as many surgeons; Crile not much more often. In 1907, the Mayos performed 100 cholecystectomies, and 261 cholecystostomies; in 1915, 915 cholecystectomies, and but sixty cholecystostomies.

There were nine negative replies to the question. Bloodgood, Kelly, Cullen and Grant are not performing the operation so frequently as formerly.

Question 3: Have the results been better than when simple drainage was used? Thirty-six men answered yes; seven answered no; two failed to answer.

Question 4: In what cases, do you consider cholecystectomy the operation of choice? The

chief indications for removal of the gallbladder recommended by the majority are any disease of the gallbladder wall itself and damage to the cystic duct.

Three surgeons prefer cholecystectomy in every case; two, in all cases except those complicated by pancreatic disease; 80 per cent. advise removal when any disease of the gallbladder wall with or without stone is found, mentioning as indications thick-walled, enlarged gallbladders; thick-walled, contracted gallbladders; adherent gallbladders; adhesions to the pylorus (Lund); gangrenous gallbladders; in early malignancy confined to the gallbladder itself. Kehr urges cholecystectomy as a prophylaxis in cases of chronic cholecystitis which prove rebellious to medical treatment. Several (Mayo, Judd, Lathrop, Gibbon and others) call attention to the possibility of systemic joint infection secondary to disease in the wall of the gallbladder, as pointed out by Rosenow, and advise cholecystectomy as a prevention.

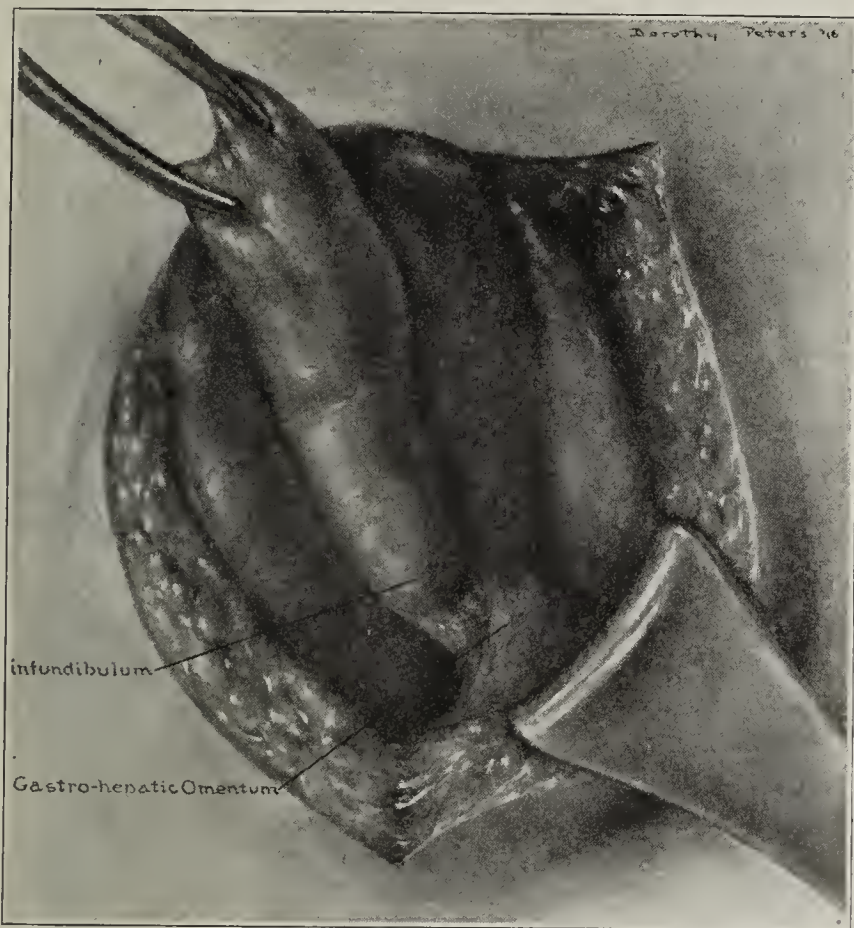


Fig. 1.—The liver and gallbladder are drawn out into wound; the infundibulum of the gallbladder is seen lying over the cystic duct and artery.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

Obstruction or obliteration of the cystic duct, either by stone or stricture, is the next indication advised by the majority. A few call attention to the liability of stricture of the duct following the removal of an impacted stone. Some of the conservative men think cholecystectomy only indicated in the presence of gangrene and suspected malignancy of the gallbladder itself. Kelly employs cholecystectomy only in thick, contracted gallbladders and malignancy.

Mayo Robson mentions (1) phlegmonous cholecystitis, (2) gangrene of the gallbladder, (3) chronic cholecystitis, (4) in mucous fistula or hydrops due to stricture of the cystic duct, (5) in empyema, (6) in cancer.

Deaver advises the operation of cholecystectomy for (1) hydrops from obliteration of the cystic duct, (2) calcareous degeneration, (3) the cholesterol gallbladder of Moynihan, (4) chronic empyema, (5) gangrene, (6) carcinoma limited to the gallbladder itself, (7) extensive laceration or perforation of the gallbladder.

Crile advises cholecystectomy (1) if the cystic duct is occluded, (2) if the cystic duct has a decubitus, (3) if the gallbladder wall is injured by disease.

Elting advises the operation in old chronically thickened and adherent gallbladders and in certain acute diseases of the gallbladder in which there is no evidence of serious disturbance of the liver or the ducts.

Lilienthal gives all indications cited above and concludes that it is his belief that any gallbladder that is worth operating on may with advantage be removed.

Erdman says cholecystectomy limits morbidity and increases efficiency. As a result he is performing cholecystectomy in almost every case although there are some cases in which cholecystostomy must be performed.

Lane urges cholecystectomy because it removes the natural habitat of gallstones in the body and lessens the chance of recurrence. Cholecystectomy also gives an immediate and more comfortable convalescence. He quotes Finney as saying that more secondary operations are performed after cholecystostomy than after cholecystectomy. Crile believes that the clinical results of cholecystectomy are better than those of cholecystostomy, just as nephrectomy for a pus kidney is better than nephrotomy. He has never seen any adverse clinical results following excision of the gallbladder.

Babcock recommends cholecystectomy in the first stages of cholecystitis, but emphasizes many of the technical dangers. Cholecystostomy ought to be largely restricted to the third stage of cholecystitis, for cases of empyema, perforation, gangrene, and pan-

creatitis with duct involvement. He thinks in the hands of the average surgeon the mortality of cholecystectomy in the first stages of cholecystitis is less than for cholecystostomy in the last stages of the disease.

C. H. Mayo says cholecystostomy and the removal of stones will cure symptoms of mechanical obstruction, but does not cure chronic cholecystitis and cannot restore the destroyed walls of the gallbladder or free it from adhesions. He advises cholecystectomy for these and for all cases in which infection is the major feature, with or without stones. Chronic pancreatitis with gastric symptoms cannot be cured by cholecystectomy, but requires prolonged drainage.

Question 5: What are the contraindications for cholecystectomy? The chief ones may be said to be the following: Inexperience of the operator. Inexperience of the anesthetist; one who may not appreciate the fact that manipulations about the liver ducts

may cause the patient to strain or cough, although fully anesthetized. Desperate condition of the patient, which will not permit any prolonged operation or any additional trauma. In the very obese, in whom good exposure cannot be obtained or in the presence of perihepatic adhesions which make it impossible to draw the liver well down and rotate it outward through the wound. Edema of the gastrohepatic omentum and swelling of the ducts making it almost impossible to recognize them, is mentioned by some. Ochsner does not think it wise to operate on any case in the very acute stage. Mayo Robson does not believe in removing the gallbladder if there is no patency of the common duct. Deaver advises

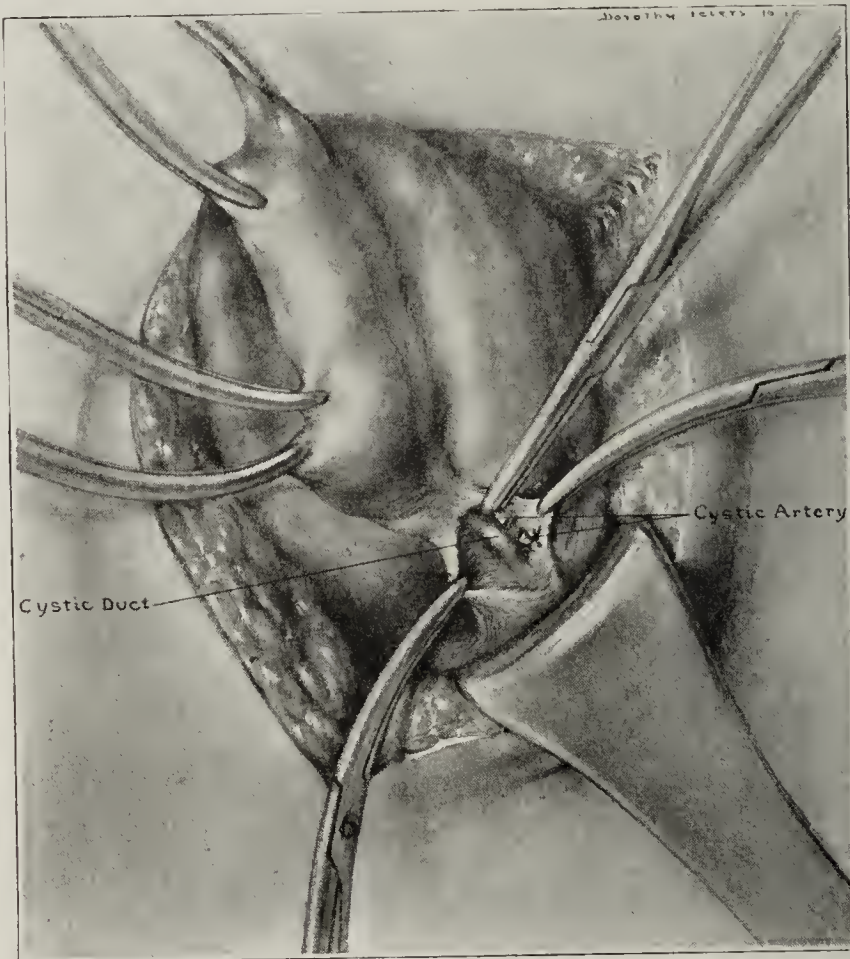


Fig. 2.—Infundibulum of the gallbladder lifted up away from the gastrohepatic omentum, exposing cystic duct and artery.

passing a probe through the cystic duct, the common duct, into the duodenum in all cholecystectomies to make sure the common duct is patent. Porter advises against removing the gallbladder if there is the slightest chance that it may have to be used for future drainage. Frazier, Deaver, Mayo, and Crile advise against cholecystectomy in pancreatic disease and in acute empyema. Cholecystectomy is contraindicated in patients who have already had one major operation performed, as a hysterectomy or umbilical hernia repaired.

Clark was one of the first to advise exploring the gallbladder by touch through a midline incision during the course of other operations, believing that the gallbladder was the cause of a lot of the supposed gynecologic dyspepsia. In a recent paper he urges that the best judgment be used by the operator in deciding whether it is safe to attack the gallbladder at the time or to wait and have the patient submit to another operation.

Swope advises against removal when adhesions are so extensive that removal would be attended with marked traumatism and leave large areas of raw surfaces. He believes that a diseased gallbladder, like a diseased appendix, should be removed when the operation is safe; still, there are exceptions. He advocates cholecystectomy for hydrops and chronic empyema in the quiescent stage, when the infection has ceased to be active.

Question 6: As a rule do you treat acute empyema of the gallbladder with cholecystectomy or drainage? Forty-four men replied to this question. Thirty-three favored cholecystostomy, among whom were Crile, Deaver, Vander Veer, Estes, Cullen, Tinker, Gaub, Finney, Mulligan, Lower, McMullen, Clinton, Lathrop, Porter, McLean, Van Meter, Grant, Kelly, Gibbon, Loop, McGuire, and others.

Ochsner advises primary drainage and excision later, as do Werder, Stanton, Clark, and others. Elting feels that the gallbladder is only a part of a general infection and that drainage is needed. Bevan drains if the patient is very sick, but removes the gallbladder if the patient's condition is good or if the gallbladder is gangrenous.

Coffey does cholecystectomy in more than one half his cases. He believes the ones he drains should have the gallbladder removed later. Martin, Frazier, Haggard, LaPlace, Andrews and Beckman favor cholecystectomy.

Judd writes: "No definite statement can be made as to the best procedure in acute empyema. This is a matter that must be left to the surgeon's judgment in the individual case. If we can do a cholecystectomy as safely, we prefer to do it, though many times we believe that a cholecystostomy should be followed later by a cholecystectomy." Deaver has the same advice to give and says the question often makes Hamlets of us all.

Question 7: How does the mortality of cholecystectomy compare with cholecystostomy in your work? Among the forty-five answers to this question, two stated the difference in mortality was not known; four men's work showed a lower mortality for cholecystectomy than for cholecystostomy; eighteen reported the mortality the same for each operation; twenty-one had a higher mortality for cholecystectomy than for cholecystostomy (ranging from 0.5 to 3 per cent.).

The mortality for either operation was estimated by many men to be below 2 per cent.

Cholecystectomy is an operation, attended, I believe, with many more technical difficulties and dangers than simple drainage, and I regard it as a much more formidable one. Even in spite of good anesthesia, good assistance, the Bevan incision, good

exposure cannot always be had and the operation cannot be as safe as drainage, if there is poor exposure. The operative dangers, aside from shock, are hemorrhage from the cystic artery, hemorrhage from the cut liver surface, requiring packs, and injury to the common or hepatic ducts.

Hemorrhage from the cystic artery may occur at the time of operation or later, from slipping of a ligature. Injury to the duct may be caused by clamping off the duct too close to the common duct, or by not appreciating the fact that the cystic duct often-times lies well up underneath the infundibulum or pelvis of the gallbladder, and that the common duct may lie directly beneath the pelvis.

As emphasized by Mayo and Judd, the folds of the gastrohepatic omentum should be split, the infundibulum of the gallbladder should be lifted up and separated from it by a dry gauze dissector, as advised by Mayo, or clamped by forceps, as advised by Deaver, to expose the cystic duct. It should be freed completely before it is clamped and cut. Before tying it off a

probe is passed into the duodenum to make sure the common duct is patent. The artery is found, as a rule, to the inner side of the duct and above it. It is tied separately. The dissection is carried from below upward, because the circulation is controlled from the start and better exposure can be had by using the fundus of the gallbladder to hold the liver out of the wound.

Hemorrhage from the liver surface of the gallbladder bed can be prevented if the serosa is split in the long axis, dissecting the gallbladder out of its fibrous coat so as not to trespass on the liver. If there is much infiltration of the walls of the gallbladder it had better be removed in its entirety.

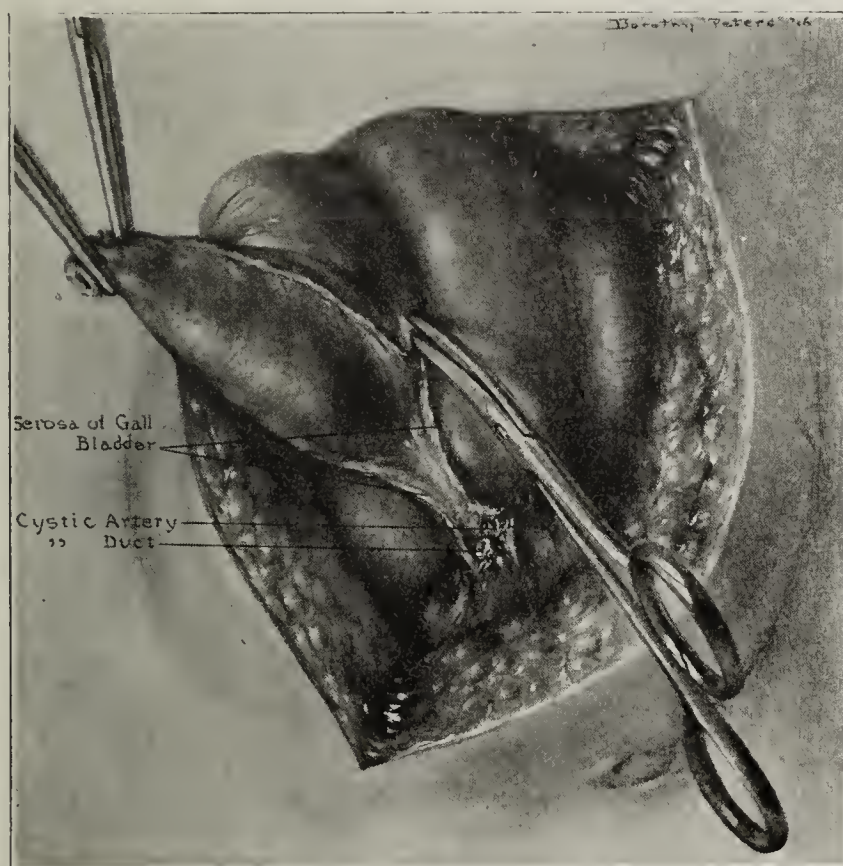


Fig. 3.—Cystic duct and artery ligated separately, gallbladder being dissected free from its bed, leaving a narrow strip of serosa.

SUMMARY AND CONCLUSIONS

Reports show that recurrences happen in 9.5 per cent. of cases that have had cholecystostomies performed. The recurrence of trouble following cholecystectomy is certainly small; the exact percentage is not known.

Cholecystectomy is employed much more frequently than in the past and is a better operation, but it is attended with many more operative difficulties and dangers than simple drainage. The gallbladder should be removed when its wall is diseased or the patency of the cystic duct is in question, provided the patient's condition will permit it.

The contraindications for the operation are critical states of the patient, acute empyema, infection of the ducts and pancreatitis, where drainage is desired.

It is safer to treat acute empyema of the gallbladder with simple drainage and only right to explain to the patient that a second operation may be necessary.

Two safe operations are much better than one dangerous one, and in the case of doubt, simple drainage should be employed, especially by those inexperienced in gallbladder surgery.

ABSTRACT OF DISCUSSION

DR. JOHN B. DEEVER, Philadelphia: I agree with Dr. Guthrie in toto. Much in this operation depends on the man behind the gun. Much harm has been done to the common and hepatic ducts by the removal of the gallbladder by men not fully equipped. I know of no more difficult operation, in certain cases, than cholecystectomy. In many instances the gallbladder has been taken out when it should have been left. A living patient with a gallbladder is better than a dead patient without a gallbladder. I have been interested in the subject of pancreatitis for a certain number of years, and with my assistant, Dr. Pfeiffer, made investigations of the influence of the secretions of the pancreas and lymphatics and find that these would be in favor of drainage against removal. Not only must the gallbladder be drained but the common duct. We must be able to read the signboards at the crossroads, to recognize the anatomic landmarks. If not we shall get into trouble in our surgery of the gallbladder and ducts. There is no subject that demands more greatly the master diagnostician or greater surgical skill.

DR. HARRY S. NOBLE, St. Mary's, Ohio: This question is most important. It is but a few years since the one operation on which all abdominal surgeons were agreed was the drainage of the gallbladder in the presence of infection. This was as axiomatic as the removal of the infected appendix, or the evacuation of pus under pressure. Suddenly this operation is called on to give reasons for its existence. It seems to me Dr. Deaver struck the nail squarely on the head when he said it depends on the man behind the gun, for it does depend on the mental attitude of the operator; his belief or disbelief as to the function of the gallbladder determines his treatment of the organ. The routine removal of the gallbladder is a slight justification of the young surgeon who cured club feet by means of an amputation. The gallbladder has a function, and this important organ should be conserved whenever possible. There is one fact observed by many surgeons in many lands, that should positively preclude the unnecessary removal of the gallbladder, and that is the process of dilatation which occurs in the common duct, and the attempt of nature to regenerate another gallbladder from the stump of the cystic duct. Flörcken reported a case of regeneration of the gallbladder with the formation of stones two and one-half years after removal of the gallbladder. I believe a similar case was reported through the columns of *THE JOURNAL* a few weeks ago. This process of dilatation in the duodenum is so well marked, that on one occasion it was mistaken for the duodenum. This fact alone proves that the gallbladder has a function and should positively preclude its removal. It has been shown by Halstead and Opie that pure bile injected into the pancreatic duct will cause a violent and dangerous pancreatitis; whereas bile, when mixed with mucus and so injected, will cause only a mild pancreatitis. The ampulla of Vater nor-

mally contains bile, pancreatic fluid, and mucus. Kemp of London in some of the earliest experiments on this subject showed that there was a difference in the alkalinity and chemical reaction of bile before and after passing the gallbladder. The gallbladder is one of the most constant organs in the abdomen of the vertebrate tribe—it is not in the least degenerative or vestigial in its actions. Why is it so constant in its occurrence, and why so uniform in size and appearance throughout the animal kingdom? Man was given a gallbladder before he was given a urinary bladder; and so far as I can learn the gallbladder is universally present in the carnivora. Remove it if you must, but accord it the same consideration you would an eye or a kidney, sacrifice it only when its potentiality for harm is greater than its possibility for good.

DR. F. F. LAWRENCE, Columbus, Ohio: I want to call attention to the fact that, as a rule, the condition for which the gallbladder is operated on is not limited to the gallbladder, the common or the hepatic duct, but commonly involves a large part of the bile tract. The small hepatic ducts in the liver are also involved. It is not uncommon to find coming out of the drainage tube two, four or six weeks after a cholecystostomy, small stones which have come down from the small hepatic ducts, thus proving the involvement of the small ducts in the substance of the liver. The common duct is always partially or completely obstructed. In all the jaundice cases the common duct is obstructed. Drainage must be complete in order to have recovery. Suppose you remove the gallbladder and place gauze or tube drainage down in the common duct. You must wall off with gauze or other material to protect the general peritoneal cavity. Sooner or later you will have not only morbidity but mortality, because you have created a condition equal to or greater than that for which you operated, in the way of adhesions about the duodenum, hepatic flexure of the colon, the pylorus and other structures in the right upper quadrant. If the gallbladder were an organ like the appendix, there might be some excuse for its removal, but its removal should not receive the sanction of surgeons in general.

In other words, cholecystectomy should be sanctioned only for malignancy, gangrene and acute perforation of the gallbladder, and I am not sure that it should be sanctioned for the last named.

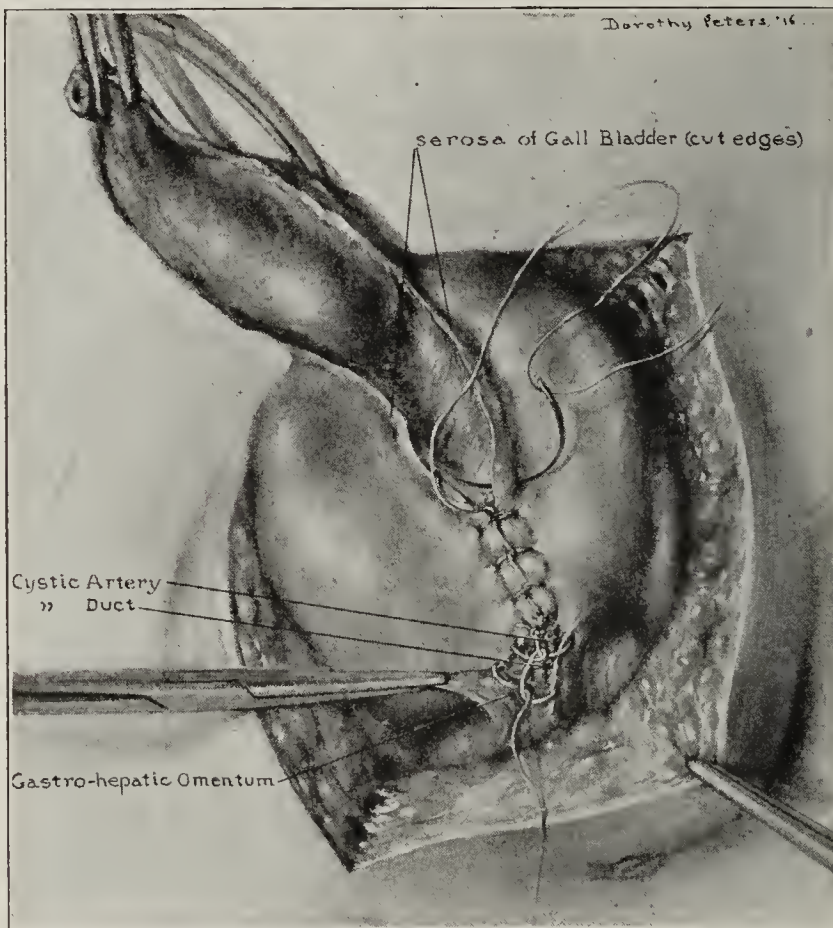


Fig. 4.—Split in gastrohepatic omentum being closed, covering cut ends of cystic artery and duct; suturing cut edges of serosa.

Homemade Sterilizer for Dairy Utensils.—A simple and efficient homemade steam sterilizer for dairy utensils, which can be very cheaply constructed, is described in Farmers' Bulletin No. 748 of the United States Department of Agriculture. The insufficiency of the most thorough ordinary cleanliness and the necessity for sterilization of all articles that come in contact with milk is becoming more and more impressed on dairy workers. The apparatus described is made out of an ordinary roasting pan, some galvanized sheet iron, sheet asbestos or paper packing and a small piece of steam pipe. It can be used on the kitchen stove or on any similar source of heat and will furnish steam at the outlet pipe at a temperature of 205 F. to 211 F., the lower temperature being the minimum to secure sterilization and subsequent drying of the apparatus.

FAT EMBOLISM IN BONE SURGERY

INCIDENCE AND PREVENTION *

EDWIN W. RYERSON, M.D.

CHICAGO

Fat embolism, as a clinical entity, received but little attention in this country until the excellent and scholarly paper of A. S. Warthin¹ appeared in 1913.

The clinical picture in fat embolism is fairly well marked. There is usually an incubation period of from twenty-four to thirty-six hours after the traumatism, whether surgical or accidental. In severe, crushing injuries this period may be reduced to three hours, as in the case reported by Beitzke.² Then ensues difficulty in respiration; not a true dyspnea, but rather an air hunger. This marks the entrance of the fat into the lungs from the right heart. Some patients may show no other symptoms and may make a speedy recovery. The temperature is not much elevated in this variety, but the pulse and respiration are rapid.

In severer cases the fat passes from the lungs to the left heart and into the general circulation. Entrance of the fat into the cerebral circulation causes nausea and vomiting, and the patient may become somnolent or comatose. The temperature is much elevated, and may reach 106 or 107 F. Fat appears in the urine and sometimes in the sputum. Petechiae may appear in the skin. It is hardly possible to estimate the mortality rate on account of the insufficiency of records.

The occurrence of several fatal cases in the writer's experience has led him to consider it a much more frequent and serious danger in bone and joint surgery than he had formerly supposed.

In 1905 a young woman was brought to the Chicago Polyclinic Hospital with a Pott's fracture of the ankle, incurred a week previously, with marked deformity. She was given nitrous oxid gas, and the deformity was reduced without difficulty by the late Dr. A. B. Hosmer, assisted by the writer. In twenty-four hours there was marked difficulty in respiration, and the temperature rose to 102 degrees. No diagnosis was made beyond a probable ether pneumonia. She died in the course of the next twenty-four hours, and necropsy showed marked fatty embolism of the lungs. No examination of the brain was permitted. The urine was not examined for fat.

In 1914 a child was operated on by the writer for drop-foot due to infantile paralysis, at the Home for Destitute Crippled Children. A silk ligament suspension of the foot was done, small holes being drilled in the first and fifth metatarsal bones and in the tibia, through which the silk was passed. In about twenty-four hours the child, who had shown no shock and but little discomfort up to this time, began to vomit and to have difficult respiration. The temperature rose to 103. The urine contained no acetone and no albumin. Fat embolism was not suspected, and no necropsy was obtained.

In the same year a boy of 8 was operated on at the Children's Memorial Hospital for severe paralytic scoliosis. An Albee bone transplantation was made, a splint cut from the tibia by a motor saw being sewed into a cleft made by splitting the spinous processes of the lower dorsal and upper lumbar vertebrae. There was very little shock or postoperative discomfort, but in thirty hours a well-marked air hunger and rise of temperature supervened. The boy died a day or two later. Fat embolism was not suspected in this case, and no special examination was made with reference to it.

The occurrence of these two fatalities naturally caused a great deal of sorrow and anxiety to the

writer. The operations had been performed under the same technic which had been used in a large number of other cases in which no such results had been noted. Dr. Ludwig Hektoen, professor of pathology in Rush Medical College, on hearing a more detailed description of the cases than has been given above, said at once that fat embolism seemed to him highly probable. A search of the literature made this probability seem even more certain and also revealed the fact that the large majority of the reported cases occurred after injuries or operations involving the lower extremity.

During the year 1915 another case of fat embolism occurred in the writer's service at the Children's Hospital, in which the diagnosis was made before death and confirmed by postmortem examination. This was an infant about 8 months of age, with congenital club feet. The feet were manipulated under ether anesthesia, and the plantar fascia and Achilles tendon were divided with a tenotome. The day after operation the child began to breathe with difficulty, the temperature rose high, and death ensued a day later. At necropsy the lungs were found to be the seat of marked fatty embolism. No examination of the head was permitted.

Several other cases have been recalled which were probably fat embolism, but which were not fatal, and in which no diagnosis was made at the time.

The treatment of fat embolism, as proposed in the literature, is apparently not on a well-defined basis. Only four specific procedures have received attention.

Czerny³ advised the injection of 2 per cent. sodium carbonate, probably with the idea of forming a soluble soap. This method has received little support.

Schanz⁴ gives a large quantity of normal saline infusion subcutaneously, and would inject it into a vein if the symptoms were very severe. This method does not seem rational to me.

Wilms⁵ drained the thoracic duct for four days, with recovery of the patient. This procedure has been recommended by others, notably Tanton⁶ in his comprehensive paper. It is based on the theory that the fat is carried principally by the lymphatic system rather than by the venous system, a theory which will find very few supporters.

Riener⁷ advised the insertion of a cannula into the saphenous vein, and thence into the femoral vein, allowing the outflow of the venous blood with its admixture of fat. This treatment is based on the theory that the dosage of fat which causes the initial symptoms, sufficient for diagnosis, may not necessarily be fatal, and that the fatal dosage has not progressed as far upward as Poupart's ligament. It seems rational and valuable. Tanton⁶ and others would open up the area of injury and remove the accumulated blood and fat, using drainage or tamponage. This also seems advisable. Venesection and lumbar puncture have been recommended.

None of the methods of treatment above mentioned, however, can be considered to have any distinct curative value in cases in which a large quantity of fat has been forced rapidly into the lungs. From a study of the reported cases it can fairly be assumed that the process is usually a very rapid one, and that by the

3. Czerny: Quoted by Warthin, Footnote 1.

4. Schanz: Zentralbl. f. Chir., Jan. 1, 1910, abstr., THE JOURNAL A. M. A., Feb. 12, 1910, p. 576.

5. Wilms: Sem. méd., 1910, xxx.

6. Tanton: Jour. de chir., March, 1914, xii, No. 3; abstr., THE JOURNAL A. M. A., May 9, 1914, p. 1511.

7. Riener: Centralbl. f. Chir., 1907.

* Read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Warthin, A. S.: International Clinics, 1913, Series 23, Vol. 4.

2. Beitzke: Rev. inéd. de la Suisse romande, 1912, xxxii, 501; abstr., THE JOURNAL A. M. A., Oct. 19, 1912, p. 1494.

time a diagnosis is made any form of recorded treatment is likely to be of little value.

It becomes necessary, therefore, carefully to consider the methods of prophylaxis.

For many years I have seldom used the tourniquet in my operative work, for reasons which need not here be detailed. It is possible that this fact may explain the greater incidence of fat embolism in my clinics than in those of some other operators. No mention is made in the literature of the routine use of the tourniquet as a means of prophylaxis up to the year 1915.

It seems likely that a complete stasis of the circulation during and a short time after the operative procedures would probably prevent or at least reduce the transportation of the fat through the venous channels. Bürger believes that fat already disintegrated may become bound by coagulating blood.

The tourniquet can be left in place for as long as half an hour, and can then be gradually loosened. This idea was suggested in 1914 to Dr. H. Gideon Wells, director of the Sprague Memorial Institute, and a series of experiments was carried out under his direction at the University of Chicago in the spring and summer of 1915. A large number of dogs and rabbits were subjected to bone operations of various kinds. The writer had supposed that the removal of a bone splint from the tibia would be likely to cause severe fat embolism, since the medulla of the tibia is invaded and more or less injured by the saw blade. The experiments proved that this is not true, and that fractures and contusions of the bones cause much more embolism than does the performance of a typical Albee bone transplant to the spine. The use of the chisel and mallet is far more dangerous than the motor saw.

The experiments showed, also, that when a tourniquet was applied the fatty embolism from all kinds of traumatism to the bones was markedly decreased. This evidence convinced me that the tourniquet should be made a matter of routine in bone surgery.

When the laboratory work had been practically completed (a year after it had been suggested by me), an article was published by L. Bürger.⁸ He states that the tourniquet should be applied to ward off fat embolism in all cases of fracture, and advises Momburg's constriction at the waist line in very severe cases, especially with crushing injuries of the pelvis. "Half an hour should be sufficient," he says. Another precaution is to avoid the transportation of patients with such injuries; "any attempt to move them to a distance is liable to bring on fatal fat embolism."

The article confirms that the tourniquet is the best method of preventing fat embolism.

THE EVOLUTION OF OSTEOCHONDRITIS DEFORMANS COXAE JUVENILIS*

ALBERT H. FREIBERG, M.D.

CINCINNATI

In 1905 I described¹ two cases of arthritis deformans coxae juvenilis whose chief clinical interest lay in the impossibility, at that time, of distinguishing them from adolescent coxa vara without the aid of the Roentgen plate. They were the first cases of the kind reported in this country, and the examination of the roentgenograms made it evident that we were dealing with deforming disease of the hip which must have been in existence for a long time and with whose early clinical phase we were totally unfamiliar. In both instances we were dealing with intelligent patients coming from excellent social environment, and it would be only fair to presume that we might rely on the accuracy of their statements with reference to the indefinite character of the symptoms which were present in the early stages of the disease. Both patients

presented themselves with what was a finished deformity of the joint, to all intents and purposes, and both of them were under observation for over a year without material change in their condition, when the report was made. The title to this report seems to have been misleading, since I have been made to call these case adolescent coxa vara, by some who have quoted them. Although these cases had a history strikingly similar, the roentgenograms have, in the light of present knowledge, very striking differences. These differences have assumed a practical importance to



Fig. 1 (Case 1).—Roentgenogram of hips.

me in view of additional experience. In the first case we were dealing with a boy of 14 years, and the Roentgen ray presented a deformity of the head of the femur best described by speaking of it as "mushroomed on the neck." The second case was that of a young man 22 years old, who had been aware of the condition since his sixteenth year; the roentgenogram showed here a deformity of the femoral head, such as is often seen in the so-called arthritis deformans of older persons, and which has been aptly likened to the shape of the glans penis. In both cases there was positive denial of any injury which could be of causative importance.

Since the report of these cases and those which preceded it, much progress has resulted in the study of the deforming hip disease of the young. This is most largely due to the work of Perthes, who in 1910 described the early symptoms and characteristic Roentgen-ray appearances of a disease involving

8. Bürger, L.: Fat Embolism in Military Surgery, *Med. Klin.*, Sept. 5, 1915, No. 36; abstr., *THE JOURNAL A. M. A.*, Oct. 23, 1915, p. 1494.

* Read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Freiberg, A. H.: *Am. Jour. Orthop. Surg.*, July, 1905.

chiefly the upper epiphysis of the femur, and it was he who first brought these changes forward as ending finally in a deformation of the head of the femur and the acetabulum which had been spoken of as arthritis deformans juvenilis. Even though the deformity of the femur in its later stages bears much resemblance to that seen in the so-called arthritis deformans of adults, the disease which produces it in children and the changes seen in the roentgenograms nevertheless differ markedly from the disease of adults spoken of by Goldthwait as "hypertrophic" and by Nichols as "degenerative" arthritis. The most striking difference is seen in the absence of new bone formations, or osteophytes, in those portions of the joint peripheral to its bearing surface. In the symptoms, also, the disease of early life differs from that of the adult, being in the former of much milder character, and, indeed, often of such insidious course as to escape detection until the terminal deformity has been discovered. That these juvenile cases have in their earlier stages and in former years constituted largely the class of cases which we formerly regarded as mild hip tuberculosis seems today quite evident. It seems very clear now that we have found here the explanation of the remarkably complete restoration of function in cases of hip disease which were sometimes brought forward as evidence of the efficiency of this or that method of treatment or of some one's particular skill in applying it.

The identity of the disease accurately described by Perthes and which begins usually prior to the eighth or ninth year of life with a characteristic flattening of the capital epiphysis of the femur, and that condition seen in adolescence as a mushroom deformity of the upper end of the femur, seems today quite clear. It has been established by the roentgenograms of cases seen early in the disease and those taken years later during the adolescence of the same patients. Still more striking is the observation I have made in the first case which I present.

CASE 1.—The patient is a boy of 12 years, who came because of marked limp with flexion and adduction deformity of the right hip of one year's duration. Although there was little pain, there was distinct tenderness over the femoral head, and after a clinical examination, I thought I was dealing with the deformity of hip tuberculosis. Nothing was said concerning the left hip, and my clinical examination did not disclose any abnormality. The boy was otherwise apparently well, though undernourished and pale, and his temperature was 99 F. and over on several occasions. The roentgenogram was made of both hips (Fig. 1); the right hip showed typical flattening of the capital epiphysis. The epiphysis was quite dense with areas of increased radiability. The left hip, to my surprise, showed marked mushroom deformity of the head; the capital epiphysis was greatly reduced in height and increased in width. The mother, on being questioned, remembered a period of limping about six years before but

had ascribed no importance to it. There was no history of trauma more severe than that usually to be found in active children. This case furnishes striking testimony to me, were further evidence required, that we are dealing with two phases of the same lesion, early and late. I do not mean, of course, to infer by this report that it is extremely rare to see this disease in bilateral form. Bibergeil, in a bibliographic summary, found ten reports of such cases.

I have, however, found two cases among my records which are still more instructive, to my mind, since they were carefully observed during a number of years. Furthermore, they were recorded at frequent intervals by Roentgen rays from a period near the inception of the disease to the time when the terminal mushroom deformity was presented in characteristic manner. Both cases were looked on originally as tuberculous, and the one which I shall present was roentgenographed regularly at intervals of three months during the whole active period of the disease. I look on it as offering certain important features in connection with the question of etiology and pathologic physiology.

CASE 2.—S. C. W., a boy 7 years of age, was brought to me in January, 1907. He was an unusually well-developed boy, very tall and heavy, with the appearance of robust health. The child of well-to-do parents, he was reared in a very favorable rural environment. In August, 1906, he began to limp without having had any injury of consequence, as far as his parents knew. Very soon after this he complained occasionally of pain in the groin and knee, of the right side. Still later there developed starting pains at night without later consciousness of suffering. He was still having distinct night cries when I examined him. At this time he was walking with a decided limp, standing with enough abduction to obliterate the right gluteal fold. There was one-half inch atrophy of the right

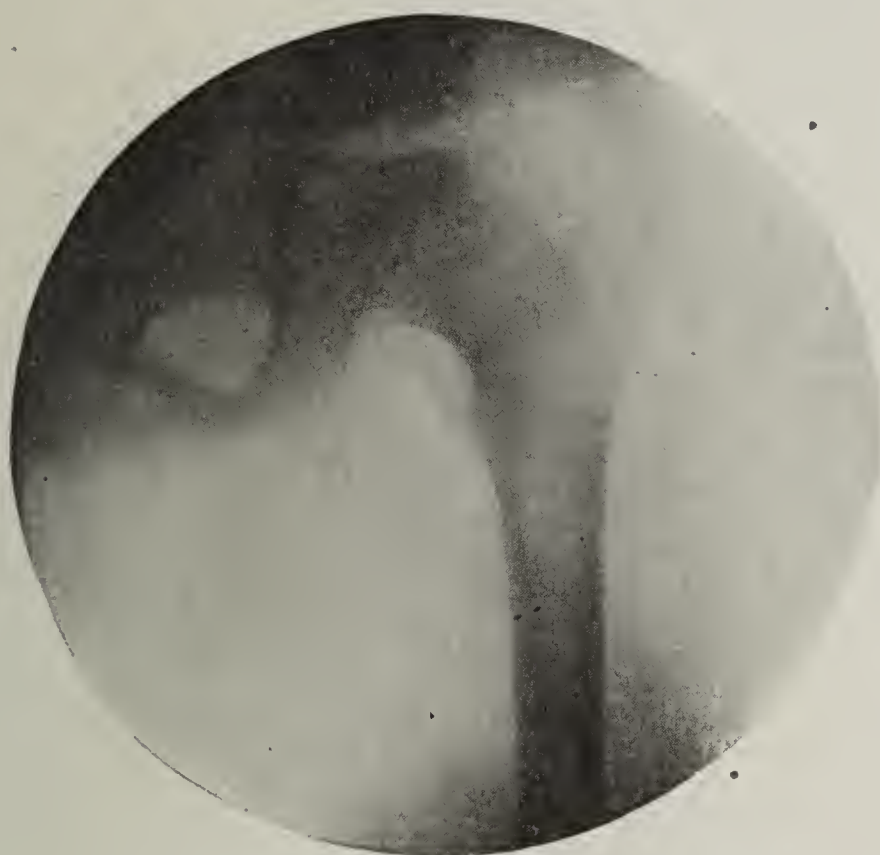


Fig. 2 (Case 2).—Roentgenogram taken January, 1907.

thigh, and motion was limited in abduction, adduction and both internal and external rotation. The right hip was held in 7 degrees of flexion. There was tenderness over the femoral head and thickening about the neck. Some elevation of body temperature was always present on the numerous occasions when it was taken. No tuberculin test was made. The roentgenogram (Fig. 2) made at this time shows a typical flattening of the capital epiphysis of the femur, which is itself of greater than normal density, whereas there is some bone atrophy in the upper part of the neck.

At this time the boy was taken to Dr. V. P. Gibney for consultation, who concurred in my diagnosis of tuberculous disease and returned him to me for treatment. This consisted in the application of a traction brace with partial recumbency. Some time later he was brought with a condition of greater sensitiveness, and he was crying out quite often every night. He was therefore kept in hospital for several weeks in bed with traction, and was then sent home with a plaster spica and stilted brace. In May, 1908, the examination showed shortening of less than $\frac{1}{2}$ inch, no night cries, and very little muscle spasm. The general condition was excellent. The roentgenogram made at this time (Fig. 3) shows, however, a marked change in the capital epiphysis; a piece appears to have separated distinctly from

its lateral third. There is no sign of disease in the acetabulum. The boy had been treated for some months by means of Marmorek's serum and was one of a series of cases reported by me for this reason. In October, 1909, the examination showed him to be in excellent condition, without pain, tenderness or spasm. There was complete range of motion in the hip except in rotations, where a few degrees of limitation persisted. The roentgenogram (Fig. 4) shows

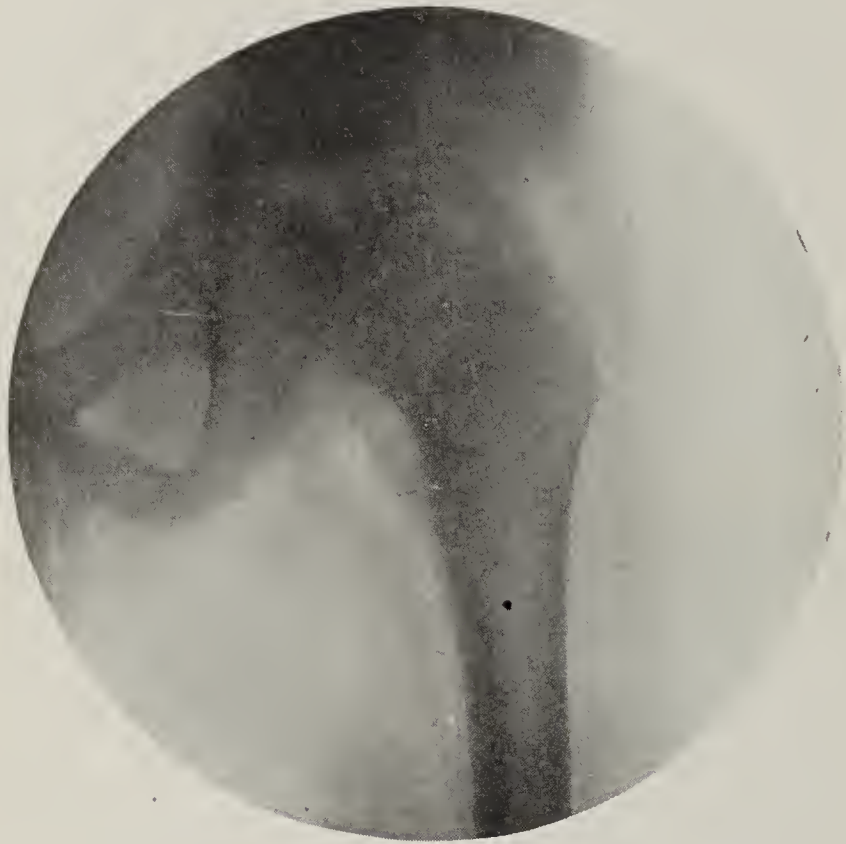


Fig. 3 (Case 2).—Roentgenogram taken May, 1908.

a return of density in the capital epiphysis; the lateral part which seemed to have separated has apparently reunited. The epiphysis, however, is much flattened, and its lateral end is curved over the lateral aspect of the upper part of the neck. The acetabulum seems still unchanged. The boy was now permitted to go without any mechanical protection. He was seen from time to time during the year 1910, and was then dismissed from observation. In January, 1915, eight years after the first examination, he was again brought for examination because of a return of limping. This was not marked, and there was no pain. Limitation of motion was present in extremes of rotation only. The roentgenogram (Fig. 5) made at this time shows the typical mushroom deformity of the head with the flattened epiphysis.

Viewed in the light of present knowledge, it seems plain to me that this case must be regarded as of non-tuberculous character, and that it belongs distinctly in the category of osteochondritis deformans juvenilis as described by Perthes. The symptoms which were present must be looked on, however, as much more severe than we are accustomed to observe in such cases. Even so, to me they now spell an affection of infectious or toxic character, of low grade. Such a case coming today, in its beginnings, would call for a careful search for an infection atrium, and I regard it as more than probable that its discovery in tonsils or elsewhere would result in cutting short the progress of the disease and very likely the further development of deformity.

It seems erroneous to me to hold that a case has been made out for the traumatic origin of this disease. In the cases which I have observed the history of injury has always been most indefinite and not to be brought into clear relationship with subsequent symptoms or even with the side of the body which we find affected. The development of the disease in the oppo-

site hip at a later time without the occurrence of distinctly related trauma would seem also to speak emphatically against injury as a cause. On the other hand, I believe that a search backward into the early history of well observed cases would usually reveal symptoms of distinctly inflammatory nature, such as slight fever, local tenderness and muscle spasm, to say nothing of the distinct night cries which I have noted in the two cases mentioned. The cases of congenital luxation of the hip which have been forcibly manipulated and which are used by Legg in support of the theory of traumatic causation are not convincing to me. In them the trauma is more direct than we are able to determine in our cases of osteochondritis; on the other hand, cases of congenital luxation which have gone unreduced without attempts at replacement very often show a deforming process in the femoral head which is presumably due to the effect of continued abnormal function. I have shown this to be the case, in fact, with traumatic luxation in the adult which has remained unreduced for years.

It seems to me far better to assume, as an etiologic basis for osteochondritis deformans juvenilis, a chronic infectious process of probably secondary character, just as we do in explaining other deforming joint diseases of later life. The circulatory peculiarities on which Legg² lays stress may be used to explain the changes which take place, even more appropriately in connection with infection and its associated progressive character than with trauma. This accords with the vascular theory of Wollenberg with which I have been concerned in another paper.³ Therefore, I feel that there is no occasion to change the name given to this disease by Perthes and that it should



Fig. 4 (Case 2).—Roentgenogram taken October, 1909

remain until we can speak in more exact terms of its etiology and pathology. Thus far no cases have been continuously followed by Roentgen-ray observation for a long enough time to determine what the truly terminal deformity really is or to what extent it may change during the later years of adolescence and adult

2. Legg: Surg., Gynec. and Obst., xxii, 307.

3. Compare Freiberg and Woolley: Am. Jour. Orthop. Surg., 1910, viii, 491.

life. On the contrary, it seems likely enough, in conformity with the observations of Preiser and others, that such a degree of disturbance of the joint mechanism will have as its result further deformity and disablement, as the years go on.

If these considerations are to be taken seriously, as based on reasonable premises, it would be fallacious to assume that because the symptoms are of mild character and because recovery with much joint motion may be expected, mechanical protection is unnecessary or unimportant in this disease. There is reason to believe that the terminal deformity is due to weight bearing and motion as much as in tuberculous disease, and the influence of the deformity in producing disablement many years afterward we do not even know. As the result of our errors in mistaking these cases for tuberculosis in past years, we know that long continued fixation of these hips does not interfere with the return of joint motion; for this reason I believe that this form of treatment should be patiently and carefully carried out. If at all to be modified this should perhaps be done to the extent of adding stilting to fixation. Finally I would urge again that in all future cases it should be incumbent on us to give our patients the most careful scrutiny in the earliest stage possible with a view to ascertaining the existence of focal infection, such as in the tonsils. If discovered early and given appropriate treatment, this would bid fair to save for our patients future disablement and deformity and to abbreviate greatly the course of the disease.

19 West Seventh Street.

ABSTRACT OF DISCUSSION

DR. J. R. KUTH, Duluth, Minn.: Dr. Freiberg, in draw-

ing attention to infection as an etiologic factor in this most interesting condition, touches on what is most important as related to treatment. Up to the present time, most attention has been given to the deformity itself, to late results in the hip joint, and to the amelioration of deformity by treatment. In a few cases that I have seen and have been able to study, the destruction of the head at the time of first examination (and this was the first time that these patients presented themselves for treatment) was so far advanced that one could hope for very little more than a further increase in the sinking-up process of the splintered head. Among these cases was one which ran remarkably parallel to the one that Dr. Freiberg described as being probably a severer form of Perthes' disease.

In these cases I was left with the same impression as regards the infective origin as was Dr. Freiberg. The history of any injury was either denied or was so vague as to be valueless as a causative factor. It would seem that if we are to derive much benefit from treatment of the condition from the infective point of view, either in the eradication of local focus or in the treatment of some distant focus, this

should be done much earlier than the time we generally see these cases. Inasmuch as these cases come for treatment at a time when the disease is far advanced and the deformity established to the extent in which we generally see it, the disease can probably be correctly described as a self-limiting one, the best treatment being rest, fixation and weight removal. I did not understand Dr. Freiberg as saying that all cases of osteo-arthritis deformans of adolescence are due to a pre-existing Perthes' disease. It would seem, from the cases described by Maydl, Zesas, Frangenheim, Von Brunn and others, that there really are cases of what is known as osteo-arthritis deformans coxae of adolescence in which the individual may not have had a previous Perthes' disease. If we are to think that these were probably cases of Perthes' disease, the observations of the Germans regarding the previous history, the date of onset, and the pathologic findings at operation, would then be very misleading.

DR. FREDERICK C. KIDNER, Detroit: My support of Dr. Freiberg's theory of the infectious origin of the cases of so-called Perthes' disease is based on the study of only a single case. It was a typical case of osteochondritis juvenilis,

except in two particulars. First, the child, in the beginning, had a slight fever, lasting three or four days. Second, when he went to the hospital, he had eleven thousand white cells with 80 per cent. of polynuclears. The roentgenogram was typical. The depression below the epiphyseal line was very plain, and there was one spot in the neck of the bone which closely resembled an abscess. I tunneled in through the greater trochanter, and opened a cavity just below the epiphyseal line, from which was obtained a low-grade staphylococcus, which died out in the second generation and could not, therefore, be used for guinea-pig inoculation. It seems, on the basis of this case alone, that many of these cases are due to hematogenous infection originating somewhere else, as in the tonsils. I wish, also, to make a plea for a longer and more persistent treatment of cases of Perthes' disease, because I think that many of the so-called "mushroom"



Fig. 5 (Case 2).—Roentgenogram taken January, 1915.

hips of adult life originate in this disease.

DR. JOHN RIDLON, Chicago: I have a case which, from the roentgenographic findings, I believed to be a typical case of Perthes' disease, but which went on to the development of a typical tuberculous abscess. I am not yet certain that in Perthes' disease we really have a separate entity that can be diagnosticated with certainty.

DR. VIRGIL P. GIBNEY, New York: While Dr. Freiberg was describing the case in which he overlooked the other hip, I was reminded of two cases in young boys that I have seen within the last few years whose hips seemed to be going to pieces. Some men said they were tuberculous. I protested that they were not. An internist got hold of a rather stout boy, and treated the intestinal tract. The stools were examined, carefully and repeatedly, and bacteria far in excess were found, easily accounting for the infection. In a recent paper, Dr. Niles reported the boy's health restored, with restoration of function in both hips. I begin to feel as Dr. Freiberg does, that we are all at sea on our tuberculous hips; and I seem to feel hesitation in calling a case one of tuberculous disease without resort to laboratory tests. We may think it is that,

because of the symptoms; but we make no test; or, if we do, we say that this test is not always reliable, and we feel that we are not getting very far. With the aid of the intestinal specialist, the proctologist, the laryngologist and the dental surgeon, however, we may be able to find out the cause of infection. Many are said to be rabid on the subject of special tooth abscesses. We do not find them in children, but we find other foci of infection in the teeth of children. A laboratory for the study of dental diseases will be established in Columbia University within a short time. We should rely more on the pathologic findings in connection with accurate Roentgen-ray findings.

DR. HENRY LING TAYLOR, New York: A year ago I reported nineteen cases of Perthes' disease. The cases now number over thirty. There are several things quite evident from this and other material, and one is that the cases are not tuberculous. Another is that the statistics of tuberculous hip disease have been seriously vitiated by counting these cases among them; just as formerly they were vitiated by counting in cases of coxa vara. The latter condition has been separated from tuberculosis of the hip, and these cases will also have to be separated from it. I pointed out, a year ago, that Perthes' disease was the foundation of some cases of osteo-arthritis in adults; several such cases have been observed. These cases have practically all been diagnosed as tuberculosis of the hip; and even when the patients have recovered entirely from the disease, the fact that such a diagnosis has been made is a handicap to them. It was pointed out by one of them, a doctor, that he had to pay a higher premium for life insurance on account of his hip condition having been diagnosed as tuberculous, which it was not. In my series of thirty odd cases, several were ushered in with symptoms suggestive of infection. Several others followed trauma; but both of these classes together constitute but a small minority of the whole number. The treatment needed is very much milder than that for tuberculosis. I have seen one case that seemed absolutely to demonstrate the evil effect of routine treatment on orthopedic lines. The case was that of a young boy whose symptoms began over four years ago. The condition was diagnosed as tuberculosis of the hip joint and the child was treated with the long traction splint. The affection was certainly Perthes' disease, and the child now has over an inch and a quarter of shortening, of which one inch may safely be ascribed to the long continued suspension of the limb. I feel, therefore, that it is an error to overtreat these cases.

DR. ALBERT H. FREIBERG: With regard to the cases reported by earlier observers as cases of arthritis deformans of traumatic origin, I went over these reports very carefully. In the cases of von Brunn, particularly, osteophytes are described; but a careful examination of his illustrations fails to show that what he calls osteophytes should be so considered, in the light of what we now know about these, in deforming disease of the hip joint. They are irregularities of bone, but not new bone-formations, which we mean by the word osteophyte. At the same time, the reproductions are by no means excellent in the works referred to; and it is possible that if I had the original negative or the original prints, I might come to the opposite conclusion. The histories are not characteristic. There is no convincing evidence that any severe injuries happened to the children. That a child had a fall and later developed symptoms, is just the kind of history we hear today in regard to tuberculosis of the joints, and does not prove an etiologic relation. We must be careful about the effects of our treatment in these cases. We are prone to feel that if, after a year or so, there is an apparent return to normal function, and there has been no loss of motion or length, the case is to be considered as finished; but the examination of the one case which I have reported shows that we are in no position to say what the end results will be in eight or ten years, so we shall have to be careful in coming to the conclusion that a case is ready to be released from treatment. How an excess of protection can result in loss of length in a limb, is difficult to understand, except when the treatment happens to deprive the limb of function. In the same way, in many cases of infantile paralysis the shortening is due to lack of use. I should like to see such cases submitted to weight-bearing to some extent, rather than to the amount of protection that we have been using for tuberculous disease.

ELECTIVE LOCALIZATION OF BACTERIA IN DISEASES OF THE NERVOUS SYSTEM*

EDWARD C. ROSENOW, M.D.

From the Mayo Foundation

ROCHESTER, MINN.

Many bacteria retain for a long time the peculiar properties which determine their characteristic localization. The importance of studying the infecting power of some in which these properties are less fixed has not been sufficiently considered.

Some years ago I showed that the common occurrence of endocarditis in animals following intravenous injection of a staphylococcus from endocarditis and numerous strains of *Streptococcus viridans* from chronic infectious endocarditis depended to a certain extent on clump formation, and that simultaneously with the disappearance of this property, both from artificial cultivation and animal passage, endocarditis failed to develop.¹

The importance of making injections soon after isolation of the bacteria was emphasized at that time. In 1909 Lewis and the writer² reported the isolation of a diplococcus from the thrombus in the portal vein in primary portal thrombosis, which produced retrograde thrombosis in radicles of the portal vein in a rabbit following intravenous injection. The full significance of the results of the animal experiments, however, was not realized at the time.

During my studies on the transmutation of pneumococci and streptococci³ in which relatively avirulent strains were made virulent by successive animal passages, and highly virulent strains less virulent by cultivation, marked changes in localization following intravenous injection in animals were noted. At certain lower grades of virulence, endocarditis, arthritis, cholecystitis, ulcer of the stomach, myositis and iritis respectively, occurred, while when the virulence was high, hemorrhages and edema of the lung and bronchopneumonia commonly occurred. The latter observation is in accord with the results of Wadsworth. The results suggested the possibility that diseases of widely different symptomatology might be due to strains of bacteria of the same or closely related species, but having peculiar localizing or infecting power. Since then systematic cultures in which there was afforded a gradient of oxygen pressure have been made from diseased tissues in a series of diseases.⁵ Streptococci frequently very sensitive to oxygen have been isolated in many instances from the involved tissues, often to the exclusion of other bacteria in rheumatism, fever, arthritis deformans, appendicitis, ulcer of the stomach, cholecystitis, and myositis, and a diphthero-

* Read before the Section on Practice of Medicine at the Sixteenth Annual Session of the American Medical Association, Detroit, June, 1916.

1. Rosenow, E. C.: Immunological and Experimental Studies on Pneumococcus and Staphylococcus Endocarditis, Jour. Infect. Dis., 1910, vi, 245; Immunological Studies in Chronic Pneumococcus Endocarditis, Jour. Infect. Dis., 1910, vii, 429; Further Immunological Studies in Chronic Pneumococcus Endocarditis, New York State Jour. Med., 1911, xii, 441; Experimental Infectious Endocarditis, Jour. Infect. Dis., 1911, xi, 210.

2. Lewis, D. D., and Rosenow, E. C.: Primary Portal Thrombosis, Arch. Int. Med., 1909, iii, 232.

3. Rosenow, E. C.: Transmutations Within the Streptococcus Pneumococcus Group, Jour. Infect. Dis., 1914, xiv, 1.

4. Wadsworth, A. B.: Studies on Pneumococcus Infection in Animals, Tr. Assn. Am. Phys., 1912, xxvii, 72; Pneumonia; a Bedside and Laboratory Study, Am. Jour. Obst., 1909, lix, 1080.

5. Rosenow, E. C.: The Newer Bacteriology of Various Infectious Diseases as Determined by Special Methods, THE JOURNAL A. M. A., Sept. 1914, p. 903.

like streptococcus from the erythematous node in erythema nodosum. The streptococci from rheumatic fever and erythema nodosum especially showed a preference for partial anaerobiasis. Intravenous injection soon after isolation of these strains and commonly those from the respective focus of infection often showed a most marked tendency to localize electively in the tissues in animals corresponding to those involved in the spontaneous disease.⁶ The lesions were usually elective in many instances. They approximated in type those of the spontaneous disease. The elective property or peculiar tropic condition of the streptococci in the foci of infection was undoubtedly an important factor in producing the diseases studied. The suggestion that other diseases whose etiology was still obscure might have a similar origin was at hand.

By the use of the same or similar technic, verification of the results in ulcer have been brought forward by Gerdine and Helmholtz,⁷ Hardt,⁸ and Moody.⁹ The results in iritis have been verified and extended by Irons, Brown and Nadler.¹⁰

In this paper I wish to summarize briefly the results of an experimental study of the possible etiologic relation of localized foci of infection, especially in and about the teeth and tonsils, to diseases of the nervous system. The technic used was similar to that pre-

in which they were grown, the supernatant broth saved for filtration and for injection of animals, and the sediment suspended in sodium chlorid solution, so that 1 c.c. represented the growth from 15 c.c. of the broth culture. Animals of different species were injected, often in series, with doses ranging generally from 1 to 3 c.c. of the suspension for rabbits and guinea-pigs, and from 0.25 to 1 c.c. per kilogram of weight for dogs and goats. In many experiments smaller doses of the broth culture without centrifugalization were injected. In some the bacteria from emulsions of the tonsils and suspensions of the material expressed from the tonsils were directly injected.

Part of the material obtained from the patient was plated out and incubated on human blood agar, aerobically and anaerobically. Smears and inoculations on blood agar plates were made as a routine of the broth cultures and suspensions at the time of injection. In most instances the bacteria from the primary culture in the broth were injected. These cultures often contained a mixture of bacteria, but usually showed a great preponderance of streptococci and in some instances pure cultures of streptococci. While it was the rule to inject the bacteria from the primary cultures in broth, injections were made in some instances of pure cultures from single colonies on blood agar plates or from

ELECTIVE LOCALIZATION OF STREPTOCOCCI AND STAPHYLOCOCCI IN THE NERVOUS SYSTEM

Source of Bacteria	Strains	Animals injected	Appendix	Stomach or Duodenum, H.	Stomach or Duodenum, Ul.	Gallbladder	Liver	Pancreas	Intestines	Joints	Endocardium	Pericardium	Myocardium	Muscles	Kidney	Lung	Skin	Teeth	Nerve trunks	Meninges	Spinal cord	Brain	Dorsal roots
Multiple sclerosis.....	3	31	0	6	3	10	3	3	0	13	3	3	6	29	23	3	0	0	23	58	13	0	
Sporadic anterior poliomyelitis.	1	36	0	17	0	3	6	0	3	8	0	6	3	14	31	0	3	0	19	78	14	0	
Transverse myelitis.....	1	21	5	24	19	0	0	0	33	14	14	10	14	24	10	10	5	0	5	50	67	24	0
Neuralgia.....	4	18	0	6	0	6	6	0	0	11	22	0	6	33	6	33	28	0	28	22	6	0	83
Multiple neuritis.....	1	19	11	11	5	5	0	0	11	22	5	16	11	27	16	32	0	0	79	0	5	5	0
Myositis and dental neuritis.....	1	24	0	13	0	8	0	0	0	4	13	0	4	71	13	0	0	50	46	0	0	0	0
"Myalgia".....	12	29	3	10	14	3	3	0	0	48	24	0	28	93	17	3	3	0	7	7	3	3	0
Average incidence of lesions exclusive of specific strains.....			3	12	6	5	3	0	7	12	12	5	7	27	17	15	6	0	12	13	4	8	0

viously described. Owing to the wealth of material at my disposal in the Mayo Clinic and the willing cooperation of the patients and the members of the staff, favorable cases were selected for investigation. Effort was made to obtain bacteria for cultures from the depth of the focus by expressing the infected material from tonsils with a laryngeal mirror, and by aspirating the infected pockets about teeth with a sterile pipet. In the former it commonly happened that abscesses were ruptured, even in tonsils which appeared quite normal on the surface. These were usually situated at the pole of the tonsils. Tonsillectomy and extraction of teeth were done when indicated.

The cultures for injection were usually incubated at 37 C. in tall columns of ascites-dextrose broth (affording a gradient of oxygen pressure), for from eighteen to twenty-four hours, centrifugalized in the containers

lesions and blood of animals. It is noteworthy how promptly the nonpathogenic or saprophytic bacteria disappear in animals.

The particular micro-organism responsible for the lesions in animals when mixtures were injected was determined by demonstrating its presence in the lesions and its absence in normal tissues (and blood) by means of cultures and sections, and by again producing similar lesions on reinjection of the pure culture.

In the table is given a summary of the results obtained in animals. The figures indicate the percentage incidence of focal lesions in the various organs. In a few instances the figures only approximate the actual occurrence of lesions in various organs because they were not looked for in all the animals injected, the pulps of only four to six teeth and approximately three fourths of the spinal roots were examined as a routine for lesions. Lesions in the liver, spleen, thyroid, lymph glands, tonsils, tongue, parotid, eyes and reproductive organs occurred so rarely that they are not included in the table. In the last line is given the percentage incidence of lesions in various organs exclusive of the specific strains. These figures serve as a basis for comparison. They correspond in a general way to those given in my previous table.⁶ The incidence of arthritis, however, is less, while the incidence of myositis is greater. The latter is due to the fre-

6. Roscnow, E. C.: Elective Localization of Streptococci, THE JOURNAL A. M. A., Nov. 13, 1915, p. 1687.
7. Gerdine, L., and Helmholtz, H. F.: Duodenal Ulcer in Infancy Infectious Disease, Am. Jour. Dis. Child., 1915, x, 397.
8. Hardt, L. L. J.: The Secretion of Gastric Juice in Cases of Gastric and Duodenal Ulcers, Am. Jour. Physiol., 1916, xl, 314.
9. Moody: Personal communication to the author.
10. Irons, E. E., Brown, E. V. L., and Nadler, W. H.: The Localization of Streptococci in the Eye. A Study of Experimental Iridocyclitis Rabbits, Jour. Infect. Dis., 1916, xviii, 315. The apparent inability some to corroborate these and the results on the transmutation work may be explainable as due to differences in technic and differences in character of strains studied.

quent injection of slightly hemolyzing streptococci which commonly localize in muscles.

Lesions of the spinal cord, usually patchy in character, were observed in 58 per cent. of thirty-one animals injected with the bacteria from the tonsils or infected teeth in three cases of multiple sclerosis. In one of these the lesions appeared to be due to a staphylococcus; in the other two, to a green-producing streptococcus. Markedly increased reflexes, ataxia and paraplegia were noted during life in some of the animals. None became paralyzed. The duration of symptoms in the patients ranged from three to eight years. In two additional cases little evidence of local infection was found and the cultures failed to produce lesions in the spinal cord.

Lesions of the spinal cord, consisting of numerous hemorrhages, especially in the anterior horns in the cervical region, were noted in 78 per cent. of thirty-six animals injected with the staphylococcus from the tonsil in a typical case of sporadic anterior poliomyelitis. Many of these developed partial or complete paralysis, more marked in the anterior extremities, both after intravenous and intracerebral injection of pure cultures and of emulsions of diseased cords. Several dogs showed marked improvement in motive power, and some obtained a complete restoration of movement. The lesions in the cord are quite different from those in epidemic anterior poliomyelitis.

Lesions of the meninges and spinal cord occurred in 50 per cent. and 66 per cent. of twenty-one animals injected with the bacteria as isolated from the pyorrheal pockets and tonsils in a case of transverse myelitis with paralysis of the lower extremities. Partial or complete paralysis, which began in the hind extremities, developed in many of these animals. The lesions of the cord consisted chiefly of hemorrhages both in the gray and white matter and of leukocytic infiltration in the meninges and surrounding the blood vessels.

The occurrence of the two types of paralysis, following injection of the bacteria from these two cases, was a striking picture. It was difficult, and in some instances impossible, to demonstrate bacteria in the areas of hemorrhage showing little or no leukocytic infiltration in the substance of the cord. They appeared to be infarctions from partial or complete thrombosis of the small blood vessels remote from the area of hemorrhage. This was true alike following injections in multiple sclerosis, anterior poliomyelitis and transverse myelitis. The bacteria were found in large numbers in the areas of infiltration in the meninges and surrounding blood vessels in transverse myelitis. These findings are in accord with the fact that bacteria are rarely findable in acute myelitis in man, and hence the lesions are thought to be toxic in origin or due to filterable viruses.

Lesions in or about one or more of the posterior roots occurred in 83 per cent. of eighteen animals following injection of streptococci from cases of brachial, intercostal and postherpetic neuralgia. The occurrence of neuritis in 28 per cent. of these animals is noteworthy. This and the high incidence of lesions in the skin, 28 per cent. (chiefly herpes), occurred in animals injected with relatively large doses. As far as can be determined this is the first experimental demonstration of the probable nature of this form of neuralgia.

Lesions of the peripheral nerves occurred in 79 per cent. of the nineteen animals injected with the pneumococcus obtained on two occasions from multiple neuritis. In one rabbit typical wrist-drop developed.

The animals seemed to be in pain. The lesions consisted of localized hemorrhages, edema and leukocytic infiltration, in which often many diplococci were found. The localization of the slightly hemolyzing streptococcus isolated from the dead pulp of a tooth and excised muscle from the neck in a case of myositis and dental neuritis was unique: 71 per cent. of the twenty-four animals injected showed myositis, 50 per cent. dental pulpitis, and 46 per cent. neuritis, chiefly of the dental nerves.

Lesions in or about the joints occurred in 48 per cent. of the twenty-nine animals injected, in the myocardium in 28 per cent., and in the muscles in 93 per cent., following injection of the cultures (all containing slightly hemolyzing streptococci) from the twelve cases of "myalgia" (cases of fibrositis or mild myositis, with or without periarthritides). These were included in this table to show the contrast in distribution of lesions and because in some cases it appeared that some of the pain was due to mild neuritis.

It must not be supposed that the lesions observed were slight or temporary, that they were always the result of the injection of large doses (even the small amount of exudate expressed from tonsils when directly injected was sufficient to produce the lesions in some instances), or that they were usually a part of a generalized fatal infection (62 per cent. of the animals recovered and were chloroformed for examination). Localizations strikingly like those in the patients were obtained in many animals of different species with the bacteria as isolated, but not with the same strains after cultivation for a time or after a number successive animal passages. In those strains in which the elective property was marked, the characteristic localization occurred in nearly all the animals injected intravenously and in a high percentage of those injected intraperitoneally. Numerous strains from other sources and the filtrate of the broth cultures of the strains as isolated have failed to cause similar lesions. These and other facts preclude the possibility that the lesions in the animals were from spontaneous or accidental causes.

The conclusion seems warranted that the lesions in the patients studied were due to hematogenous infection from a focal source by the bacteria isolated. The improvement in symptoms following removal of foci of infection which were proved to harbor bacteria with peculiar localizing powers in multiple sclerosis, transverse myelitis, several cases of persistent neuralgia (although not in others), and in the case of dental neuritis and myositis speaks in favor of this view. The results emphasize the importance of thorough search for, and removal, if possible, of foci of infection in diseases of the nervous system. In the light of these results and much clinical evidences, as emphasized especially by Billings, a chronic focus of infection which cannot heal for mechanical reasons, often teeming with bacteria, must be considered as a test tube with a permeable wall embedded in the tissues, which as I have already pointed out,⁶ affords not only abundant opportunity for the entrance of bacteria and their products, but also the conditions favoring the acquisition of various infective powers by the bacteria. The demonstrated presence over a long period of time of foci of infection (particularly in chronic diseases) of bacteria with the same elective localizing powers suggests that the tendency to recurrences of a certain type of disease in the same patient and even hereditary tendencies may be due in part to the peculiar environ-

ment furnished by the individual which may favor the acquisition and maintenance by the bacteria of a particular infecting power.

Too much benefit should not be expected from the removal of evident foci of infection, because a similar condition may be present in inaccessible foci and in others too small to be detected. Moreover, recovery may be made difficult by local tissue sensitivity or peculiar mechanical conditions, and living bacteria in a metastatic lesion may continue the process independently of the focal source. In the case of dental neuritis and myositis the focus was found in the pulp of a dead molar tooth, no demonstrable lesions being found in the jaw. The removal of the tooth, while helpful, was not followed by the prompt disappearance of the symptoms. Streptococci demonstrated in sections of the excised muscle from the neck were proved alive ten days after a typical recurrent attack of spasm and pain.¹¹

ABSTRACT OF DISCUSSION

DR. FRANK BILLINGS, Chicago: When one discusses the subject of localized infection he ought to know the particulars of it and discuss it from the side of an infectious organism and all that relates to it. One should also discuss the host and the reaction of the body. This, however, is neither the time nor the place. The organisms infecting the body invade us, living as parasites harmful or harmless to the host. The organisms may act directly on certain tissues, lodge in them, multiply and produce reactions which are not always the same. We have recognized that the pathogenic micro-organism may possess a tropism for tissues, but have not appreciated the importance of this principle of bacteriology. One may conceive that the agents infecting some articular tissue like a joint may gain tropism for that kind of tissue; and if isolated and injected into an animal the same tissues will be infected in the injected animal. The work that Dr. Rosenow has done is proof that tropism may be gained in the infected tissues. The *Streptococcus viridans* may have an elective affinity for the heart and at another time an affinity for muscles or joints. There are many things we cannot explain. There are certain biochemical changes that occur due to reactions of the organism in the tissues. The phenomenal work that Dr. Rosenow and others have done has been due to the fact that they were able to come in contact with the patients. They have been able to go to the bedside and to use the patients as material. The best work done by Dr. Rosenow was in the wards of the Presbyterian Hospital. We never removed tissues from a patient without his consent or request. In chronic conditions we may find many parasitic organisms in the tissues. They were disregarded and only strains were used that were proved to be pathogenic. Finally, we have come to know that at many conditions formerly thought to be noninfectious are infectious.

DR. ERNEST ZUEBLIN, Baltimore: Dr. Rosenow's demonstration of the tropism of muscular tissue against certain bacterial strains may give us an explanation why we so frequently find the muscular system affected. For the clinician, the physician interested in dispensary work and the routine practitioner the frequency of chronic myositides, of interstitial infiltrations and nodosities encountered in the larger muscles (neck, etc.) is striking. Although among Jewish and Dutch physicians this type of muscular rheumatism is well known and successfully treated, among the general practitioner such findings obtained only by a careful physical examination are too often neglected. We all are aware of the tedious task to improve these chronic ailments, which left alone get worse and result in permanent injury. My new experimental data in the line of Dr. Rosenow's

work, showing an affinity of bacteria toward the muscular elements, must be followed with great interest as a possible way for better diagnosis, prognosis and treatment of such ill defined cases. From the experimental standpoint I would like to ask Dr. Rosenow if there is any possibility to increase that tropic affinity of the bacteria by the addition of certain organ extracts to the culture media, and if such a thing is possible what percentage of organ extract is permissible for obtaining the best culture result.

DR. SAMUEL JAMES MELTZER, New York: Dr. Rosenow's observations are certainly very striking and probably practically important. They are so striking that a great many bacteriologists and clinicians look at them with some suspicion. But Dr. Rosenow is in the fortunate position that the minority which believes in his results is composed of men who had the chance to see his experiments. The question is: how can it be explained that infections, localized in various organs, could be specifically produced by one and the same type of an organism, namely, by the streptococcus. Various explanations occurred to my mind. In the first place, that streptococci which may look alike and which may give even certain similar reactions, may nevertheless be fundamentally different. There are a great variety of species or sub-species among the streptococci; we only do not yet possess the means of recognizing their individualities. That would mean that, for instance, infections of the appendix and gallbladder, etc., are really produced by definitely different sub-species of streptococci. A second explanation may be the assumption that the streptococci are merely constant companions of certain specific organisms, not yet known to us; the discovery of the ameba as the cause of pyorrhea alveolaris is an illustration. There is a third possible explanation. It is based on the conception of the *locus minoris resistentiae*, the importance of which in pathology was impressed on me some twenty years ago in experiments carried out by Dr. Cheesman and myself. We found then that the intravenous injection of organisms, streptococci, for instance, had hardly any influence on the experimental animals. However, we could find at any place in the animal body the specific organisms in pure culture when we, previous to the injection, caused a slight lesion in that place. We thus localized these organisms in circumscribed places: the liver, the parietal peritoneum, the uterine mucosa, etc. Now the *locus minoris resistentiae* may be considered from two points of view. One is that locality possesses a diminished resistance to all parasitic organisms; and the other is that this locality is less resistant to an organism which acquired a specific virulence for this tissue. It is the latter form of *locus minoris resistentiae* which I wish to apply to the observations of Dr. Rosenow. It is admissible to assume that specific organisms which are residing for a longer period in a certain tissue reduce considerably the natural resistance of this tissue to the virulence of that specific organism or rather increase the virulence of that organism to the specific tissue. When such an organism is now injected into a normal animal, that organism will show a greater virulence to the corresponding tissue in the new animal. It is, for instance, thus possible that a strain of streptococci which was obtained from a case of appendicitis acquired a higher virulence specifically to the tissues of the appendix. The intravenous injection of such an organism may, therefore, produce appendicitis and no lesions in any other organisms.

DR. G. CANBY ROBINSON, St. Louis: The elective localization of bacteria is an interesting conception, and has a very important bearing on the question of etiology of disease. Many of the conditions that have been discussed by Dr. Rosenow have a nonspecific etiology, the localization of the infection rather than the type of organism being responsible for the disease produced. But this theory should not be made to play a rôle in the causation of diseases resulting from specific infections. Surely Dr. Rosenow does not believe, for instance, that he has produced true acute anterior poliomyelitis in animals by injecting a streptococcus or staphylococcus which he obtained from the tonsils of a patient with this disease. It is fair to claim that the organisms infected, localized in the cord and meninges of the animals, but this

11. The details of the clinical histories and the experiments, a review of the literature, and a more detailed discussion of the significance of the findings, are reserved for separate papers.

localization does not constitute poliomyelitis as the term has been adopted to apply to a definite, clear cut clinical entity, caused by a filterable virus quite different from bacteria of the ordinary type.

DR. HENRY ASBURY CHRISTIAN, Boston: In analyzing the remarkable work of Dr. Rosenow we can make something like this subdivision: There are groups of cases with local lesions from which local lesion organisms can be isolated and when injected into animals these organisms localize in them at the same place from which they were isolated in the patient. From the appendix, in appendicitis, organisms may be isolated and if injected into animals they localize in animals at the same place in a predominating number of cases. It seems to be like the homing instinct of pigeons. Then there is another group of cases which present this difference. They are cases in which the organism is isolated from a focus that is not a part of the disease. The organisms isolated from such a focus if injected into animals localize themselves not in tissues which are similar to the tissues from which they were isolated but in tissues corresponding to the tissues involved in the general disease. This applies in Dr. Rosenow's case of multiple sclerosis, a disease of the central nervous system. Here the organisms are isolated from the tonsil but in animals localize in the central nervous system. I should like Dr. Rosenow to give us some idea why it is that an organism isolated from the teeth or tonsil will localize in the central nervous system rather than in the tonsil or teeth. These are two groups of cases which cannot be explained directly in the same way. In the second group the organism maintains the quality of localizing when injected into animals in certain tissues although it has not been localized in the body of the patient in that particular place. In cases of multiple sclerosis the organism must have been long present in the patient's tonsil without losing its power of localizing in the central nervous system. In conclusion I would like to express my appreciation of the tremendous amount of experimental work that Dr. Rosenow has done and which has thrown much light on this subject.

DR. EDWARD C. ROSENOW, Rochester, Minn.: The importance of injury from accidental causes as a determining factor in localization of bacteria as raised by Dr. Meltzer, is fully appreciated. The nature of the lesions observed, their location, and the incidence of their occurrence, as well as the care and individual caging of animals, precludes the possibility that injury from accidental causes had anything to do with the localization of the bacteria in these experiments. The "warning note" raised by Dr. Robinson is, I feel, superfluous, but it gives me opportunity to emphasize that the case of anterior poliomyelitis was not of the epidemic type, but sporadic anterior poliomyelitis, and that the elective property or peculiar tropic condition of the bacteria is, of course, only one of a number of factors determining their localization. Dr. Christian's questions are much to the point. I have repeatedly emphasized the fact that the bacteria having elective properties in the diseases which I have studied, do not usually produce inflammation of tonsils sufficient to cause subjective symptoms of tonsillitis, and that when the diseases studied occur in association with tonsillitis, they occur commonly some time after the height of the attack. The pus or other exudate containing the bacteria having elective affinity is not from actively inflamed tonsils, but usually from small atrophic tonsils with deep pockets which cannot heal for mechanical reasons, and which are virtually test tubes with a permeable wall. The bacteria in these tonsils are virtually outside the tonsil and, hence, should not be expected to localize in the tonsils of animals. It is impossible to say definitely at present on what factors the acquirement of elective properties depends. Chronic foci of infection, such as the above, however, appear to furnish conditions favorable not only for the entrance of bacteria, but for them to acquire varying infecting powers. It was thought more important to determine first to what extent localization of bacteria depended on peculiar properties of the microorganisms at hand, and then to study more closely the exact mechanism involved. This study is now in progress. While other factors, such as varying degrees of resistance and other

peculiarities in animals normally present or produced experimentally, are of importance in determining localization of bacteria, it appears from this study, in which due regard is paid to the question of oxygen pressure, the proper nutrition and the early injection of animals, that the diseases studied are due in some instances to common pathogens, but which have acquired peculiar infecting powers.

POLIOMYELITIS

WITH SOME OBSERVATIONS ON THIRTY CASES

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As long ago as 1865, Taylor,¹ in referring to infantile paralysis, said, "There seems to be no doubt that this disease is much more frequent now and is rapidly increasing." It was not until 1881, however, that the first epidemic was described. This was reported by Bergenholtz, and consisted of eighteen cases in northern Sweden.

Since the Vermont² epidemic of 1894, there have been at least fourteen epidemics of poliomyelitis carefully recorded in different parts of the United States. These have varied in both size and intensity, and have been scattered across the country from Massachusetts³ to California. Previous to the present epidemic, the largest number of cases was observed in the Swedish epidemic (1,031 cases) of 1905, and in the Pennsylvania epidemic (1,000 cases) of 1910. It is easily seen, therefore, that the 1916 epidemic, which has already exceeded 5,000 cases in New York with no indication of abatement, has long since dwarfed all previous records for this crippling and often fatal disease.

Not until Wickman's⁴ report of the Swedish epidemic of 1905 was it shown that acute poliomyelitis is conveyed from person to person. Wickman further indicated that healthy persons may act as carriers. Nevertheless, with our present knowledge, it is out of the question to identify all carriers, if they exist; in fact, we do extremely well if we are able to recognize abortive cases when they occur.

We come, then, to what is the most difficult problem concerning this disease, namely, appropriate and successful means for checking its spread. Since it is generally conceded that poliomyelitis is not, under ordinary conditions, spread by water, milk or food and that, in most instances, it is conveyed by direct contact, it would seem that the sole means for adequate control is by compulsory hospitalization at the earliest possible moment. We believe that through the prompt and energetic measures along this line adopted by Chicago's commissioner of health, another epidemic of this dire malady may have been averted.

Since poliomyelitis spreads along the lines of travel all incoming passengers from the East are inspected for evidence of this disease. Physicians and any other

1. Taylor, Charles Fayette: *Infantile Paralysis*, Philadelphia, J. B. Lippincott Company, Philadelphia, 1867.
2. Caverly, C. S.: *History of an Epidemic of Acute Anterior Poliomyelitis*, Tr. Vermont State Med. Soc., 1894, p. 240.
3. *Infantile Paralysis in Massachusetts during 1910*, Month. Bull. Massachusetts State Board of Health, 1911.
4. Wickman, Ivan: *Acute Poliomyelitis*, Nervous and Mental Disease Monograph Series, No. 16, New York, 1913.

ers having knowledge of a known case are required to report it to the commissioner of health, and all doubtful or suspected cases are investigated by physicians of the city health department. When the diagnosis is definitely established, the patient is removed to the hospital by a health department ambulance.

The cases in our series, as presented in Table 1, were with a few exceptions of a mild type. Cases 19 and 25 we classed as of the encephalic variety, all the rest being spinal. It will be noted that the youngest patient was 5 months of age and the eldest 11 years, and that there were but two patients more than 5 years of age; 86 $\frac{2}{3}$ per cent. of the patients were under 5 years of age. The sexes were almost equally divided, there being fourteen boys and sixteen girls. One point particularly observed by us was the fact that practically all the children were fair haired. A few had light brown hair, but they usually had blue eyes. There was really but one dark complexioned child in our

recorded thirty-four instances in which there was the history of a fall.

There was no retention of urine in any of our cases, nor was there any bowel difficulty. Neither was photophobia observed in any instance. Drowsiness, however, was a common symptom in the early stage. As usual, in the cases of those attacked by poliomyelitis, our patients were, with few exceptions, not only well nourished, but exceptionally robust infants and children.

In determining the mode of treatment of acute poliomyelitis, the contagious nature of the disease is necessarily a matter of prime importance. Nevertheless, the degree to which this disease is contagious is a very uncertain quantity. Based on Frost's⁶ estimates, the contagiousness of this disease is one-third that of scarlet fever and about one-half that of diphtheria. In reaching this conclusion, however, Frost includes the clinically doubtful cases.

TABLE 1.—OUTLINE OF CASES *

Case Number	Type	Age, Years	Sex	Complexion	Nourishment	Date of Onset	Date of Admission	Other Children in Family	Other Cases in Family	History of Injury	Large Tonsils	Paralysis					Pain	Tenderness	Max. Temp. in Hospital	Rigidity of Neck	Pain on Flexion of Spine
												Right Arm	Right Leg	Left Arm	Left Leg	Face					
1	S	1½	F	F	G	6/28	7/ 3	...	0	..	0	0	+	0	0	0	0	0	99.6	0	0
2	S	3½	M	F	G	7/ 5	7/10	...	0	..	0	0	Pa.	0	+	0	++	++	99.6	+	+
3	S	2	F	F	G	6/27	7/10	3	0	..	0	0	0	0	+	0	+	+	100.2	0	+
4	S	3½	M	F+	G+	7/ 6	7/14	...	0	..	0	0	0	Pa.	0	0	0	0	99.4	0	0
5	S	3	M	F	G	7/11	7/18	...	+	..	0	0	+	0	0	0	0	0	100.2	0	0
6	S	11	M	F	G+	7/ 6	7/18	3	+	+	0	0	0	0	+	0	0	0	99.2	0	0
7	S	3½	F	F	G	7/14	7/19	...	0	+	+	0	0	0	+	0	+	0	99.4	0	+
8	S	2	M	F	P	?	7/20	...	0	..	+	0	+	0	0	0	0	0	99.8	0	0
9	S	3½	F	F	G	7/16	7/21	...	0	..	0	0	+	0	0	0	+	+	99.6	0	0
10	S	3½	M	F	G	7/15	7/22	6	0	..	+	0	+	0	0	0	+	+	99.6	0	0
11	S	4½	F	F	G	7/15	7/22	2	0	..	0	0	Pa.	0	+	0	+	+	99.8	+	+
12	S	2½	F	F	F	?	7/23	...	0	..	+	0	+	0	+	0	0	0	99	0	0
13	S	2	M	F	G	7/14	7/23	1	0	..	0	0	0	0	+	0	0	0	99.4	+	0
14	S	6	M	L.B.	G	7/16	7/23	4	0	+	+	0	0	0	0	0	0	0	98.8	0	0
15	S	5	M	F+	G	7/16	7/24	0	0	0	0	0	+	0	0	+	+	+	99.4	+	++
16	S	2	F	F	G	7/17	7/24	...	0	..	+	0	0	0	+	0	0	0	98.2	0	0
17	S	3½	M	F	P	7/ 4	7/24	3	0	..	+	0	+	0	0	0	0	0	99.2	0	0
18	S	1½	F	F	F	?	7/24	...	0	..	+	0	0	0	0	+	+	+	99	0	0
19	En.	5	F	D	G	7/21	7/25	0	0	0	+	0	0	0	+	0	0	0	99.8	0	0
20	S	3½	M	F	F	?	7/25	...	0	0	+	Pa.	+	Pa.	+	+	+	+	100	++	++
21	S	1	F	F	G	?	7/25	...	0	..	0	+	+	0	0	+	+	+	100.2	0	+
22	S	5 mo.	F	F	G	7/12	7/26	2	0	0	+	+	+	0	0	0	+	+	99.6	0	+
23	S	1	F	F	G	7/12	7/26	...	0	..	+	0	0	0	+	0	+	+	101	0	+
24	S	2¾	F	L.B.	G	7/19	7/26	...	0	..	+	0	0	0	+	0	+	+	101	+	+
25	En.	2½	F	L.B.	F	7/20	7/27	...	0	..	+	0	+	0	+	+	+	+	98.6	0	0
26	S	4	M	F	P	7/25	7/28	3	0	0	+	0	+	0	Pa.	0	+	+	101.4	+	+
27	S	2	M	F	F	7/21	7/29	3	0	0	+	0	+	0	0	0	+	+	101.4	+	+
28	S	2	M	F	G	?	7/29	0	0	0	+	0	0	0	+	0	+	+	99.4	0	+
29	S	3	F	F	G	7/26	7/30	2	0	..	+	0	+	0	0	0	+	+	100.8	+	+
30	S	3	F	F	G	7/24	7/30	4	0	..	+	0	+	0	+	0	+	+	99.8	+	+

* In this table the following abbreviations are employed: S, spinal; En., encephalic; L.B. light brown; D, dark; Pa., paresis; G, good; P, poor.
† Cousins but not living in same house.

series, and for some time we regarded that one as a doubtful case. It would be interesting to know whether poliomyelitis shows some special predilection for those of fair complexion or whether this was a mere incident in our series. Its prevalence in Sweden and Norway would further make us think that the fair haired may show some special predisposition.

As our patients were brought to the hospital by the department of health ambulances without an accompanying relative, it was very difficult and often impossible to gain any history of the onset other than the late. Consequently we were unable to obtain in practically all instances even a theoretical source of infection. We have been indirectly informed, however, that in nearly all cases there was some history of injury. In some of the latter instances it was evident that the injury, usually a fall, occurred at the time of onset of the paralysis. In a series of 150 cases, Lovett⁵

Again referring to Table 1, it will be noted that there were known to be thirty-six children of various ages who were closely associated with the patients in the acute stage, and yet thus far there have been no two cases in any one family. However, there was one instance of two cousins being admitted to the hospital. Nevertheless they did not live in the same house, nor were their residences nearby. In fact, they had not seen one another "for more than a month" previous to their illness. Furthermore, while we have a definite record of only thirty-six contacts among children, there were probably at least double that number, including all ages of all the families. In this connection, it may be said, Wickman believes that abortive cases are commonly overlooked as carriers.

Our routine hospital treatment consists of a warm bath on admission, cleansing eyes and nose with a 20 per cent. argyrol solution, and putting the patient to

5. Lovett: Infantile Paralysis in Massachusetts in 1909, Month. Bull. Massachusetts State Board of Health, June, 1910.

6. Frost, Wade H.: Epidemiologic Studies of Acute Anterior Poliomyelitis, Bull. 90, Hyg. Lab., U. S. P. H. S., October, 1913, p. 14.

bed. A nose and throat culture is also made at this time. Heavy stockings are put on and every endeavor made to keep the limbs warm. The patient is dressed comfortably, and in most cases bedclothing over the patient is not only unnecessary but undesirable. If used, supports should be provided, so that it does not weigh on the toes.

TABLE 2.—RESULTS OF SPINAL PUNCTURES

Case Number	Pres- sure*	Clear	Nonne	Fehling's	Cell Count
1.....	N	+	—	—	20
2.....	S	+	—	—	90
3.....	N	+	+	+	30
4.....	N	T	+	—	12
5.....	N	+	—	+	16
6.....	N	+	+	—	12
7.....	S	+	++	+	98
8.....	N	+	+	—	14
9.....	N	+	—	—	8
10.....	S	+	—	—	6
11.....	N	+	+	+	36
12.....	N	+	+	+	46
13.....	N	+	++	+	67
14.....	N	+	—	—	36
15.....	..	..	..	..	..
16.....	N	+	—	—	14
17.....	S	+	+	+	23
18.....	N	+	+	—	3
19.....	N	+	—	—	12
20.....	..	..	..	..	..
21.....	N	+	+	+	8
22.....	..	..	..	..	..
23.....	S	+	+	+	15
24.....	N	+	—	—	4
25.....	N	+	+	—	30
26.....	+	+	+	++	18
27.....	+	+	+	++	14
28.....	N	+	—	+	12
29.....	N	+	+	+	23
30.....	N	+	—	—	15

* Spinal fluid key: N, normal; +, increased; S, very slight increase; T, turbid.

A laxative, usually some form of cascara, is given on admission, and in addition an enema on either the same day or the following morning. A light diet is provided for children old enough to partake of it. In the case of nursing babies, accommodations for the mothers are arranged for in the hospital. Hexamethylenamin was given the first few patients, but was soon discarded, as there is pretty conclusive proof that it is of no benefit after the disease has begun.⁷

Table 2 shows the results of the spinal punctures. In Cases 15, 20 and 22, so much difficulty was encountered that all further efforts to tap the spinal canal were abandoned. As may be seen, we found very few of these cases with an increased pressure. This, however, may be explained on the ground that most of these patients had passed the early acute stage. The amount of fluid varied from 3 to 10 c.c., and was obtained in almost each instance on the same day the white count was made. The cell count per cubic centimeter of fluid was also seen to be low in most instances.

Where the patient was received early, following lumbar puncture, from 0.5 to 1 c.c. of 1:1,000 epinephrin chlorid solution was given intraspinally, following the suggestion of Meltzer.⁸ This was repeated every four to six hours, provided the pulse rate did not exceed 160. In no case, however, did we repeat the dose more than three times.

Some patients showed marked improvement in from one-half to one hour following the epinephrin injection.

On several occasions a patient with a totally paralyzed arm would make a voluntary movement of the arm within an hour after receiving the epinephrin. Such marked improvement, however, was seldom permanent, but gradual improvement in some cases seemed to be more rapid. Lucas and Osgood⁹ have shown that little can be expected of vaccines. However, the benefits to be derived from the intraspinal use of horse serum¹⁰ seem promising. At the date of writing, we had not made use of the latter method of treatment.

We made no use of electricity, and did not institute massage until all acute symptoms had subsided. We believe that rest and quiet are the two chief requirements of the patient in the acute stage. Ordinarily massage was begun in from two to three weeks from the onset of the disease, according to the severity of the case. The patients are kept in bed throughout their stay in the hospital, and on discharge instructions given the parents regarding the necessity for further treatment. Among our cases there were but three which showed a tendency to impending deformity through the contraction of muscles. Nevertheless, it was too early to expect that which may develop, if proper precautions are not taken, in the months to come. Where foot drop is marked, plaster casts should be applied to overcorrect this slightly. The cast should later be cut so that it will be removable in order that massage may be applied.

Both Ed Müller and Paul Krause¹¹ state that a leukopenia is present in acute poliomyelitis. The latter remarks that "a marked leukopenia is characteristic of anterior poliomyelitis." The blood findings in the cases presented by us do not confirm the foregoing assertion.

TABLE 3.—LEUKOCYTE COUNTS

Case Number	White Count	Day of Disease
1.....	11,500	30
2.....	11,750	5
3.....	18,000	14
4.....	11,200	21
5.....	7,350	16
6.....	13,000	21
7.....	10,000	13
8.....	7,500	10 (?)
9.....	8,000	11
10.....	12,700	12
11.....	11,800	13
12.....	6,700	7 (?)
13.....	14,500	13
14.....	8,000	12
15.....	16,300	11
16.....	15,800	10
17.....	18,600	23
18.....	11,400	5
19.....	13,250	5
20.....	15,900	7 (?)
21.....	9,800	7 (?)
22.....	12,600	16
23.....	13,350	15
24.....	11,000	8
25.....	11,000	8
26.....	14,800	4
27.....	20,800	7 (?)
28.....	14,600	7 (?)
29.....	23,600	3
30.....	14,300	7

In Table 3 it will be seen that a leukocytosis was almost constant, and that it usually persisted for at least two weeks, and frequently much longer. It would seem that the white count should serve as a good index in determining the time to begin active manipulation of the muscles.

7. Kelly, E. R.; Gellhorn, W., and Manning, J. B.: Report of Infantile Paralysis in State of Washington during 1910, Olympia, Washington, 1911, p. 18. Römer, Paul H.: Epidemic Infantile Paralysis, translated by H. Ridley Prentice, New York, William Wood & Co., 1913, p. 174.

8. Meltzer, S. J.: Symposium on Infantile Paralysis, abstr., THE JOURNAL A. M. A., July 22, 1916, p. 314.

9. Lucas and Osgood, quoted by Kelly (Footnote 7), p. 145.
10. Sophian, Abraham: Specific Treatment of Infantile Paralysis, THE JOURNAL A. M. A., Aug. 5, 1916, p. 427.

11. Krause, Paul: Lehrbuch der klinischen Diagnostik innerer Krankheiten, 1913, p. 87.

During the period of quarantine or hospitalization, all discharges, including bowel movements, must be disinfected. Every effort must also be made to see that the surroundings are free from flies or insects of any nature. In view of a certain amount of uncertainty in the matter, it is well to be on the lookout for the bedbug as a possible carrier, since Frauenthal¹² affirms that bedbugs have transmitted the disease, and Flexner has shown an instance of this in monkeys.

There is at least one other perplexing question in connection with this disease which should be mentioned. For how long a time should a case of acute poliomyelitis be quarantined? A few years ago the Paris Academy of Medicine¹³ recommended the isolation of convalescents and patients for three months. Sawyer,¹⁴ however, showed that while virus was present in the rectal washings sixteen days after the onset of the acute attack, it was nevertheless absent in both nasal and rectal washings thirty-seven days after the onset of the disease. Ed Müller believes that the period of isolation should be eight weeks, while in Sweden it is usually three weeks. The latter is also said to be the length of quarantine in Pennsylvania. In accordance with the regulations of the Illinois State Board of Health, the minimum period of quarantine in Chicago is five weeks.

It is interesting to note that in our small series of cases there were no deaths, whereas the mortality among the New York cases is high, apparently exceeding 20 per cent. Statistics show the average mortality to be 10.31 per cent.; that it is lowest at 5 years and highest at from 21 to 30 years. In this connection it is well to remember that while the great majority of acute poliomyelitis cases occur before the age of 5 years, recent statistics tend to indicate that the number of cases over 5 years is gradually increasing. It must also be borne in mind that no age may be said to be exempt.

Notwithstanding the dire results which so frequently follow an attack of poliomyelitis, the percentage of complete recoveries is often high. Statistics show a variation in this respect all the way from 15 to 50 per cent.

CONCLUSIONS

1. There is still some unknown agency responsible for the transmission of poliomyelitis. Not every case is acquired through direct contact or by means of a human carrier.

2. A leukopenia is not characteristic of poliomyelitis, since a leukocytosis was present in almost every case observed by us.

3. In order to control an epidemic or an impending epidemic, isolation by means of compulsory hospitalization will give the best results.

4. An isolation period of three weeks from the date of attack is probably sufficient.

25 East Washington Street.

12. Frauenthal, H. W., and Manning, J. V.: *Infantile Paralysis and Modern Methods of Treatment*, Philadelphia, F. A. Davis Company, 1914, p. 63.

13. Forchheimer: *Therapeutics of Internal Diseases*, iv, 237, New York, D. Appleton & Co., 1914.

14. Sawyer, W. A.: *An Epidemiological Study of Poliomyelitis*, *Am. Jour. Trop. Dis. and Prev. Med.*, September, 1915, p. 164.

Public Nutrition.—The nutrition of the great mass of the people is a question of the highest importance, deserving far more attention than it has hitherto received. All the great countries ought to have a central authority, which should concern itself exclusively with the far-reaching questions of the well-being of the people.—Rubner.

MUNICIPAL CONTROL OF INFANTILE PARALYSIS

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Municipal control of epidemics of infantile paralysis is a most difficult problem. In order to obtain any results we must utilize our knowledge to the utmost; measures should be comprehensive, definite and rigid.

Infantile paralysis is produced by a minute infectious agent which cannot be isolated, cultivated or identified by the usual bacteriologic method. The virus is present in the secretions of the nose, throat and intestines of the sick, and has been found in the noses and throats of healthy contacts, who may remain healthy carriers.

The virus can be carried on the surface and in the intestines of the common house fly. It is probable that other insects, vermin and domestic animals may similarly carry and disseminate the virus.

Accurate data have not been obtained on the duration of living virus in the nose and throat of the sick or in healthy contacts. In monkeys the virus has been found in the mucous membrane of the nose and throat as long as six months after the occurrence of paralysis. It is very probable that carriers of this disease, as in meningococcic meningitis, group themselves into the larger group of temporary transient carriers, and a smaller group of permanent carriers or carriers over a long period of time.

The virus has been found in the dust of rooms containing patients with infantile paralysis. It is unusually resistant to drying, summer temperatures and the action of 0.5 per cent. phenol (carbolic acid) and glycerin.

The virus may therefore be disseminated by the sick, by healthy carriers, by the fly, insects or other animal carriers, and through the agency of dust, dirt, food, garbage or refuse which has become accidentally contaminated with the virus. This can readily occur through the coughing, sneezing, or promiscuous spitting of carriers.

Studies of the present and previous epidemics indicate that the disease is transmitted along the route of human travel and intercourse; that the disease is transmitted principally through the agency of healthy carriers.

EPIDEMIOLOGY

Two factors are necessary for the occurrence of infectious disease: a highly virulent infectious agent and a susceptible individual. Infantile paralysis is always sporadic in this country. It has been suggested that the virus fluctuates in virulence and may suddenly assume excessively virulent properties. For an epidemic of any disease to occur, there must be general lowered resistance to the disease. In time of epidemic, on account of general exposure, it is probable that a widespread and high immunity develops. In periods free from epidemic, this immunity probably gradually dies out.

The introduction of a highly virulent virus during a period of general lowered resistance can explain epidemics, recurring in cyclic manner.

General and widespread nasopharyngeal catarrh would offer a ready means of widespread production

of carriers and dissemination of an infectious agent. The past winter in this country was unusually severe, and epidemics of grip were general and alarming; few persons escaped a few days' disability from nasopharyngeal catarrh.

It is obvious that infantile paralysis is a highly contagious disease, with an infectious agent easily disseminated. Unlike the other contagious diseases, as scarlet fever, measles and diphtheria, easily controlled by suitable quarantine, this disease is extremely difficult to control. Few who are exposed actually develop the disease. This epidemic teaches that sporadic cases at all times should have the most rigid quarantine of the sick and the healthy contacts.

With the outbreak of a large, apparently uncontrollable epidemic of infantile paralysis in New York City, there was ample cause for alarm in neighboring cities in close business relationship with New York. The immediate outbreak of cases in these cities, and large epidemics in some, indicated that the most rigorous methods would have to be immediately employed to prevent epidemics in these cities. An especially serious problem was the flocking of thousands of children from New York to the surrounding country.

PREVENTIVE MEASURES

The preventive campaign as planned and rigidly carried out in Bridgeport may be classified as follows:

1. Quarantine of the sick and healthy contacts.
2. Exclusion of probable carriers from New York and adjoining cities in which the disease was epidemic.
3. Establishment of a special central hospital to which was enforced compulsory removal of all patients with infantile paralysis.
4. Organization of a special medical "poliomyelitis diagnosis squad."
5. Repeated circularization of the physicians, calling attention to abortive cases and the preparalytic stage of the disease.
6. Mobilization and enlargement of all the sanitary forces covering the street cleaning department, garbage department, police and fire departments, regular sanitary inspectors, and the staff of nurses.

1. *Quarantine.*—Quarantine of the sick should be rigid, and, until we learn more about the disease, should cover the probable period of the epidemic, about eight weeks. Rigid quarantine means removal of the patients from their homes except in special but rare instances in which quarantine can be carried out at home. All patients were kept at the poliomyelitis hospital for a period of eight weeks.

Families in which the disease occurred were quarantined for ten days. In every instance an officer was stationed at the outside door during the entire period of the quarantine. Each house was fumigated as soon as the patient was removed. A quarantine officer visited the premises twice daily, watched the other children, and issued circulars and personal instructions as to renovation and cleaning up of the houses. All were advised to use a spray of salt solution and also 1 per cent. peroxid several times daily for the nose and throat.

When cases occurred in tenement houses, all the children in the tenement were quarantined, but the wage earners in the family outside of the first quarantine were allowed to come and go. Special intensive efforts of thorough sanitation and inspection

were used for the quarantined tenement houses and those near by. The streets were carefully cleaned, flushed or oiled. Instructions were issued to avoid raising dust in sweeping houses, sidewalks or streets. Accumulation of garbage was avoided.

Quarantined houses were placarded, as was the street in which the quarantined houses were situated.

2. *Exclusion of Probable Carriers.*—The disease is transmitted along the course of human travel and intercourse. Children are principally affected. The number of healthy carriers are probably far in excess of the sick. There is no practical way of determining these carriers. The safe way was to exclude all children under 10 from Bridgeport who came from cities in which this disease was actively epidemic. There are so many indirect ways of contact that it is certainly an unsafe procedure to depend on a health certificate issued by a private physician or a health department, since neither could be at all familiar in most cases with the daily life of the applicant. We found that a number of those wishing to come to the city of Bridgeport gave untrue stories of their previous address and destination. A number of automobile parties were caught coming in during the very early hours of the morning on unfrequented high ways. These evasions occurred in most instances among those who had no particular business in Bridgeport.

All railroads, boats and roads were carefully patrolled.

3. *Establishment of a Special Poliomyelitis Hospital.*—It was deemed wise to remove all patients from their homes. A specially organized trained medical staff as well as hospital was provided for the care of the patients. As a general rule there was little objection to the removal of patients from their homes when the parents learned that special attention and care had been provided for their children.

4. *Organization of Poliomyelitis Diagnostic Squad.*—Early diagnosis and diagnosis of abortive cases are most important. The medical society was asked to appoint a diagnostic committee especially fitted for the work. Immediately on the report of cases to the health department, a member of the diagnostic committee was notified and immediately visited the patient. Many cases were diagnosed early in this way, and abortive cases were caught which otherwise might have been overlooked for a time at least.

6. *Mobilization of Sanitary Forces.*—A cooperative mobilization of all the sanitary forces was secured. This enabled a thorough intensive cleaning up of the city, of the streets, the homes, the people, places of amusement, restaurants, hotels and boarding houses.

A campaign of education of the public was instituted through the press, from the pulpit, on the screen, by circularization, and by talks from civic bodies. A house to house canvass was made in which parents were instructed in the principles of hygiene and sanitation.

Especially attention was given to prevent the collection of children anywhere in crowds. By health department order they were excluded from Sunday school, public play grounds, theaters, stores, picnics, circuses, from street cars at certain times of the day and from boats. The children's department of the public library was closed, public band concerts were discontinued, and public dumps were carefully patrolled. Soda fountains were rigidly checked

A fly swatting campaign was instituted and the anti-spitting law (including the streets) was rigidly enforced.

CONCLUSION

Every force, medical, sanitary and civic, must be mobilized to meet this disease.

Are preventive measures of material help? It is of course impossible except by comparison to judge the number of cases that might have occurred had not active measures been instituted. The relatively larger number of cases in other cities indicates so far that active measures are important.

GASTRO-INTESTINAL FINDINGS IN ACNE VULGARIS

ESPECIALLY FLUOROSCOPIC *

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AND

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It is generally recognized that the acne bacillus is the direct cause of acne vulgaris; yet there are a number of associated conditions which the patients often show that are regarded as predisposing factors. Among these may be mentioned puberty, anemia, and utero-ovarian and gastro-intestinal disorders. Varying degrees of emphasis have been placed on these factors in their relation to acne by different authors and investigators. Probably those which have received the most attention are the gastro-intestinal affections; but the observations have been mostly of a clinical nature.

One of the earliest investigators in this line was Barthelemey,¹ who, in 169 cases of acne, found clapping in all but four cases. According to this author acne does not exist without dilatation of the stomach.

Mitour² examined thirteen patients with acne, seven of whom had dyspepsia, and the gastric contents showed an increase in the acids of fermentation. He defined the dyspepsia which is present in acne as that type which is characterized by distention and fermentation of the stomach accompanied by considerable variation in the gastric hydrochloric acid content.

Bach³ examined 128 cases of acne in women for hemoglobin content of the blood, female disorders, and gastro-intestinal derangements. Only the gastro-intestinal disorders showed a higher percentage in the acne patients than in the control of cases, of which there were sixty-two.

White⁴ found digestive disturbances in 59 per cent. of 438 cases of skin diseases. The percentage, however, in the acne cases alone was only 55, which was somewhat lower than the general average.

Other lines of investigation, as those of Kapp,⁵ who found in thirty-three cases of acne the presence of indol in the urines of all the patients, have suggested that there is a toxic protein decomposition in many

cases of acne which is most likely dependent on intestinal stasis.

At the suggestion of Dr. Gilchrist, we thought that more definite information might be obtained as to the nature of the gastro-intestinal disorders accompanying acne, by fluoroscopy of the gastro-intestinal tracts of acne patients. This method of investigation, which as far as we know has not been carried out before in this disease, would be of especial value in determining if an anatomic basis existed in these patients which would permit protein decomposition and toxic absorption. Besides the fluoroscopy of the gastro-intestinal tracts, the patients also received test meals, and analysis of the gastric contents was made.

METHOD

1. *Gastric Analysis.*—(a) Fasting Stomach: Patients were given 6 tablespoonfuls of boiled rice at 9:30 p. m. Nothing was taken by mouth after this. The contents of the stomach were removed at 9 o'clock on the following morning and examined for amount, presence of free hydrochloric acid and occurrence of rice retention as evidenced by Hausmann's test and microscopic examination after staining for starch with iodine.

(b) Test Breakfast: After removal of the contents of the fasting stomach the patients were given two small slices of bread and about 250 c.c. of water. This was removed one hour later. The total and free acidity were titrated and expressed in cubic centimeters of tenth normal sodium hydroxid per hundred c.c. of the gastric fluid removed.

2. *Fluoroscopic Examination.*—Patients were given 1 ounce of bismuth subcarbonate in a glass of water at 5 p. m. on the day prior to examination. Eighteen hours later a second dose of the same amount was given just before the patients were examined by the fluoroscope. All the patients were examined in the upright position.

DEFINITIONS

1. Normal gastric acidity: Total acidity, from 40 to 60; free acidity, from 20 to 40.

2. Retention: The presence of rice granules in the contents of the fasting stomach denotes retention. When distinguishable to the naked eye, as shown by Hausmann's test, it denotes a greater degree of retention than when only apparent after microscopic examination.

3. Secretion: Any amount of fluid above 25 c.c. obtained from the fasting stomach was considered abnormal.

4. Position of the stomach: Ptosis was considered to be present only when the lower level of the stomach was below the level of the crest of the ilium.

5. Position of the colon: Ptosis of the colon was considered to be present when it lay below the level of the crest of the ilium. When the transverse colon lay on the floor of the pelvis, the maximum grade of ptosis was considered to be present.

All of the material was taken from the skin clinic and was not selected. The following thirty cases were examined in the gastro-intestinal department under the supervision of Dr. Brown:

CASE RECORDS

CASE 1.—Boy, aged 15. Acne medium, duration six months. Has had pain in stomach for the past two or three years after meals. Constipated. (1) Gastric examination: Fasting stomach; 25 c.c.; free hydrochloric acid present; Hausmann's test negative. Microscopic examination: Starch negative.

* From the dermatologic and gastro-intestinal departments of the Johns Hopkins University.

* Read before the Section on Dermatology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Barthelemey: Arch. gén. de méd., 1889.

2. Mitour: Etude sur la nature et le traitement de la dyspepsie accompagnée d'acné, Thèse de Paris, 1896.

3. Bach: Klin. therap. Wchnschr., 1907, Nos. 35, 36, 37.

4. White: Boston Med. and Surg. Jour., 1907, vii, 225.

5. Kapp: Therap. Monatsh., 1907.

Test breakfast; 70 c.c.; free hydrochloric acid, 10; total acid, 41. (2) Roentgen examination: Stomach large and atonic. Cecal stasis and prolapse of the transverse colon.

Summary.—Hypochlorhydria. Ptosis and atony of the stomach. Ptosis of the colon. Cecal stasis.

CASE 2.—Girl, aged 17. Acne mild, duration six months. No history of gastric disturbances. Bowels regular. (1) Gastric examination: Fasting stomach; 40 c.c.; free hydrochloric acid present, Hausmann's test negative. Microscopic examination: Starch negative. Test breakfast; 130 c.c.; free hydrochloric acid, 36; total acid, 56. (2) Roentgen examination: Stomach in good position, slightly atonic. Intestines normal.

Summary.—Practically normal findings (except slight gastric atony).

CASE 3.—Negro woman, aged 30. Acne medium, duration five or six years. Patient often has a tight feeling in the stomach and belches sour food after meals. Bowels constipated. (1) Gastric examination: Fasting stomach; 20 c.c.; Hausmann's test positive. Microscopic examination: Starch positive. Free hydrochloric acid present. Test breakfast; 80 c.c.; free hydrochloric acid 27; total acid, 44. (2) Roentgen examination: Stomach high. Slight prepyloric bulging. Motor function normal. Prolapse of the hepatic flexure. On deep inspiration prepyloric region pulled out, suggesting loose lower right quadrant adhesions.

Summary.—Spastic pylorus with slight retention, due to a reflex spasm from right lower quadrant adhesions. Prolapse of hepatic flexure.

CASE 4.—Girl, aged 20. Acne medium, duration six years. Patient often belches sour food after meals. Bowels constipated. (1) Gastric examination: Fasting stomach; 55 c.c.; free hydrochloric acid present; Hausmann's test negative. Microscopic examination: Starch negative. Test breakfast; 20 c.c.; free hydrochloric acid, 4; total acid, 24. (2) Roentgen examination: Stomach dilated, three fingers' breadths below crest of the ilium. Congenitally fixed duodenum. Sluggish peristalsis.

Summary.—Gastric atony and stasis. Hypochlorhydria.

CASE 5.—Girl, aged 18. Acne medium, duration two years. Often has hiccups and a sour taste after meals. Bowels regular. (1) Gastric examination: Fasting stomach; 45 c.c.; free hydrochloric acid present; Hausmann's test negative. Microscopic examination: Starch negative. Test breakfast; 77 c.c.; free hydrochloric acid, 40; total acid, 72. (2) Roentgen examination: Stomach just below crest of ilium. Normal size. Hyperperistalsis and motility. Prepyloric bulging. Moderate prolapse of hepatic flexure which is pulled over to pyloric region, then drops down to the left iliac fossa, thence irregularly up to the splenic flexure, which is in good position.

Summary.—Hyperacidity and slight hypersecretion. Hyperperistalsis and motility. Suggests irritative lesion in the pyloric region, possibly duodenal ulcer. Pelvic adhesions.

CASE 6.—Boy, aged 15 years. Acne mild, duration two months. No gastric symptoms. Bowels regular. (1) Gastric examination: Fasting stomach; 84 c.c.; free hydrochloric acid present; Hausmann's test positive. Microscopic examination: Starch positive. Test breakfast; 100 c.c.; free hydrochloric acid, 23; total acid, 37. (2) Roentgen examination: Stomach very large, three fingers' breadths below crest of ilium. Markedly increased peristalsis; bismuth going over rapidly into duodenum. Some prepyloric bulging. Prolapse of the transverse colon.

Summary.—Irritative lesion in pyloric region with gastric retention and ptosis of transverse colon.

CASE 7.—Boy, aged 19. Acne medium, duration one year. For the past three months has had colicky pains in the stomach with no reference to meals. Has been constipated for the last three months. (1) Gastric examination: Fasting stomach; 16 c.c.; free hydrochloric acid present; Hausmann's test negative. Microscopic examination: Starch negative. Test breakfast; 23 c.c.; free hydrochloric acid, 29; total acid, 60. (Stool shows occult blood.) (2) Roentgen examination: Stomach, fair position; hyperperistalsis; hypermotility. Large intestine in good position.

Summary.—Hyperactive stomach. Irritative lesion in region of duodenum, probably ulcer.

CASE 8.—Woman, aged 21 years. Acne severe, duration three years. Patient complains of full feeling in stomach after meals and is constipated. (1) Gastric examination: Fasting stomach; 5 c.c.; free hydrochloric acid present; Hausmann's test negative. Microscopic examination: Starch negative. Test breakfast; 17 c.c.; free hydrochloric acid, 20; total acid, 44. (2) Roentgen examination: Stomach, fishhook type, three fingers' breadths below crest of ilium. Normal peristalsis, hypermotility; cecal stasis. Hepatic flexure and ascending colon kinked back on cecum; prolapse of the transverse colon.

Summary.—Prolapse of the stomach and colon. Right lower quadrant adhesions. Hyperchlorhydria. Fecal stasis. Condition suggests chronic appendix with hyperactive stomach.

CASE 9.—Boy, aged 16. Acne severe, duration one year. No gastric symptoms except belching of sour food occasionally after meals. Bowels regular. (1) Gastric examination: Fasting stomach; 10 c.c.; free hydrochloric acid present; Hausmann's test negative. Microscopic examination: Starch negative. Test breakfast; 58 c.c.; free hydrochloric acid, 12; total acid, 35. (2) Roentgen examination: Stomach practically in normal position, slightly on the right side. No cecal stasis. Segmentation of the transverse colon. Bismuth mostly in the rectum.

Summary.—Intestinal picture of mucous colitis; hypoacidity.

CASE 10.—Girl, aged 19. Acne mild, duration five years. No gastric symptoms; bowels regular. (1) Gastric examination: Fasting stomach; 22 c.c.; free hydrochloric acid present; Hausmann's test negative. Microscopic examination: A few starch granules present. Test breakfast; 25 c.c.; free hydrochloric acid, 37; total acid, 51. (2) Roentgen examination: Stomach normal in size and position; no cecal stasis; marked ptosis of the transverse colon, which reaches to the bottom of the pelvis. Marked redundancy and atony of the transverse colon.

Summary.—Marked ptosis of transverse colon; fecal stasis.

CASE 11.—Woman, aged 23. Acne severe, duration one year. No symptoms referable to gastro-intestinal tract; bowels regular. (1) Gastric examination: Fasting stomach; 45 c.c.; free hydrochloric acid present; Hausmann's test negative. Microscopic examination: Starch negative. Test breakfast; 135 c.c.; free acid, 18; total acid, 43. (2) Roentgen examination: Stomach ptosed nearly to bottom of pelvis; atonic with sluggish peristalsis. Cecal stasis.

Summary.—Ptosis and atony of stomach; hypersecretion; hyperchlorhydria; fecal stasis.

CASE 12.—Boy, aged 18. Acne medium, duration one year. No gastro-intestinal symptoms. Bowels regular. (1) Gastric examination: Fasting stomach empty. Test breakfast; free hydrochloric acid, 14; total acid, 24. (2) Roentgen examination: Stomach large, atonic, at level of crest of the ilium; poor peristalsis and motility; stomach pulled somewhat down into the lower right quadrant; moderate cecal stasis; prolapsed spastic transverse colon.

Summary.—Right lower quadrant adhesions; fecal stasis; atony of the stomach and hyperchlorhydria; probably chronic appendicitis.

CASE 13.—Man, aged 21. Acne medium, duration five years. No gastro-intestinal symptoms; bowels constipated. (1) Gastric examination: Fasting stomach; 10 c.c.; free hydrochloric acid present; Hausmann's test negative. Microscopic examination: Starch positive. Test breakfast; 80 c.c.; free hydrochloric acid, 28; total acid, 31. (2) Roentgen examination: Stomach two fingers' breadths below the crest of the ilium. Good peristalsis and motility. No cecal stasis; most of the bismuth in descending colon and rectum.

Summary.—Practically normal finding with slight gastroptosis.

CASE 14.—Boy, aged 15. Acne medium, duration two years. Patient often has fullness of stomach and shortness of breath after eating fried food. Bowels regular. (1) Gastric examination: Fasting stomach; 12 c.c.; free hydrochloric acid negative; Hausmann's test negative. Microscopic examination: Starch positive. Test breakfast; 20 c.c.; free hydrochloric acid, 10; total acid, 32.

chloric acid, 4; total acid, 8. (2) Roentgen examination: Stomach to level of crest of ilium; normal size, good tone. Pylorus pulled down to right lower quadrant; cecal stasis. Ascending and first part of transverse colon kinked back on cecum. Pyloric and cecal regions move *en masse*. Ptosis of transverse colon.

Summary.—Right lower quadrant adhesions; fecal stasis; marked subacidity; suggests chronic appendicitis.

CASE 15.—Boy, aged 19. Acne medium, duration three years. Occasionally spits up sour food after meals. Bowels regular. (1) Gastric examination: Fasting stomach; 10 c.c.; Hausmann's test negative. Microscopic examination: Starch positive. Free hydrochloric acid present. Test breakfast; free acid, 5; total acid, 17. (2) Roentgen examination: Stomach good position; vertical type; reaches to the crest of the ilium; good peristalsis and motility. Vertical duodenal cap; definite cecal stasis; ptosis of hepatic flexure with kinking back of ascending and transverse colon on cecum; fixation of cecum. Spastic transverse colon.

Summary.—Subacidity marked; fecal stasis and spastic transverse colon.

CASE 16.—Boy, aged 13. Acne medium, duration one and one-half years. Patient often spits up sour food after meals. Bowels regular. (1) Gastric examination: Fasting stomach; 10 c.c.; free hydrochloric acid present; Hausmann's test negative. Microscopic examination: A few starch granules present. Test breakfast; 25 c.c.; free hydrochloric acid, 22; total acid, 36. (2) Roentgen examination: Stomach three fingers' breadth above the crest of the ilium, normal size, slightly atonic; cecal stasis; pylorus pulled down and to the right. No evidence of definite adhesions in cecal region. Large amount of bismuth in cecal region.

Summary.—Slight subacidity; fecal stasis.

CASE 17.—Boy, aged 14. Acne mild, duration six months. No gastric symptoms; bowels regular. (1) Gastric examination: Fasting stomach; 10 c.c.; free hydrochloric acid present; Hausmann's test positive. Microscopic examination: Starch positive. Test breakfast: 40 c.c.; free acid, 35; total acid, 52. (2) Roentgen examination: Stomach normal sized, pylorus drawn down into right lower quadrant; increased peristalsis, cecal stasis, ascending colon kinked back on cecum. Transverse colon in good position.

Summary.—Right lower quadrant adhesions with hyperactive stomach suggesting chronic appendicitis; fecal stasis.

CASE 18.—Man, aged 21. Acne medium, duration three years. Patient often belches up sour food after meals and occasionally after eating meats he has pains in the right side. Bowels regular. (This patient also has a vesicular eczema on hands, of three weeks' duration.) (1) Gastric examination: Fasting stomach; 25 c.c.; free hydrochloric acid present; Hausmann's test positive. Microscopic examination: Starch positive. Test breakfast: 110 c.c.; free hydrochloric acid, 4; total acid, 51. Roentgen examination: Hypermotility and hyperperistalsis of stomach; pylorus pulled over to right and downward; moderate cecal stasis. Hepatic flexure pulled over to prepyloric region, then back on cecum and up to splenic flexure.

Summary.—Right lower quadrant adhesions suggesting chronic appendicitis; hypermotility of stomach, moderate cecal stasis.

CASE 19.—Girl, aged 15. Acne mild, duration two years. Patient occasionally spits up sour food after meals, and has feeling of fulness in epigastrium. (1) Gastric examination: Fasting stomach; 15 c.c.; free hydrochloric acid present; Hausmann's test and microscopic starch negative. Test breakfast: 90 c.c.; free hydrochloric acid, 24; total acid, 51. (2) Roentgen examination: Stomach normal sized, with marked increase in peristalsis; pylorus pulled down to right lower quadrant.

Summary.—Chronic appendicitis.

CASE 20.—Woman, aged 21. Acne mild, duration eight years. Patient occasionally has "heart burn" and a feeling of fulness after meals. Bowels constipated unless she takes medicine regularly. (1) Gastric examination: Fasting stomach; 35 c.c.; free hydrochloric acid present; Hausmann's

test and microscopic starch negative. Test breakfast: 75 c.c.; free hydrochloric acid, 25; total acid, 40. (2) Roentgen examination: Stomach normal in size; in good position with slight tendency to hour glass type. At junction of middle and upper third there is a slight prepyloric bulging. Vertical duodenal cap present. Moderate cecal stasis. Ascending colon kinked back on cecum and drawn down to prepyloric region. Colon in good position.

Summary.—Pericecal adhesions with reflex spastic stomach; fecal stasis; suggests a high chronic appendicitis with probable pylorospasm.

CASE 21.—Woman, aged 21. Acne mild, duration two years. Patient often has "heart burn" and belches sour food after meals. Bowels constipated. (1) Gastric examination: Fasting stomach; 5 c.c.; free hydrochloric acid present; Hausmann's test and microscopic starch negative. Test breakfast: 50 c.c.; free hydrochloric acid, 30; total acid, 17. (2) Roentgen examination: Stomach normal size, reaching just to crest; vertical fishhook type. Orthotonic; good peristalsis and motility. No cecal stasis. Most of bismuth in sigmoid and rectum. Very slight ptosis.

Summary.—Subacidity; slight ptosis.

CASE 22.—Boy, aged 18. Acne severe, duration three years. No gastric symptoms. Bowels regular. (1) Gastric examination: Fasting stomach; 25 c.c.; free hydrochloric acid present; Hausmann's test and microscopic starch negative. Test breakfast: 125 c.c.; free hydrochloric acid, 42; total acid, 62. (2) Roentgen examination: Stomach to level of crest; vertical fishhook type; slightly atonic; sluggish peristalsis and motility. Pylorus ptosed. Cecal stasis. (Rest of picture not made out, as patient's bowels had moved.)

Summary.—Gastroptosis with atony; fecal stasis; slight hyperacidity.

CASE 23.—Girl, aged 20. Acne severe, duration five years. Has had indigestion for a number of years. Has feeling of fulness and belches food after meals. Bowels constipated. (1) Gastric examination: Fasting stomach; 40 c.c.; free hydrochloric acid present; Hausmann's test and microscopic starch negative. Test breakfast: free hydrochloric acid, 6; total acid, 18. (2) Roentgen examination: Stomach dilated, atonic and ptosed a hand's breadth below crest of ilium. Marked prolapse of the transverse colon. Considerable bismuth in rectum.

Summary.—Splanchnoptosis, with atony of stomach and marked subacidity; fecal stasis.

CASE 24.—Boy, aged 18. Acne medium, duration two years. No gastro-intestinal symptoms. Bowels move daily. (1) Gastric examination: Fasting stomach: 20 c.c.; free hydrochloric acid present; Hausmann's test and microscopic starch negative. Test breakfast: 10 c.c.; free hydrochloric acid, 29; total acid, 40. (2) Roentgen examination: Stomach normal size, reaching to crest, vertical type; lateral duodenal cap. Increased peristalsis and motility. Moderate cecal stasis and ptosis of transverse colon. Bismuth seen going over in large quantities into duodenum.

Summary.—Hypermotility of stomach; ptosis of transverse colon; fecal stasis; possible irritative duodenal lesion.

CASE 25.—Girl, aged 25. Acne mild, duration three years. Patient often has a sour stomach and belches after meals. Bowels constipated. (1) Gastric examination: Fasting stomach (lost). Test breakfast: 90 c.c.; free hydrochloric acid, 26; total acid, 60. (2) Roentgen examination: Baglike, atonic stomach. Ptosis of stomach and intestines. Kinking of the ascending colon and hepatic flexure.

Summary.—Ptosis and atony of stomach and intestines; fecal stasis.

CASE 26.—Girl, aged 20. Acne medium, duration one year. No gastro-intestinal symptoms. Bowels regular. (1) Gastric examination: Fasting stomach: 20 c.c.; free hydrochloric acid present; Hausmann's test and microscopic starch positive. Test breakfast: 110 c.c.; free hydrochloric acid, 13; total acid, 41. (2) Roentgen examination: Stomach in good position. Cecal stasis. Hepatic flexure bent back on cecum forming an angle. Prolapse of the transverse colon.

Summary.—Prolapse of transverse colon; cecal stasis; subacidity.

CASE 27.—Girl, aged 18. Acne mild, duration five months. Patient occasionally belches sour food and has cramps in stomach after meals. (1) Gastric examination: Fasting stomach: free hydrochloric acid present; Hausmann's test and microscopic starch positive. Test breakfast (refused). (2) Roentgen examination: Atonic ptosed stomach, three fingers' breadths below the crest of the ilium on left side. Cecal stasis and ptosis of the large intestine.

Summary.—Ptosis and atony of stomach and colon; gastric retention; fecal stasis.

CASE 28.—Girl, aged 19. Acne medium, duration two months. No gastro-intestinal symptoms. Bowels regular. (1) Gastric examination (refused). (2) Roentgen examination: Stomach slightly ptosed and atonic. Transverse colon kinked back and adherent to the cecum. Hepatic flexure prolapsed. Cecal stasis. Pylorus drawn slightly down into the right lower quadrant. Cecal and prepyloric region move *en masse*.

Summary.—Ptosis and atony of stomach. Cecal stasis. Right lower quadrant adhesions. Suggests chronic appendicitis. Fecal stasis.

CASE 29.—Boy, aged 17. Acne severe, duration one year. No gastro-intestinal symptoms. Bowels constipated. (1) Gastric examination: Fasting stomach: 10 c.c.; free hydrochloric acid positive; Hausmann's test and microscopic starch negative. Test breakfast: Free acid, 49; total acid, 79. (2) Roentgen examination: Stomach just to crest. Normal in size. Hyperperistalsis and motility. No cecal stasis. Transverse colon in good position. Spastic transverse colon.

Summary.—Hyperchlorhydria; spastic, transverse colon (suggesting mucous colitis).

CASE 30.—Boy, negro, aged 21. Acne medium, duration one year. Patient sometimes belches sour food after meals. Bowels constipated, except for past two weeks. (1) Gastric

examination: Fasting stomach; 5 c.c.; free hydrochloric acid present; Hausmann's test and microscopic starch positive. Test breakfast (refused). (2) Roentgen examination: Normal intestinal picture.

COMMENT

In an analysis of our cases, presented in the accompanying table, it is seen that those showing gastric abnormalities, 93 per cent., are somewhat greater in number than the ones showing intestinal abnormalities, 70 per cent. The most common gastric findings were hyperacidity, 48.1 per cent.; retention, 36.6 per cent.; atony, 33.3 per cent., and ptosis, 40.0 per cent. The most common intestinal findings were cecal stasis, 46.6 per cent.; ptosis of the colon, 36.6 per cent., and right lower quadrant adhesions, 23.3 per cent. Clinically, 63.3 per cent. of the cases gave evidence of gastric disturbances, and 40 per cent. of them were constipated.

It is rather striking that none of the cases examined gave entirely normal gastro-intestinal findings. These findings, however, in a few of the cases were of such mild degree or nature that they could not be considered as giving rise to any pathologic state.

Since the most important factors (as subacidity, gastric and intestinal ptosis, atony, adhesions and cecal stasis), which would probably predispose to acne, are those which permit gastric or intestinal retention followed by toxic absorption, we have therefore selected from our cases those which show these abnormalities to such a degree that a basis for toxic absorption can definitely be presumed to exist. There are twenty of

PRINCIPAL GASTRO-INTESTINAL FINDINGS IN ACNE VULGARIS

Case No.	Age	Sex	Degree*	Duration	Gastric Disturbances, Clinical	Gastric Acidity				Gastric Secretion			Gastric Tone			Gastric Motility		Gastric Position		Intestinal Findings							Remarks			
						Normal	Hypacidity	Hyperacidity	Achyilia	Normal	Hypersecretion	Retention	Orthotonic	Hypertonic	Atonic	Hypermotility	Hypomotility	Normal	Gastropsis	Constipation, Clinical	Cecal Stasis	Coloptosis	Atonic Colon	Spastic Colon	R. L. Q. Adhesions	Gastric Reflexes				
1	15	M	A	6 mo.	+	..	+	..	..	+	..	..	..	..	+	..	+	+	+	+	+	+	+	+	+	+	Pyloro-spasm	Chronic appendix
2	17	F	M	6 mo.	..	+	+	+	..	+	+	+	+	+	+	+				
3	30	F	A	5 yrs.	+	+	+	+				
4	20	F	A	6 yrs.	+	..	+	..	..	..	+	..	..	..	+	..	+	+	+	+	+	+	+	+	+	+	.....	Mucous colitis
5	18	F	A	2 yrs.	+	..	+	+	+	+	+	+				
6	15	M	M	2 mo.	+	+	+	+	+				
7	19	M	A	1 yr.	+	+	+	+	Chronic appendix	
8	21	F	S	2 yrs.	+	+	+	+	+	+			
9	16	F	S	1 yr.	+	..	+	+	+	+			
10	19	F	M	5 yrs.	..	+	+	+	Chronic appendix	
11	23	F	S	2 yrs.	+	+	+	+			
12	18	M	A	1 yr.	+	+	+	+			
13	21	M	A	5 yrs.	+	+	+	Chronic appendix	
14	15	M	A	2 yrs.	+	..	+	+	+			
15	19	M	A	3 yrs.	+	..	+	+	+			
16	13	M	A	2 yrs.	+	..	+	+	+	Chronic appendix	
17	14	M	M	6 mo.	..	+	+	+			
18	21	M	A	3 yrs.	+	+	+	+			
19	15	F	M	2 yrs.	+	+	+	+	+	Pyloro-spasm Pyloro-spasm	Chronic appendix Chronic appendix
20	21	F	M	8 yrs.	+	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+
21	21	F	M	2 yrs.	+	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+
22	18	M	S	3 yrs.	..	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+
23	20	F	S	5 yrs.	+	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+
24	18	M	A	2 yrs.	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+
25	25	F	M	3 yrs.	+	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+
26	20	F	A	1 yr.	..	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+
27	18	F	M	5 mo.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+			
28	19	F	A	1 yr.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+			
29	17	M	S	1 yr.	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+
30	21	M	A	1 yr.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+			
Number.....						19	11	13	3	0	13	6	11	12	8	10	4	10	18	12	12	14	11	0	3	7				
Percentage.....						63.3	40.7	48.1	11.1	0	43.3	20.0	36.6	40.0	26.6	33.3	13.3	33.3	60.0	40.0	40.0	46.6	36.6	0	10.0	23.3				

* A signifies average; M, mild; S, severe. † Test meal refused.

these cases, Nos. 1, 3, 4, 6, 8, 10, 11, 12, 14, 15, 17, 18, 19, 20, 22, 23, 25, 26, 27 and 28, which constitutes 60 per cent. of the total.

Our observations are too limited to draw any very definite conclusions as to the nature of the relations between acne vulgaris and gastro-intestinal abnormalities but we feel that our results show that the well established clinical observations as to the association of these conditions have, in many cases, a well-founded pathologic basis.

CONCLUSIONS

1. Acne vulgaris is generally conceded to be caused by the presence and growth of the acne bacillus.

2. There are a number of predisposing factors to this disease, one of the most important of which is gastro-intestinal derangements.

3. In a series of thirty cases of acne vulgaris, which were examined from the gastro-intestinal side, by test meals and fluoroscopic observations, we found that none of them gave absolutely normal findings, and that 60 per cent. of the cases showed abnormalities which were of such a nature as to permit gastric and intestinal stasis followed by toxic absorption.

529 North Charles Street—1100 North Charles Street.

ABSTRACT OF DISCUSSION

DR. MICHAEL LEO RAVITCH, Louisville, Ky.: While the gastro-intestinal tract may have some influence as a causative factor in acne, I do not believe it is a very potent one. Judging from the fact that acne usually makes its appearance about puberty, I think the gastro-intestinal tract can be ruled out as a very important or primal factor. About this period of life glandular activity is very marked; but what causes this glandular hyperactivity we do not know. I have seen many cases of acne that failed to improve under various modifications of diet, no matter how strictly they have been followed.

DR. H. H. HAZEN, Washington, D. C.: From the results of this work we are justified in deducing at least one conclusion, namely, that stasis or other abnormal conditions of the gastro-intestinal tract are not such important factors in the causation of acne vulgaris as some writers would have us believe.

DR. WALTER J. HEIMANN, New York: Dr. H. J. Schwartz and I found hyperglycemia in 60 per cent. of the seborrheas, including acne. In a very large proportion of cases of acne there are gastro-intestinal disturbances, chiefly either hyperacidity or carbohydrate fermentation. It is possible that these may be associated with the disturbed sugar metabolism. Perhaps a combination of these ideas with those outlined by Drs. Ketron and King will ultimately lead us to an understanding of the underlying cause, if not to that of the local cause, which may be the acne bacillus.

DR. LLOYD W. KETRON, Baltimore: We have no claims to put forth. We simply wish to present the facts for what they are worth. It is probable that patients with eczema or some other skin diseases may show just as high a percentage of intestinal derangements as do acne cases. Our figures show that a large percentage of these patients suffer from intestinal stasis and retention, and under these conditions we would be more apt to meet with deranged protein metabolism.

Superstition.—In some parts of France there was formerly a custom of covering a newly born infant with salt in order to conduce to longevity; the salt was allowed to remain on the infant two or three days, and then was washed off with wine and water. The academician St. Aulaire was so treated as an infant, and undoubtedly lived to be very old. Pythagoras regarded honey as conducive to long life, and, according to Plutarch, the Egyptians prescribed courses of emetics with the same object.—Saundby.

New Instruments and Suggestions

USE OF CITRATED PLASMA IN TISSUE CULTURES

PRELIMINARY REPORT*

N. CHANDLER FOOT, M.D., BOSTON

Instructor in Pathology, Harvard Medical School

The Burrows-Carrel method of cultivating tissue in coagulated plasma at body temperature¹ is already so well known that in describing a modification of it I shall merely touch on those points in the procedure which are affected thereby.

While the method gives almost perfect results in the laboratory in connection with animal experimentation, it unfortunately has its drawbacks when one wishes to apply it to work on the human subject in the hospital. In the first place, one must have a powerful centrifuge at hand, so that the blood may be centrifugalized without loss of time; otherwise it is apt to clot during the process. If the donor can come to the laboratory, this is easy; but if the blood is to be collected in a distant ward and brought to the laboratory, one often finds it clotted on removing it from the machine. The necessity of providing cracked ice or snow is often rather inconvenient, and the fact that this frequently melts almost completely during centrifugalizing makes it liable to spill into the tubes and contaminate their contents. Lastly, the necessity for paraffining and chilling all the glassware used during the preparation of the plasma is also more or less troublesome.

While one is working in a hospital it is not always easy to be on hand when a venesection is to be performed, nor is it always possible to be ready with cracked ice and paraffined glassware at such a time. On the other hand, as venesections are frequently done, or blood is obtained for Wassermann or other tests by the hospital staff, it occurred to me some time ago that it would be very easy for an intern to obtain such blood at any convenient time were it treated with some anticoagulant, such as sodium citrate, and set aside till wanted by the experimenter.

It has been shown that such blood can readily be recoagulated at will by the addition of a solution containing calcium; and modern researches on transfusion have demonstrated the tolerance of the human organism for citrated blood. The conclusion is obvious: why not use citrated plasma for cell cultures, recoagulating it on the coverslip by the addition of a calcium solution? To test out the feasibility of this idea, I began experimenting along these lines with perfectly satisfactory results, apparently in no way inferior to those obtained by the use of the original method.

The blood to be used is collected in tubes or flasks containing enough of a 0.2 or 0.3 per cent. solution of sodium citrate to make the total amount of the mixture contain one part of this to nine parts of blood. It may be drawn direct from the vein, through a cannula (preferably oiled), or into a syringe containing a sufficient quantity of the citrate solution, care being exercised to insure a thorough mixture of the blood with the citrate solution. The blood so collected is then centrifugalized for from ten to fifteen minutes in a powerful machine (the ordinary hand centrifuge is usually too slow for this work), and the resulting plasma decanted or pipetted into a flask which is then put away on ice, or in a cool place until wanted. I have always used paraffined flasks for this purpose, as the paraffin tends to prevent clotting. It will remain fluid and usable for a considerable time, a week or two at any rate.

The cultures are prepared in the usual way, a drop of the plasma being mixed on the coverslip with an equal amount of Ringer's or Locke's solution, the amount of calcium chlorid in these being increased ten times (from 0.025 to 0.25) in order to provide the excess of calcium necessary to overcome

* From the Department of Pathology, Harvard Medical School, and the Pathological Laboratory of the Peter Bent Brigham Hospital.

1. Abderhalden, E.: *Handbuch der biochemischen Arbeitsmethoden*, 1912, v, Pt. 2. Carrel, A., and Ingebrigtsen, R.: *Jour. Exper. Med.*, 1912, xv, 287.

Special Article

FOURTEENTH ANNUAL SUMMARY OF
FOURTH OF JULY INJURIES

For the fourteenth consecutive year, THE JOURNAL presents statistics of deaths and injuries resulting from the celebration of the Fourth of July. With the rapid decline in the number of casualties in the last few years, instead of relaxing its vigilance, THE JOURNAL has made extra effort to secure complete and accurate data. Blanks sent to hospitals for reports were returned with short lists or with the statement that no cases whatever were treated. Health officers, also, who formerly sent in long lists of killed

TABLE 1.—TETANUS CASES BY STATES
Comparison with Previous Years

	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	Total
Alabama....	..	..	1	..	..	..	..	..	..	..	..	..	..	1
Arizona.....	..	..	..	..	1	..	..	..	..	..	..	..	..	1
California....	2	4	4	3	1	..	2	1	2	1	..	..	..	20
Colorado.....	4	..	1	..	..	..	..	..	..	..	..	..	..	1
Connecticut..	3	..	3	..	4	1	..	..	..	..	..	..	..	1
Delaware.....	..	..	1	1	1	..	2	..	..	..	..	..	..	..
Dist. of Col.	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Florida.....	..	..	..	..	..	1	..	..	..	..	..	..	..	..
Georgia.....	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Idaho.....	1	..	..	..	..	..	1	..	..	..	..	..	..	..
Illinois.....	49	15	20	16	12	12	20	10	3	..	..	..	..	15
Indiana.....	11	6	3	8	2	..	9	6	..	1	1	..	..	4
Iowa.....	14	2	3	4	4	1	1	1	1	..	..	..	..	3
Kansas.....	11	1	..	..	2	1	6	..	..	..	1	..	..	2
Kentucky....	4	2	..	1	..	1	1	..	..	..	..	1	..	1
Louisiana....	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Maine.....	2	4	1	1	..	1	1	1	..	..	..	..	1	..
Maryland....	1	..	1	1	..	..	2	1	..	..	..	..	..	..
Mass.....	16	5	7	3	2	5	8	..	1	1	..	..	..	4
Michigan....	29	7	9	4	4	2	11	11	2	1	..	..	..	8
Minnesota...	15	2	2	2	2	..	..	..	..	..	..	1	..	2
Missouri....	29	1	3	3	1	5	8	2	..	..	..	..	..	2
Montana....	2	1	1	..	1	..	3	2	..	..	..	..	..	1
Nebraska....	4	3	3	1	..	1	3	1	..	..	..	..	..	1
New Hamp...	2	..	..	1	..	..	1	..	..	..	..	..	..	..
New Jersey..	8	9	3	10	8	10	19	9	2	..	..	1	..	..
New York...	36	9	6	8	4	9	11	7	1	..	2	..	..	..
N. Dakota...	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ohio.....	67	9	5	7	6	7	12	3	3	..	..	..	..	1
Oklahoma...	1	..	1	1	..	1	..	1	..	1	..	..	..	..
Oregon.....	2	..	..	1	1	1	..	..	..	..	..	..	..	..
Pennsylvania	82	17	12	5	7	7	10	11	1	..	..	..	..	1
Rhode Isl...	3	..	..	1	..	..	..	..	..	..	..	..	..	..
S. Carolina..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
S. Dakota...	..	..	..	..	..	1	1	..	..	..	..	..	..	..
Tennessee...	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Texas.....	..	..	..	..	2	..	..	..	..	..	..	..	..	..
Utah.....	..	1	1	..	..	..	..	1	..	..	..	..	..	..
Vermont....	3	2	..	2	2	..	..	..	..	..	..	..	..	..
Washington	2	1	..	..	2	4	4	1	..	..	..	..	..	..
W. Virginia	3	..	..	2	..	1	4	..	..	2	..	..	..	..
Wisconsin...	10	4	13	2	3	5	9	3	2	..	..	..	..	..
Wyoming...	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Total.....	417	105	104	89	73	76	150	72	18	7	4	3	1	1,7
States hav- ing cases..	30	21	23	25	23	20	25	18	10	6	3	3	1	

TAKING FOOTPRINTS WITHOUT INK

J. H. TAYLOR, Washington, D. C.

A maternity hospital in Chicago has adopted the footprint as a means of identifying its tiny charges. The Chicago hospital takes the footprint of every infant that is born or brought there before the baby is an hour old. The present way of obtaining a baby's footprint is to spread some printer's ink on a printer's roller and run it over the baby's foot; then the foot is pressed against a sheet of white paper, which leaves the impression desired. After the impression is obtained, the ink remaining on the baby's foot has to be removed by washing with absorbent cotton saturated with alcohol or benzin.

In order to obviate the use of ink, the baby's foot should be rubbed with cold cream. Then a sheet of plain white paper is pressed against the bottom of the foot so that the entire surface of the sole of the foot comes in contact with the paper. After this is done powdered charcoal is spread with a camel's hair brush over the surface of the paper touched by the baby's foot, which will bring the latent impression out as plain as if taken in the old way with ink. By this process the same result is obtained and the infant's foot is not even soiled. The impression obtained, if placed in an envelope, will keep until the time when the mother and infant are ready to leave the hospital. An impression made by using powdered charcoal takes less time than by the use of printer's ink. This method could also be used to determine the degree of flatness of a person's foot.

516 Navy Building.

Liver Pills.—Liver pills (they do not act on the liver) are usually distinctly harmful in the conditions for which they are usually taken, sluggish bowels. *Once a liver pill taker, always a liver pill taker, is the rule.* A condition which often can be readily corrected by proper diet and exercise is thus rendered chronic and sometimes almost incurable by remedies advertised to relieve it.—*Health Letter*, Life Extension Institute.

and injured, likewise had no names to report. C many of the blanks was written the significant statement: "We had a safe and sane Fourth." The data are presented in the same manner as heretofore, and each table the comparison shows the remarkable decrease during the last few years in the number deaths and injuries from the use of fireworks.

FIRST YEAR WITHOUT A LOCKJAW VICTIM

This is the first year in which not a single case of lockjaw was reported. A few cases were reported, in which it was feared tetanus would result, but the prompt use of antitoxin as a prophylactic doubtless prevented it.

TETANUS CASES OF PREVIOUS YEARS BY STATES

The various tables are printed again to show the totals for the fourteen years. Table 1 shows the cases reported in all previous years since 1903 and the totals. Although Pennsylvania had the largest numbers in 1903 and 1904, thereafter until 1910 Illinois reported the largest numbers. In fact, Illinois had the largest number of tetanus cases in the thirteen years, having reported 157 cases, followed closely by Pennsylvania, with 152. Ohio reported 119; New York,

TABLE 2.—RATIO OF TETANUS CASES TO BLANK CARTRIDGE INJURIES

Year	Tetanus Cases	Blank Cartridge Injuries	Ratio
1903.....	417	1,672	1: 4.01
1904.....	105	905	1: 8.62
1905.....	104	809	1: 7.78
1906.....	89	979	1: 11.00
1907.....	73	606	1: 8.16
1908.....	76	874	1: 11.50
1909.....	150	1,225	1: 8.17
1910.....	72	450	1: 6.25
1911.....	18	185	1: 10.28
1912.....	7	77	1: 11.00
1913.....	4	101	1: 25.25
1914.....	3	124	1: 41.33
1915.....	1	295	1:295.0
Totals.....	1,119	8,487	1: 7.58

Michigan, 80; New Jersey, 79; Missouri, 52; Wisconsin, 51, and Massachusetts, 48. Altogether, in the thirteen years, 1,119 tetanus cases were reported due to injuries resulting from the use of fireworks celebrating the Fourth of July, and of this number, 11 patients died.

BLANK CARTRIDGE WOUNDS AND TETANUS

The proportion of blank cartridge injuries to the cases of lockjaw reported during the thirteen years is given in Table 2. The two years in which the largest numbers of lockjaw cases were reported were

TABLE 3.—CAUSES OF TETANUS CASES

Year	Blank Cartridge	Giant Cracker	Can-non	Fire-arms	Powder, etc.	Total
1903.....	363	17	5	3	29	417
1904.....	74	18	5	1	7	105
1905.....	65	17	4	5	13	104
1906.....	54	17	1	7	10	89
1907.....	52	8	6	4	3	73
1908.....	58	5	4	3	6	76
1909.....	130	9	1	4	6	150
1910.....	64	2	..	5	1	72
1911.....	15	1	1	..	1	18
1912.....	7	..	..	..	..	7
1913.....	4	..	..	..	..	4
1914.....	2	..	..	1	..	3
1915.....	1	..	..	..	..	1
Totals.....	889	94	27	33	76	1,119

1903 and 1909, when also the two largest numbers of blank cartridge wounds were reported. In 1903 the case of lockjaw resulted from every four blank cartridge injuries, and in 1909, one case from every eight injuries. The proportion of cases to blank cartridge injuries in the entire thirteen years was 1 to every 7½ blank cartridge injuries. The one case in 1915 was due to this cause, although there were 295 blank cartridge wounds. The decreasing proportion of tetanus cases to such injuries in the last three or four

years was doubtless due to the more general and prompt use of antitoxin in such injuries.

CAUSES OF LOCKJAW CASES

The causes of all tetanus cases during the thirteen years are shown in Table 3. Of the 1,119 cases of

TABLE 4.—CASES OF TETANUS FROM OTHER CAUSES

	1908	1909	1910	1911	1912	1913	1914	1915	1916
Alabama.....	..	..	1	1	..	..	..	..	..
Arizona.....	..	..	..	..	..	1	..	..	..
Arkansas.....	2	..	..	..	..	..	..	..	..
California.....	4	4	1	2	7	10	..	1	2
Colorado.....	3	..	..	1	..	..	..	..	..
Connecticut.....	2	2	..	..	..	..	..	..	..
Delaware.....	2	1	..	..	..	..	..	..	..
Dist. of Columbia..	..	..	..	..	..	..	..	..	..
Florida.....	2	..	..	..	..	..	..	..	..
Georgia.....	..	1	..	..	..	..	..	1	..
Idaho.....	..	..	..	..	..	..	..	..	..
Illinois.....	17	18	7	6	10	7	..	..	..
Indiana.....	6	4	1	2	1	3	1	1	2
Iowa.....	2	7	3	1	..	2	1	..	1
Kansas.....	4	..	1	..	..	..	..	..	..
Kentucky.....	5	5	..	1	2	..	3	1	..
Louisiana.....	1	..	..	1	3	3	..	..	1
Maine.....	..	..	..	..	..	..	..	..	..
Maryland.....	3	..	2	1	1	..	..	..	..
Massachusetts.....	3	5	..	..	..	..	..	..	..
Michigan.....	4	5	1	..	..	..	1	..	..
Minnesota.....	4	2	..	..	..	..	..	..	..
Mississippi.....	..	..	..	..	..	..	..	..	..
Missouri.....	12	5	1	2	3	..	..	3	..
Montana.....	..	..	..	..	..	..	..	..	..
Nebraska.....	..	3	1	1	1	..	..	..	..
Nevada.....	..	..	..	..	..	..	..	..	..
New Hampshire.....	..	..	..	..	..	..	..	..	..
New Jersey.....	7	8	8	1	..	..	3	..	..
New Mexico.....	..	1	..	..	..	..	..	..	..
New York.....	17	12	4	2	4	..	2	..	1
North Carolina.....	1	..	..	..	..	1	..	..	..
North Dakota.....	1	..	..	..	..	..	..	..	..
Ohio.....	23	13	2	..	2	1	3	..	..
Oklahoma.....	..	..	..	..	..	..	..	..	..
Oregon.....	..	1	3	..	2	..	..	..	..
Pennsylvania.....	21	21	8	6	4	1	2	2	1
Rhode Island.....	..	1	..	..	..	..	..	..	..
South Carolina.....	..	..	..	..	..	..	..	..	..
South Dakota.....	2	2	..	..	..	..	..	..	..
Tennessee.....	3	..	..	..	1	1	..	..	..
Texas.....	4	1	1	..	..	..	..	..	..
Utah.....	..	..	..	..	..	..	..	..	..
Vermont.....	..	..	1	..	..	..	..	..	..
Virginia.....	4	1	..	1	2	1	..	..	..
Washington.....	2	..	..	..	1	..	..	..	..
West Virginia.....	..	1	..	..	..	..	..	..	..
Wisconsin.....	5	4	1	..	..	1	..	1	2
Wyoming.....	..	..	..	..	..	..	..	..	..
Totals.....	166	128	47	29	44	32	16	10	10
States reporting cases.....	20	25	18	15	15	12	8	7	7

TABLE 5.—CAUSES OF DEATHS NOT DUE TO TETANUS

Year	Gun-shot	Fire from Fire-works	Powder, Tor-pedoes, etc.	Giant Crack-ers	Can-non	Other Causes	Total
1905.....	37	23	6	5	7	17	95
1906.....	38	18	18	3	3	3	83
1907.....	20	31	13	13	3	22	102
1908.....	30	22	19	23	7	7	103
1909.....	17	37	16	7	7	6	90
1910.....	19	26	11	2	3	3	64
1911.....	11	12	9	2	5	8	47
1912.....	9	8	7	2	2	7	35
1913.....	8	13	6	..	1	1	29
1914.....	5	16	6	1	4	5	27
1915.....	5	11	5	..	6	2	29
1916.....	9	10	3	1	4	3	30
Totals.....	208	227	119	59	52	84	749

In the summaries for 1903 and 1904 there were, respectively, 60 and 92 deaths from fireworks exclusive of tetanus. The causes of the injuries were not given. With these included the total deaths in the fourteen years aside from tetanus were 901.

lockjaw from Fourth of July injuries reported for the thirteen years, 889 (79.4 per cent.) were caused by wounds from blank cartridges; 94 (8.4 per cent.) from giant crackers; 76 (6.9 per cent.) from powder

and explosives; 33 (2.9 per cent.) from firearms, and 27 (2.4 per cent.) from toy cannons. In other words, over three times as many lockjaw cases were due to blank cartridge injuries as to all other injuries put together.

TETANUS CASES NOT DUE TO FIREWORKS

Tetanus cases reported during the Fourth of July season but which were due to other causes, such as crushing injuries or penetrating wounds from splinters, nails, etc., are shown in Table 4. The number of such cases is likewise decreasing each year, owing probably to more care being taken in the treatment

of penetrating wounds as well as to the prophylactic use of antitoxin. No case from fireworks was reported.

OTHER DEATHS AND INJURIES FROM FIREWORKS

There were thirty deaths directly due to fireworks. The causes of deaths, other than from tetanus, are shown in Table 5, in comparison with the number due to similar causes in previous years. Of these ten persons were burned to death by fire from fireworks, nine were from gunshot wounds, four from explosions of toy cannons, three from explosions of powder, three from bloodpoisoning following mo

TABLE 6.—SUMMARY BY STATES OF FOURTH OF JULY CASUALTIES

Marginal Number	States	Deaths			Injuries				Total Persons Dead or Injured	Causes of Tetanus Cases		Causes of all Cases Aside from Tetanus Cases				
		From Tetanus	From Other Causes	Total	Loss of Sight	Loss of One Eye	Loss of Legs, Arms or Hands	Loss of Fingers, One or More		Blank Cartridge	All Other Causes	Blank Cartridge	Firecracker	Cannon	Firearms	Powder and Fireworks
1	Alabama.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
2	Arizona.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
3	Arkansas.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
4	California.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5	Colorado.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
6	Connecticut.....	.....	3	3	.....	.....	1	4	70	75	78	42	7	5	12	12
7	Delaware.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
8	District of Columbia.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
9	Florida.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
10	Georgia.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
11	Idaho.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
12	Illinois.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13	Indiana.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
14	Iowa.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
15	Kansas.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
16	Kentucky.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
17	Louisiana.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
18	Maine.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
19	Maryland.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
20	Massachusetts.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
21	Michigan.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
22	Minnesota.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
23	Mississippi.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
24	Missouri.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
25	Montana.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
26	Nebraska.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
27	Nevada.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
28	New Hampshire.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
29	New Jersey.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
30	New Mexico.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
31	New York.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
32	North Carolina.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
33	North Dakota.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
34	Ohio.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
35	Oklahoma.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
36	Oregon.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
37	Pennsylvania.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
38	Rhode Island.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
39	South Carolina.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
40	South Dakota.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
41	Tennessee.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
42	Texas.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
43	Utah.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
44	Vermont.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
45	Virginia.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
46	Washington.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
47	West Virginia.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
48	Wisconsin.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
49	Wyoming.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
50	1916 totals.....	.....	30	30	.....	10	9	24	777	820	850	.....	.....	185	222	241
51	1915 totals.....	.....	29	29	.....	11	5	38	1,080	1,135	1,165	.....	.....	294	227	450
52	1914 totals.....	.....	37	40	.....	13	16	67	1,367	1,466	1,506	.....	.....	122	402	605
53	1913 totals.....	.....	29	32	.....	22	10	46	1,051	1,131	1,163	.....	.....	97	312	519
54	1912 totals.....	.....	35	41	.....	8	21	43	862	947	988	.....	.....	70	362	317
55	1911 totals.....	.....	47	57	.....	26	30	83	1,399	1,546	1,603	.....	.....	170	484	633
56	1910 totals.....	.....	64	131	.....	33	26	114	2,612	2,792	2,923	.....	.....	386	1,050	974
57	1909 totals.....	.....	90	215	.....	36	41	176	4,823	5,092	5,307	.....	.....	816	1,793	1,680
58	1908 totals.....	.....	108	163	.....	93	57	184	5,115	5,460	5,623	.....	.....	816	1,793	2,058
59	1907 totals.....	.....	102	164	.....	75	57	237	3,868	4,249	4,413	.....	.....	554	1,489	1,528
60	1906 totals.....	.....	83	158	.....	72	56	227	4,931	5,308	5,466	.....	.....	925	1,690	1,822
61	1905 totals.....	.....	95	182	.....	106	80	221	4,562	4,994	5,176	.....	.....	744	1,775	1,675
62	1904 totals.....	.....	92	183	.....	61	61	208	3,637	3,986	4,169	.....	.....	831	1,268	1,057
63	1903 totals.....	.....	60	466	.....	75	54	174	3,670	3,983	4,449	.....	.....	397	236	363
	Totals for 14 years.....	991	901	1892	144	654	515	1842	39,754	42,909	44,801	889	199	7,598	13,840	14,522

* Kind of fireworks causing six tetanus cases unknown.

† Kind of fireworks causing twenty-four cases of tetanus unknown.

or less minor injuries from fireworks, and one was killed by a mammoth firecracker. The total shows an increase of one more than last year and one more than in 1913. It is lower than the totals in all other years. The most serious fact presented this year is that ten persons, mostly little girls or small children, were burned to death by fire from fireworks, most cases being caused by the supposedly "harmless" varieties.

Of the 749 deaths from Fourth of July injuries, other than from tetanus, in the twelve years, 227, the largest number, were burned to death; 208, the next largest number, were killed by firearms; 119 by explosives; 59 and 52, respectively, by giant crackers and toy cannons, and 84 persons by various forms of fireworks, some of these injuries having been complicated by bloodpoisoning. Altogether, in the fourteen years, 901 persons died from injuries not complicated by tetanus. Including the 991 deaths from tetanus gives a total of 1,892 persons who died, through a silly and destructive method of celebrating the Fourth of July.

DISTRIBUTION OF INJURIES

In Table 6 a summary of all injuries, including tetanus, and of all causes, is given arranged by states. Beneath the totals at the bottom, for comparison, the totals for the thirteen previous years are given and the grand totals for the fourteen years. The number of casualties this year was 850, the lowest number

since the publication of these statistics was begun. It is a decrease of 315 below 1915, and a decrease of 656 below 1914.

NATURE OF NONFATAL INJURIES

There were 820 nonfatal injuries this year, or 315 less than last year, and 646 less than in 1914. Not a single person was totally blinded this year, whereas ten lost one eye each, nine lost legs, arms or hands, and twenty-four lost one or more fingers. The totals of these more severe injuries have markedly decreased during the last few years, the totals this year being the smallest reported during the fourteen years. This year 222 injuries were due to the giant firecracker, which holds the second place in causing nonfatal injuries, but continues to hold the first place as a cause of lacerated wounds. It was responsible for most of the losses of eyes, hands and fingers, but this year caused no deaths. Firearms caused 118 injuries, including nine deaths. As usual, many of these injuries were due to stray bullets from the reckless use of firearms by other persons. The use of cannons, including many of the improvised variety, resulted in eighty-four injuries this year, including four killed. In the thirteen years, a total of 44,801 persons were killed or injured in the celebration of the Fourth of July.

INJURIES BY STATES FOR FOURTEEN YEARS

Table 7 gives for comparison the total injuries by states for the fourteen years. This year Pennsylvania

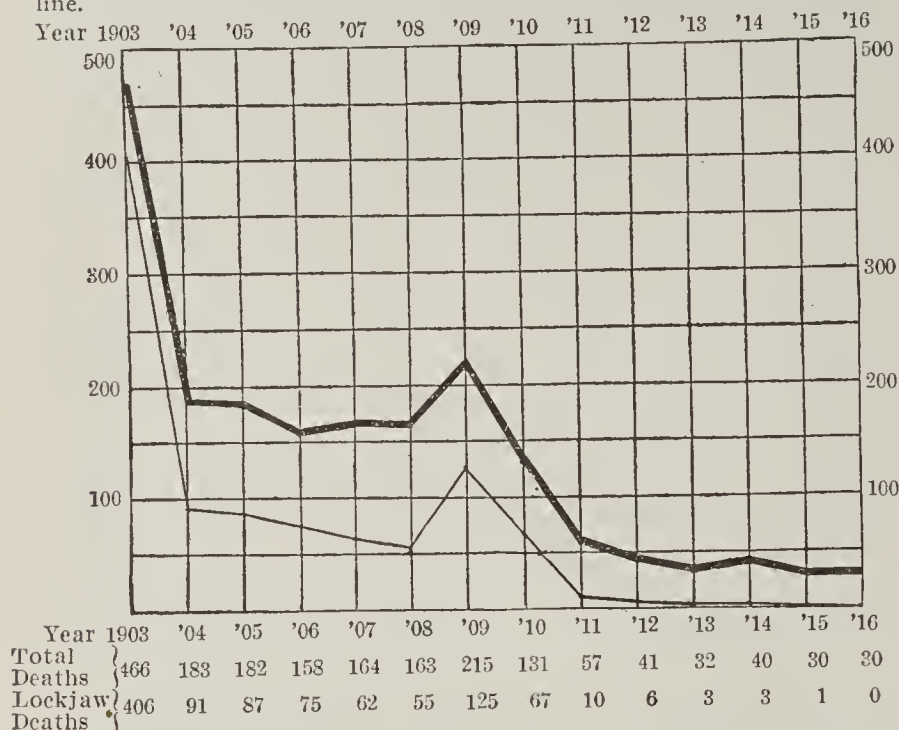
TABLE 7.—TOTAL DEATHS AND ACCIDENTS BY STATES DURING FOURTEEN YEARS

	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	Totals
Alabama.....	2	7	1	2	1	1	1	3	3	....	1	....	1	....	23
Arizona.....	1	....	4	5	2	5	3	....	2	2	....	2	2	....	28
Arkansas.....	....	....	3	4	....	5	1	4	1	1	....	....	....	1	20
California.....	100	138	142	96	121	136	89	63	43	31	22	24	40	34	1,079
Colorado.....	39	44	26	23	25	13	18	19	6	21	1	3	3	2	243
Connecticut.....	162	133	132	169	63	105	86	78	15	30	50	77	49	78	1,227
Delaware.....	1	5	14	8	16	12	13	8	3	6	6	8	1	2	103
Distriet of Columbia.....	2	10	24	5	12	21	....	....	....	2	1	1	1	....	79
Florida.....	1	2	2	....	....	....	1	4	....	....	....	....	....	1	11
Georgia.....	....	....	....	4	2	4	....	5	10	28	....	4	....	....	57
Idaho.....	4	4	3	3	4	4	2	3	1	2	....	1	2	....	34
Illinois.....	366	423	542	598	468	558	547	285	218	39	47	95	54	23	4,263
Indiana.....	160	211	217	250	....	255	164	167	53	43	12	62	29	4	1,627
Iowa.....	168	137	328	255	231	174	91	141	54	24	22	27	21	11	1,684
Kansas.....	63	88	56	61	64	72	86	50	25	8	5	7	2	3	590
Kentucky.....	30	72	17	21	18	33	17	26	6	5	2	11	5	6	269
Louisiana.....	....	2	3	7	8	4	....	4	2	2	4	4	1	7	48
Maine.....	31	32	29	15	11	16	22	7	4	....	6	6	9	....	188
Maryland.....	21	22	13	10	23	21	10	8	13	11	15	10	23	15	215
Massachusetts.....	637	193	467	329	168	430	430	63	27	45	42	87	73	72	8,063
Michigan.....	144	157	288	193	163	203	177	143	69	50	21	72	31	22	1,733
Minnesota.....	157	101	174	95	95	65	69	64	17	17	6	12	18	4	894
Mississippi.....	....	....	....	2	2	1	....	....	1	1	....	....	....	....	7
Missouri.....	147	84	218	325	299	375	352	112	60	57	83	53	48	42	2,255
Montana.....	5	17	40	3	6	11	9	10	....	6	....	1	2	1	111
Nebraska.....	46	63	43	47	58	46	42	36	17	12	17	10	3	8	448
Nevada.....	....	1	2	....	1	4	....	1	....	....	....	....	2	....	11
New Hampshire.....	37	23	9	29	13	13	23	10	2	3	3	15	4	2	186
New Jersey.....	228	204	350	398	402	472	488	167	43	16	21	55	36	29	2,909
New Mexico.....	....	4	5	1	6	....	1	3	....	....	3	....	3	....	26
New York.....	522	549	566	681	752	647	897	327	237	115	144	250	332	171	6,190
North Carolina.....	....	....	1	1	....	....	....	1	5	....	....	....	....	....	8
North Dakota.....	10	8	29	11	8	13	4	13	1	2	....	....	....	....	99
Ohio.....	443	327	329	490	375	543	323	166	105	55	70	45	13	22	3,306
Oklahoma.....	0	3	7	14	194	9	12	11	9	11	1	4	1	1	277
Oregon.....	16	13	9	11	5	9	21	19	3	5	4	5	5	5	130
Pennsylvania.....	533	744	721	969	491	987	986	623	442	265	491	487	299	217	8,255
Rhode Island.....	64	30	11	21	39	39	42	19	11	2	21	25	5	12	341
South Carolina.....	....	....	....	1	....	....	4	....	1	....	....	....	....	....	6
South Dakota.....	4	10	15	5	8	10	9	4	2	....	....	....	....	....	72
Tennessee.....	4	1	5	6	4	5	4	10	3	12	3	1	4	....	58
Texas.....	2	2	4	11	7	11	4	2	....	3	2	....	....	....	48
Utah.....	23	22	25	18	30	12	18	8	2	1	1	....	2	2	165
Vermont.....	45	14	10	14	18	19	12	4	4	1	....	3	....	4	148
Virginia.....	....	11	5	8	....	5	4	....	3	1	....	5	....	1	43
Washington.....	21	25	15	25	23	38	32	37	22	12	13	5	6	12	286
West Virginia.....	19	16	34	64	27	29	35	20	2	2	3	8	13	14	286
Wisconsin.....	190	215	230	155	150	187	157	171	52	38	16	23	22	21	1,627
Wyoming.....	1	2	8	3	....	1	1	4	4	1	....	....	....	....	25
Totals.....	4,449	4,169	5,176	5,466	4,413	5,623	5,307	2,923	1,603	988	1,163	1,506	1,165	850	44,801

returns to first place with 217 injuries, temporarily taken away last year by New York. From the beginning Pennsylvania has had the darkest record. During the fourteen years there were 8,255 persons (over eight regiments) injured by fireworks, or over 2,000 more than in New York, which had 6,190 injured—

CHART 1.—TOTAL DEATHS FROM FIREWORKS

The heavy line shows the annual fluctuation in the total number of deaths since 1903. The deaths from lockjaw are indicated by the light line.



the next darkest record; Illinois came third with 4,263, followed by Ohio with 3,306, Massachusetts with 3,063, New Jersey with 2,909, and Missouri with 2,255. Thirteen states each had over 1,000 persons injured, the total for these thirteen states alone being over 40,000, all the rest of the country having only approximately 5,000 injured. Altogether, in the fourteen years, 44,801 persons were injured, thousands of whom were maimed for life in the old senseless form of celebration.

TOTALS IN CHIEF CITIES

Table 8 shows the number reported killed and injured in the eighty-four largest cities each year, and the totals for the past ten years. The cities are arranged according to their population as given by the United States census in 1910. Philadelphia, which has been constantly in the lead since 1909, this year shunts the darkest record over to New York, which had one killed and seventy-nine injured. Philadelphia had one killed and seventy-three injured. Note that last year these cities, respectively, had 272 and 280 persons injured.

WHERE THE RESPONSIBILITY RESTS

As has been repeatedly stated in these reports, for the great majority of Fourth of July injuries, the responsibility clearly rests with city governments, since the employment of death-dealing methods of celebration is subject to their regulation. The city authorities, therefore, who fail to do their duty must be held personally responsible for the maiming and the burning to death of little children from fireworks.

Rigidly enforced prohibitive ordinances in forty-three of our largest cities would practically remove this national disgrace.

PROGRESS IN FOURTEEN YEARS

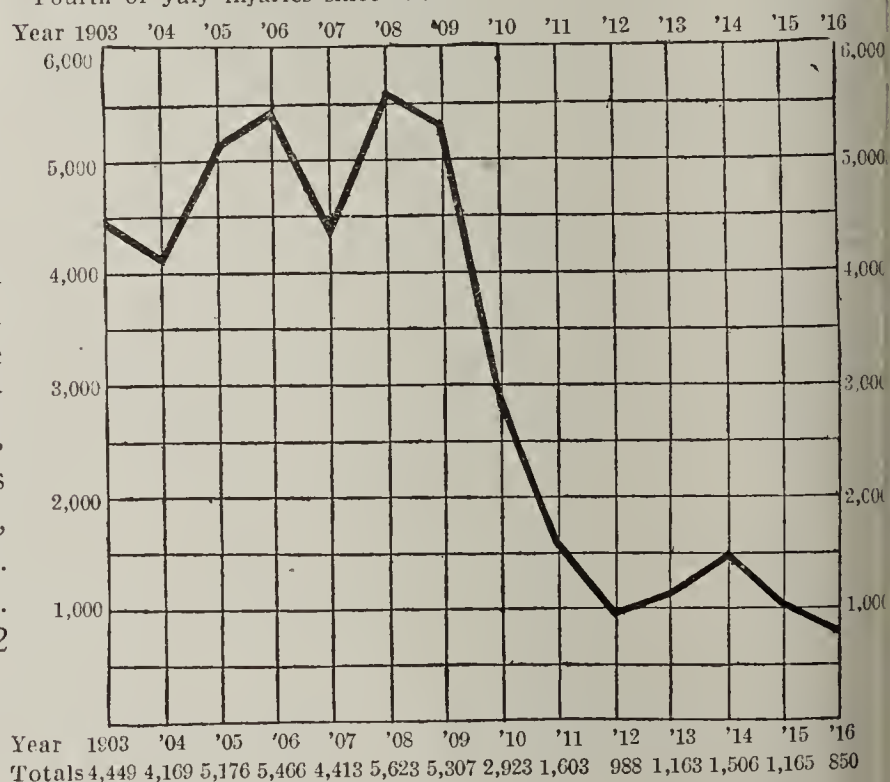
The results of publishing these statistics for fourteen years are graphically shown in the two accompanying charts. Chart 1 shows the reductions in the numbers killed. The heavy line indicates the numbers killed each year from all causes; the light line shows the numbers of deaths each year from lockjaw. Chart 2 shows the totals of those killed and injured for the fourteen years. Note that in spite of the publication annually of the awful results of the celebration, the totals continued gradually to increase until 1908, and that the remarkable decrease began in 1909.

THE SPREAD OF THE CAMPAIGN

In 1908 another table (Table 8) was added to THE JOURNAL's statistics, in which the numbers killed and injured in each of the eighty-four largest cities were shown. It was also pointed out—a fact—that the responsibility for these casualties clearly rested with city governments. When the 1908 report was published, reprints were circulated far and wide among newspapers and other publications. The result was most remarkable. Since that time not only did the press of the country generally take up the cause, but also local, state and national organizations and societies became interested. They not only argued against the use of fireworks, but, more important,

CHART 2.—TOTAL CASUALTIES FROM FIREWORKS

The dark line shows the annual fluctuation in the total number of Fourth of July injuries since 1903.



also provided more rational and patriotic means of celebration. Vigorous action was taken by city councils, and each year the ordinances are growing more prohibitive. All these forces have made most liberal use of THE JOURNAL's statistics, even though the source has not always been mentioned. The number of deaths has been reduced from 215 to thirty; the

deaths from lockjaw from 125 to none, and the totals of deaths and injuries from 5,460 to 850.

The matter is now well in hand, and the annual returns are comparatively insignificant. Nevertheless,

850 casualties and thirty deaths are too heavy a price to pay for a continuance of the old-time and out-of-date form of celebration. It is time that the more modern "safe and sane" methods should prevail.

TABLE 8.—NUMBER REPORTED KILLED AND INJURED IN THE LARGER CITIES DURING TEN YEARS

Marginal No.	City	1907		1908		1909		1910		1911		1912		1913		1914		1915		1916		Totals		Marginal No.	
		Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured		
1	New York City.....	22	422	11	316	7	559	6	179	3	91	1	58	..	65	1	94	..	272	1	79	52	2,135	1	
2	Chicago.....	16	151	12	202	..	118	4	62	2	53	2	12	1	12	3	18	5	3	1	8	46	639	2	
3	Philadelphia.....	7	248	6	426	9	508	4	405	..	294	2	127	3	340	4	237	1	280	1	73	37	2,938	3	
4	St. Louis.....	3	189	4	229	4	163	..	44	..	38	..	48	..	72	1	43	..	47	..	37	12	910	4	
5	Boston.....	3	59	6	190	5	167	..	35	..	3	..	16	1	15	..	13	..	27	..	21	15	546	5	
6	Cleveland.....	3	63	12	93	..	4	..	1	..	5	..	1	..	4	..	1	..	..	..	1	15	173	6
7	Baltimore.....	..	5	1	10	..	5	..	6	..	10	..	10	1	12	..	6	..	19	..	12	2	95	7	
8	Pittsburgh.....	10	88	..	30	5	48	6	26	1	25	1	14	1	46	1	11	..	8	..	17	25	313	8	
9	Detroit.....	2	46	..	10	2	46	1	17	..	18	2	20	1	3	..	43	..	6	2	14	10	223	9	
10	Buffalo.....	..	18	3	11	..	33	1	13	..	16	..	6	..	16	2	9	..	1	..	7	6	130	10	
11	San Francisco.....	..	..	..	11	..	12	..	9	1	8	..	7	..	9	..	4	..	5	..	9	1	74	11
12	Milwaukee.....	2	93	..	70	..	78	3	112	1	19	..	24	..	10	..	8	..	9	..	14	6	437	12	
13	Cincinnati.....	2	89	1	112	3	86	3	49	1	4	..	21	..	26	1	4	2	1	..	4	13	396	13	
14	Newark, N. J.	1	129	2	81	1	150	1	15	..	..	..	..	..	..	2	1	1	..	..	..	6	378	14
15	New Orleans.....	..	8	..	4	..	..	..	3	..	2	..	2	..	3	..	4	..	..	..	7	..	33	15
16	Washington, D. C. .	..	12	..	21	..	..	..	..	..	..	..	2	..	1	..	1	..	..	..	..	..	38	16
17	Los Angeles, Calif. .	..	35	..	40	..	26	..	..	..	4	..	5	..	6	..	1	..	7	..	7	..	131	17
18	Minneapolis, Minn. .	..	13	..	10	1	24	..	20	..	..	..	..	..	2	..	1	..	1	..	..	1	71	18
19	Jersey City, N. J. .	..	31	5	34	1	14	1	44	..	14	..	3	..	..	..	2	..	3	..	3	7	148	19
20	Kansas City, Mo.....	1	46	..	55	4	67	1	25	..	4	..	1	..	..	..	1	..	..	..	..	..	198	20
21	Seattle, Wash.	1	3	..	1	3	10	..	7	..	..	..	2	..	2	..	1	..	..	..	..	4	26	21
22	Indianapolis, Ind.	1	31	1	14	1	35	..	24	..	5	..	6	..	1	..	11	..	10	..	..	3	137	22
23	Providence, R. I. ....	..	20	1	21	..	13	..	10	1	9	..	..	2	17	..	7	..	1	..	3	4	101	23
24	Louisville, Ky. ....	..	13	..	10	1	10	1	13	..	3	..	2	..	2	..	8	..	3	..	..	2	64	24
25	Rochester, N. Y. ....	..	12	..	10	..	5	..	10	..	4	..	2	..	4	..	8	..	..	..	6	..	61	25
26	St. Paul, Minn. ....	..	20	..	13	..	18	..	12	..	10	..	7	..	2	..	4	..	4	..	3	..	93	26
27	Denver, Colo. ....	..	8	..	13	..	12	1	6	..	2	..	7	..	1	..	1	..	..	..	..	1	50	27
28	Portland, Ore. ....	..	2	..	3	..	16	..	13	..	1	..	2	..	..	..	..	..	..	1	2	1	39	28
29	Columbus, Ohio.....	5	36	..	5	1	19	..	..	..	1	..	1	..	2	..	..	..	..	1	..	6	65	29
30	Toledo, Ohio.....	1	5	..	8	2	3	1	2	..	2	1	1	..	7	..	..	..	1	..	..	6	29	30
31	Atlanta, Ga.	1	4	..	3	..	..	..	5	..	10	..	28	..	4	..	..	..	..	1	1	6	54	31
32	Oakland, Calif. ....	..	9	..	..	..	8	..	9	..	1	..	2	..	..	..	..	..	2	..	1	..	32	32
33	Worcester, Mass.	1	6	2	20	1	42	..	6	..	1	..	1	..	14	..	3	..	13	2	13	6	128	33	
34	Syracuse, N. Y. ....	..	20	..	14	..	13	..	6	..	1	..	4	..	15	..	6	..	..	..	10	..	89	34
35	New Haven, Conn. ....	..	2	..	..	..	15	..	..	..	1	..	6	..	10	..	11	..	..	..	1	..	46	35
36	Birmingham, Ala. ....	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	3	36
37	Memphis, Tenn. ....	..	1	..	3	..	4	..	2	..	..	..	2	..	1	..	..	..	..	..	..	..	13	37
38	Seranton, Pa. ....	..	5	1	17	1	29	..	6	..	10	..	..	..	9	1	15	..	4	..	9	3	104	38
39	Richmond, Va.	1	1	4	1	5	39	39
40	Paterson, N. J.	1	29	2	31	1	45	1	14	..	5	..	2	..	4	..	..	..	..	..	1	5	131	40
41	Omaha, Neb. ....	..	25	..	10	1	17	..	17	..	7	1	2	..	16	..	6	..	1	..	4	2	105	41
42	Fall River, Mass. ....	..	..	..	12	..	19	..	1	..	..	..	1	..	..	..	1	..	..	..	..	..	37	43
43	Dayton, Ohio.....	..	11	..	14	..	4	..	2	..	4	..	9	..	13	..	2	..	8	1	..	3	108	44	
44	Grand Rapids, Mich. .	..	20	1	30	..	3	..	17	1	6	..	10	..	2	..	..	..	..	..	..	..	24	45
45	Nashville, Tenn. ....	..	2	..	..	..	..	..	8	..	2	1	..	..	..	..	..	..	..	1	..	3	44	46
46	Lowell, Mass. ....	..	23	..	..	..	18	..	..	1	3	..	..	..	..	..	4	..	2	..	2	..	29	47
47	Cambridge, Mass. ....	..	..	..	17	..	..	..	..	..	4	..	4	..	8	..	2	..	4	..	2	..	27	48
48	Spokane, Wash. ....	..	..	..	..	..	..	..	..	7	..	..	1	..	3	..	23	..	2	1	12	1	98	49
49	Bridgeport, Conn. ....	..	1	..	27	..	21	..	4	..	4	..	..	..	4	..	1	..	3	..	..	2	116	50
50	Albany, N. Y.	1	24	..	37	..	31	..	11	1	5	..	9	..	27	..	3	..	27	..	33	..	161	51	
51	Hartford, Conn.	18	..	18	..	11	..	14	..	1	1	..	1	1	2	117		

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SATURDAY, AUGUST 26, 1916

FOOD ECONOMICS

The great European conflict has focused attention on problems of food supply and nutrition in ways which would long have remained unconsidered during the less critical conditions of peace. The impending necessity of complete self-sufficiency in matters of food supply early compelled Germany to give serious consideration to the situation and to take an inventory of the national food reserves. But this was not all. It led to a serious scientific study of the requirements of a nation in order that the attempts to meet them might be undertaken on a rational basis. With the minimum needs clearly ascertained, the distribution of food could be marshaled so as to prevent distress and promote physiologic efficiency. This was the significance of the Eltzbacher¹ monograph, compiled by Germany's foremost students of nutrition, including Zuntz, Rubner, Oppenheimer and Lehmann. The problem of feeding a nation was not left solely to the statistical compilations of economists. A strong team of physiologic experts was engaged, and their advice was of the greatest help in the hour of national exigency. Countries in which highly educated men are slightly esteemed, Lusk writes, would have passed over such advice, "consigning it to the newspaper dunghill of 'highbrow' information, and starved to death in consequence."²

There are some lessons from the newly acquired European data which are worth reciting in our own country. The estimated actual annual food requirements of 68,000,000 people in Germany are placed at over 56,000,000,000 calories, including 1,605 thousand metric tons of protein.³ The lowest wholesale cost of such a yearly food supply is stupendous, reaching figures aggregating billions of dollars. It is not difficult, with the statistics now available, to convert some of these estimates into figures applicable to American conditions. Assuming a monthly expenditure of \$25

per family of five persons — surely a conservative estimate for these days, even among persons of very limited earnings — if the 100,000,000 inhabitants of the United States lived as the typical poor man's family just cited lived, the cost of food would aggregate \$6,000,000,000 a year. Furthermore, the expenditure reckoned on the basis of a more liberal allowance for food of greater variety and quality would be far larger. Gephart, of the Russell Sage Institute of Pathology, New York, has ascertained the cost of food in a large boarding school in this country to average 13.8 cents a thousand calories. Such a dietary, if taken by the inhabitants of the United States, would cost twice what the other allowance totals.

A family of five, consisting of two adults and three children, may reasonably be assumed to require between 11,000 and 12,000 calories of food a day. About half of this may be made up of the staples bread, butter, milk and sugar. In the retail stores of the poorer districts in our large cities this portion of the allowance, say 6,000 calories, can be purchased for 40 cents, at an average cost of somewhat more than 6 cents a thousand calories, instead of nearly 14 cents the average cost for the school quoted above. If \$2 is spent each month for food, 80 cents a day are available, or only about 7 cents for a thousand calories. With such narrow margins between food costs and available income among the less well-to-do classes, not to say the poorest classes, how helpful it would be to promote the information that fundamentally good nutrition can be obtained at a reasonable cost in the form of the staples referred to, so that the expenditures for meats and the less common food products could be acquired in accord with incomes, and essentials omitted without sacrifice of health.

The annual consumption of sucrose has reached 85.4 pounds per capita in the United States, a quantity equivalent to 2,000 calories daily for a family of five. Lusk remarks that this quantity of sugar costs the nation a million and a half dollars daily, and the rich harvest to be reaped by the substitution, for only part of this, of saccharin, which has no food fuel value whatever, is obvious. Recalling the billions annually spent for food in the United States, Lusk illuminatingly adds that to any man of large affairs the maintenance at Boston of the Nutrition Laboratory of the Carnegie Institution of Washington, with its budget of \$60,000 per annum, appeals impressively to the imagination; yet this work is accomplished at an annual expense of a thousandth of 1 per cent. of what the American people would pay for food if each family of five had an income of \$720 per annum. Is it not a little sad, he asks, to think that the expenditure of thousands of millions of dollars annually for food, an expenditure amounting frequently to more than half the income of the poor man, should take place without any real idea as to the nature of foods?

1. Eltzbacher, P.: Die Deutsche Volksernährung, Brunswick, 1914.

2. Lusk, Graham: Food Economics, Jour. Washington Acad. Sc., 1916, vi, 387.

3. These and many other statistical facts here referred to are taken from the summary by Lusk in an address delivered before the Washington Academy of Sciences, April 14, 1916 (Jour. Washington Acad. Sc., June 19, 1916).

THE PASTEURIZATION OF MILK

The recent outbreak, in an Eastern city, of an epidemic of infectious sore throat, directly traceable to a single milk supply, has again brought up the question of the pasteurization of milk offered for public sale. A prominent New York daily newspaper repeats in its editorial columns the often reiterated advice, "Drink no raw milk"; the state board of health, in whose jurisdiction the epidemic occurred, is scored because it does not profit by experience and enact an ordinance permanently enforcing pasteurization of all milk sold in that state, inasmuch as the impossibility of protection by dairy inspection alone is established.

This sort of publicity directs attention anew to the claims of the advocates of pasteurization. The bacteriologist of the Dairy Division of the federal Bureau of Animal Industry has tersely reviewed the present status of the subject in a government bulletin which will be of interest to health officers and medical men as well as dairymen.¹ This may be taken as an unbiased, if not a "neutral" summary of the situation. It is contended that from a sanitary standpoint the value of pasteurization is of the greatest importance when market milk is under consideration; for when the process is properly performed it affords protection from such pathogenic bacteria as *Bacillus tuberculosis*, *B. typhi*, *B. diphtheriae*, and the dysentery bacillus — and probably from many others, such as the organisms of foot-and-mouth disease, epidemic sore throat, and scarlet fever, which have at times been traced to milk.

The milk industry, however, has to meet problems of profitable production as well as hygienic requirements. Pasteurization is of value from a commercial standpoint so far as it increases the keeping quality of the milk and prevents financial losses by souring. It is today the most available process for the destruction of bacteria in milk on a commercial scale. As practiced at the present time — heating to 145 F., and holding at that temperature for thirty minutes, followed by rapid cooling — with reasonable care, pasteurization destroys about 99 per cent. of the bacteria; and while it does not prevent the ultimate souring of milk, it does delay the process. It can scarcely be an unjustified "fad" that the general tendency in this country today is toward the pasteurization of all market milk, with the exception of certified and inspected milk from tuberculin-tested herds. In seven of the very large cities in the United States for which statistics were obtained, Ayers found that far more than 50 per cent. of the total milk supply was being pasteurized. This result is the outcome of investigation and propaganda of less than a dozen years' duration. In the smaller cities the process is far less widely employed, possibly because the safeguarding of the

milk supply is a less difficult problem in them. We doubt, however, whether the dangers are sufficiently realized in the smaller communities. If, as has been estimated, 127,000 people are engaged daily in handling the milk supply of New York City, it is likely that a city of only 50,000 or even less would require a system of inspection of a magnitude quite out of proportion to most of the disadvantages of pasteurization, in order to guarantee a safe milk supply. Speaking from a national standpoint, the need of education at present seems to lie not so much in the great centers of population where expert advice and control is being more freely and effectively employed each succeeding year, but rather in the smaller cities. The only valid objections to pasteurization, if indeed they are sufficiently tenable to be serious, come from the pediatricians who look with fear on a possible damage to the milk in point of digestibility or liability to the production of infantile scurvy. These dangers are now avertable. It must never be forgotten, however, that the infant is not the only person whose welfare is concerned in relation to the consumption of milk. "For economic reasons, and in recognition of the process as a means of eliminating certain risks which cannot be completely eliminated in any other way, the pasteurization of milk is certain to be the general practice in this country."

A SAFE AND SANE FOURTH

In 1903 THE JOURNAL began the collection of statistics regarding deaths and injuries resulting from the use of fireworks in the celebration of the Fourth of July, and for fourteen years has fought for a betterment of conditions. In addition to securing data through news-clipping bureaus, blanks were sent to physicians, health officers and hospitals, requesting lists of casualties. From the beginning special efforts were made to obtain information as to cases of tetanus resulting from these injuries. The tabulated figures of injuries and the enormous proportion of deaths from lockjaw in that first year were appalling. In the 1903 report it was shown that 4,449 persons had been injured, and that 466 had died. Of those injured, many had lost their sight, had legs, arms or hands blown off, or were otherwise mutilated for life. Of those fatally injured, 406, mostly children, died from tetanus, or lockjaw. In the report particular attention was called to the fact that the great majority of lockjaw cases had resulted from blank cartridge injuries, and prohibition of their use was urged. Special directions were also given regarding the care of all blank cartridge and other puncture wounds, and the early use of tetanus antitoxin as a prophylactic was strongly advocated. Reprints of the report were circulated, but not to so great an extent as was done a few years later.

1. Ayers, S. H.: The Present Status of the Pasteurization of Milk, Bull. 342 (Professional Paper), U. S. Dept. Agric., Washington, 1916, from which many of the statements above are taken directly.

In the following year a gratifying improvement was noted in the reduction of deaths from tetanus—ninety-one instead of 406. Little or no attention was at first paid to the statistics. In spite of the annual publication of the awful results year after year, the number of casualties continued to increase, until in 1908 there were 5,623 accidents, and in 1909 there were 215 deaths, 125 of which were from lockjaw.

In 1908, however, in addition to the statistics previously presented, a table was prepared, giving the casualties in eighty-four of the largest cities. This showed that the majority of deaths and injuries were clearly due to the lawlessness and disorder permitted in these cities. The corollary was also clear that the city governments were responsible, since the annual carnage could be prevented only by restrictive ordinances. The pamphlet containing a reprint of the report of 1908 was sent to newspapers throughout the country. The response was remarkable. The press generally quoted *THE JOURNAL'S* statistics, naturally emphasizing the figures for the local city and state. The facts touched local pride. Civic and other organizations started campaigns for the suppression of fireworks and the encouragement of a more enlightened celebration. City officials were stimulated to action, and in a single year a remarkable diminution of injuries resulted. That progress, with slight fluctuations, has continued, until this year not a single case of lockjaw resulted from the celebration, and there were less than one-fifth as many injuries as were reported in 1903.

It was a foregone conclusion that, once the public was acquainted with the facts, a change would be demanded. It is apparent that "a safe and sane" celebration of our independence will soon become so widespread that there will be neither injuries nor deaths from this needless cause.

THE BEHAVIOR OF PHAGOCYTES

In an address to the students of the University of Amsterdam several years ago, Metchnikoff, to whom we owe the fundamental contributions to our knowledge of the relation of phagocytes to disease, remarked:

We are only at the beginning. When the physiology of the phagocytes is better understood, methods will be sought to promote the activity of these elements in the fight against microbes, and efforts will be made to protect important cells of the body against phagocytic attack.¹

In these days, when the scientific labors and fascinating theories of this recently deceased biologist are being discussed in popular as well as in professional journals, it may be fitting to refer to some of the more recent contributions to the knowledge of the phago-

cytes. Among them an unusual interest is attached to the investigations at the University of Groningen under the leadership of Hamburger.²

In continuance of his studies on the effect of salt solutions on various compositions, quantitatively and qualitatively, on the red corpuscles of the blood—studies which served in large measure to introduce physical chemistry into the medical sciences—Hamburger and his collaborators have found that the white cells are likewise subject to chemical and volumetric changes. The behavior of phagocytes early engaged their attention, primarily from a purely scientific standpoint; yet many of the discoveries made have an immediate practical significance in relation to bodily welfare and therapeutic procedure. The simplest method of investigation has been to transfer the leukocytes to various mediums mixed with very small particles of carbon. Under suitable conditions many of these phagocytic cells promptly engulf the foreign particles as they do bacteria. The number of cells which take them up in a given period depends on the composition of the mediums, some stimulating and others exhibiting detrimental effects. The addition of surprisingly small quantities of acid or salts or other compounds of varied character is frequently very conspicuous in its influence on the intensity of phagocytosis. Another plan has been to place under the skin of experimental animals small capillary tubes closed at one end and filled with an extract of bacteria in a solution of sodium chlorid. The chemotactic influence of the contents induces phagocytes to enter these tubes. The mobility of the cells, and consequently the numbers which migrate, are influenced by the composition of the mediums—in this case the tissue fluids.

Hamburger has found that very small quantities of calcium salts increase phagocytic power to a considerable extent not only in the test tube, but also in the body. The introduction of small quantities, such as are present in some natural mineral waters, by rectum has been found to promote the motility and chemotaxis of phagocytes. The immediate application of this will at once suggest itself. Taking it for granted, says Hamburger, that phagocytosis plays a part in the defense against microbes, we may infer from the foregoing that an enrichment of our blood, and through this also of the tissue fluids, with small amounts of calcium, must have a favorable effect on local and other infections.

Supporting evidences are not wanting. The salts of calcium have been employed with alleged favorable effects in pneumonia, though Luder Brunton, who championed this therapy, did so on quite different grounds. It is said that workers in lime kilns rarely acquire tuberculosis; and in Holland such labore-

1. "Nous ne sommes qu'au d but. Lorsqu'on conna tra mieux la physiologie des phagocytes, on cherchera des m thodes pour augmenter l'activit  de ces  l ments dans la lutte contre les microbes, et on cherchera d'autres pour pr server contre l'attaque des phagocytes les cellules nobles de notre corps."

2. Hamburger, H. J.: *Physikalisch-chemische Untersuchungen  ber Phagozyten: Ihre Bedeutung vom allgemein biologischen und pathologischen Gesichtspunkt*, Wiesbaden, 1912, Verlag von J. F. Bergmann; also articles in the *Proceedings Roy. Soc. Netherlands (Amsterdam)* and *Researches on Phagocytosis, British Med Jour.*, Jan. 8, 1916.

cover wounds with lime. Iodoform in suitable concentration also promotes phagocytosis, so that Hamburger has ascribed any favorable influence the drug may have in the treatment of wounds and chronic inflammations to its phagocytic rather than any antiseptic virtues. Similarly numerous other substances—benzene, camphor, turpentine, alcohol, chloral, fatty acids, and balsam of Peru—all applied in very small doses, showed a stimulating effect on phagocytosis, but paralyzed when given in greater concentration. These substances are soluble in fats; hence the hypothesis that slight quantities of them, dissolving in the outer layer of the cell, weaken it and increase its plasticity, whereas, as soon as greater quantities enter the cell, the detrimental effect becomes manifest. Hamburger would thus explain the beneficial effect of turpentine in the treatment of bacterial invasions of the lung and udder in cattle. In the same way, he adds, we can explain the marked effect of camphor treatment in inflammatory processes of the uterus and its adnexa—an effect not understood heretofore. There is, further, the great effect of covering wounds with balsam of Peru and the supposed therapeutic value of inhalations of turpentine vapor in infectious processes of the respiratory organs. It is even not unlikely that the stimulating action which comes into play on phagocytes may also promote the activity of other cells (granulation cells) which take a part in healing processes.

It would lead us too far afield to follow the Groningen school into further fascinating and suggestive hypotheses relative to the behavior of phagocytes under influence of a changed environment. Worthy of mention, however, is the indication that like the respiratory center, these blood cells are readily stimulated by weak concentrations of carbon dioxide. We are reminded of the favorable effect of the therapeutic application of venous congestion, as in Bier's hyperemia procedure, in inflammatory processes of microbial nature. Here Hamburger believes that the increasing accumulation of carbon dioxide accelerates phagocytosis. Such are the random suggestions that follow from the pursuit of biologic science primarily for its own sake.

War Wounds of the Jaws.—The Germans realized from the opening of the war the necessity for systematic collaboration between the surgeon and the dental surgeon in treatment of gunshot and shell injuries of the face. They opened a special hospital for this class of cases, and soon increased the number of such institutions. The French were not long behind them, and it is reported that 1,000 dentists are at work in the medical corps of the army. They keep the soldiers' teeth in good condition and help in reconstructing mutilated jaws and mouths. About 500 are with the troops at the front and 500 in the hospitals in the interior. In England no attempt was made to concentrate such cases until July, 1915, and then only one hospital was set apart for them, but now more are being organized. An international gathering was held recently at London under the auspices of the British Dental Association to discuss treatment of war wounds of the jaws, and the necessity for the most skilful treatment available was emphasized anew.

Current Comment

THE PHARMACOLOGY OF NOVOCAIN

Many substitutes for cocaine in local anesthesia have been introduced during the past twenty years. In most instances it was soon realized that the disadvantages of the new products outweighed the advantages, or that the newer drugs had only a limited field of usefulness. Novocain was introduced about twelve years ago with the claim that it was from one sixth to one tenth as toxic as cocaine. It has been widely used by surgeons and dentists, who have been led to consider it harmless in ordinary doses. Investigators have called attention to an extraordinary dependence of the toxicity on the rate at which the drug enters the blood stream and the concentration of the solutions employed; nevertheless, it has been taught that the toxicity compared to that of cocaine was of the order just stated. Hatcher and Eggleston¹ have recently shown that the toxicity of cocaine varies widely with different individuals and with the rate of its absorption into the circulation, but that novocain shows far greater variations. There is an essential difference in that while an animal (cats were used mainly) once severely poisoned with cocaine does not recover rapidly, the recovery from nonfatal doses of novocain injected intravenously is extraordinarily prompt. The animals frequently become apparently normal within a few minutes after the injection of doses of novocain that caused immediate stoppage of the heart and respiration. Slow and continuous injections of novocain in very large amounts also failed to produce lasting effects, even though the total amount used was ten times as great as that required by rapid injection to cause death. On the other hand, it was found that an animal under the influence of hydrated chloral, though not in any apparent danger from that drug, succumbed to one fourth of the average fatal dose of novocain for a normal animal. This suggests that the cause of death in those cases in which small doses resulted fatally in man lay in a hypersusceptibility of the heart or respiratory center. One animal under the influence of chloral hydrate succumbed to as little as 10 mg. of novocain per kilogram of weight, which corresponds to a dose of 10 grains for man. On the other hand, one of the animals survived a dose of 31 mg. of cocaine per kilogram, which is more than three times the amount of novocain required to kill the chloralized animal and about three fourths of the normally fatal dose of that drug. It would seem inaccurate, therefore, to speak of the ratio of toxicity of the two drugs without reference to the mode of administration. This is further accentuated by the results of subcutaneous injections; when novocain is combined with epinephrin, absorption is slow and large doses are borne without permanent injury, but the effects are more prolonged than after the usual intravenous injections because the drug enters the circulation over a much longer period. Biologic tests of defibrinated blood to which novocain had been added showed that the drug

1. Hatcher and Eggleston: A Contribution to the Pharmacology of Novocain, *Jour. Pharmacol. and Exper. Therap.*, July, 1916.

was not rendered inactive on standing for a short time. Solutions of novocain become almost inactive when perfused through the liver for an hour or more. The urine of a cat which had received an enormous dose of novocain—a total of 1,000 mg., corresponding to a dose of about 2 ounces for a man—by slow intravenous injection was inactive, showing that little or none of the novocain was excreted unchanged in the urine. The authors express the opinion that novocain has a distinct field of usefulness, but they call attention to the fact that death has followed the clinical use of small doses, and that toxic symptoms of varying degree of severity have been reported by numerous observers. Hence, while novocain is a valuable drug, it is not without its dangers, and the sooner these are understood and the better we are able to guard against them, the more useful the drug will be.

THE ETIOLOGY OF INFANTILE PARALYSIS— CHIROPRACTICALLY SPEAKING

Chiropractic, as THE JOURNAL has remarked before, is a freak offshoot from osteopathy—an illegitimate offspring of a plebeian cult of aristocratic aspirations. To the chiropractor all diseases are but manifestations of vertebral subluxations. Whether you suffer from soft corns or hardening of the liver the chiropractor finds the cause of your condition in your backbone. Through a somewhat skilfully managed press bureau the "science" and "art" of chiropractic has made a noise altogether disproportionate to its importance. A physician sends us a recent advertisement published in an Indiana country newspaper under the title, "Infantile Paralysis: What Is Said About It by the Chiropractors":

"Amid so much excitement that is uncertain as to the real cause of infantile paralysis, there is no mistaking the fact that there is a legitimate cause for the malady."

Here the chiropractic delivers a stinging rebuke to those misguided souls who believe the cause of acute poliomyelitis to be illegitimate! Continuing:

"This disease is caused by a vertebral subluxation, usually the atlas, but may be located any where in the spine which impinges either the spinal cord or nerves leading to it and thus produces inflammation of the anterior horns of the gray matter."

Could anything be simpler? Yes, the remedy! Should your child show symptoms of poliomyelitis—but let the chiropractors speak:

"If it is found they [children] are suffering from any spinal defect a competent Chiropractor should be called, for only through spinal adjustments can the fault be corrected. Restoration through Chiropractic adjustments is astonishingly rapid when given in the acute or early stages."

Aside from the smile that this example of the cock-sureness of ignorance may provoke there is a certain sardonic humor in this state of affairs. The public gives to individuals who have neither elementary education nor technical training the right to diagnose and treat human ailments. As a result quacks, charlatans and self-deluded ignoramuses take their toll of life and health—and the public pays the bill.

THE LOEWI REACTION FOR PANCREATIC DEFICIENCY

About ten years ago, Loewi of Graz described an interesting physiologic reaction which he proposed to apply in order to differentiate cases of diabetes with pancreatic involvement.¹ He observed that after extirpation of the pancreas in experimental animals the introduction of epinephrin into the conjunctival sac caused a dilation of the pupil—a phenomenon which does not occur in the normal animal. The conclusion was drawn that the removal of the pancreas had caused augmented irritability of the sympathetic system, which is concerned in these pupillary responses; hence it was assumed further that the pancreas normally has the function of inhibiting or depressing the sympathetics. The mydriatic effect of epinephrin applied to the eyes of patients supposed to be suffering from diabetes has been reported by several European observers, and is sometimes spoken of as the "Loewi reaction." Other investigators have reported a failure to obtain the effect described, under conditions of undoubted pancreatic impairment. It is a matter of considerable interest to learn in some more decisive way whether or not the pancreas has any specific relationship to the sympathetic nervous system. So much has been written of late about vagotonia that one quite naturally thinks of the possibilities of "sympathicotonia." An investigation by Hoskins and Gunning² at the Northwestern University Medical School on the irritability of the sympathetic motor neurons under a variety of conditions has failed to correlate them in any way with the pancreas. The belief that this organ exerts some subtle depressing influence on the sympathetic nervous system has little if any scientific evidence left to support it.

POLIOMYELITIS VS. OTHER INFECTIOUS DISEASES

Great catastrophes teach great lessons, and the greater the catastrophe the more impressive the lesson. Immediately after a disastrous railroad accident, a shipwreck or a sensational fire, in which lives are lost, action is always taken to safeguard the public against such particular incidents in the future. But a broad application of the lesson is seldom, if ever made. The lesson of the Slocum fire, with its frightful loss of life, was applied only to safeguarding against a repetition of an identical occurrence in the future. The conditions which caused the disaster of the Eastland, for instance, were not anticipated. The sudden development of the present epidemic of poliomyelitis with its mortality and its train of crippled children has awakened special interest in this disease: all over the country boards of health are realizing their responsibility in regard to it. But it must not be forgotten that this particular epidemic is infinitesimal as compared, either in number or in total mortality, with the old enemies that are always with us. We are reminded of this by the *Survey*, which calls attention to the fact

1. Loewi, O.: Arch. f. exper. Path. u. Pharmacol., 1908, lix, 8.
2. Hoskins, R. G., and Gunning, R. E. L.: Pancreas Deficiency and Vasomotor Irritability, Am. Jour. Physiol., 1916, xli, 79.

that during May, June and July there were 3,205 cases of poliomyelitis in greater New York, while during the same period there were 9,710 cases of measles. The latter, like vice, is with us always, and we have become accustomed to it. And yet the total mortality over an extended period from this disease is far greater than that from poliomyelitis. Diphtheria, scarlet fever and the ever-present tuberculosis are today hardly given consideration; yet the total mortality from any of these diseases is infinitely greater than that from poliomyelitis, including epidemics. We are apt to forget that the latter disease is always with us, and that the present occurrence is merely a "flare-up," just as we have similar exacerbations of the other acute infectious diseases.

PROPHYLAXIS OF INFANTILE PARALYSIS

Early in June, it became apparent that New York, and particularly New York City and its environs, were about to undergo a siege with infantile paralysis. The defending forces, city and state health officers, were marshaled. Allied with them were many officers of the United States Public Health Service, private medical agencies and institutions. When the defenders began to outline a campaign, the fact became apparent that our knowledge of the mode of infection and the methods of transmission of poliomyelitis are not such as would warrant specific measures directed toward the elimination of the disease. Despite the excellent research that has been done, both laboratory and clinical, our knowledge, for practical purposes, is meager. We know something of the cause and the means of transmission, but on neither subject is our information even fairly complete. Perhaps twenty-five years from now, when these phases are understood, our present prophylactic efforts may appear to have been too troublesome, over strenuous, or even ill advised. We shall recall them with the same feeling as that with which we recall the efforts of twenty-five years ago in connection with typhoid fever, yellow fever or malaria. In the light of our present general knowledge of infectious diseases, however, and of our modicum of information concerning poliomyelitis, the measures now being utilized are not only warranted but deserve the most rigid enforcement.

Gonorrheal Rheumatism

At the third annual meeting of the Scandinavian Dermatologic Association, held in June at Christiania, Rasch reported his experiences with 216 cases of gonorrheal rheumatism, nearly all in men. Prostitutes seem to be practically immune. In treatment he relied on large doses of the salicylates, fractionated, daily exercises, moist heat and light massage. The exercises are done by the patient himself. As a rule the moist heat applications immobilize enough. To ward off ankylosis, light massage should be applied as early as possible, for about twenty minutes a day. With this treatment recovery was usually complete with free use of the joints. In all the patients were dismissed as cured in less than two months, and only fourteen required over three months' treatment. Boas corroborated his statements as to the efficacy of treatment on these lines, which he has applied in large numbers of cases, with and without supplementary vaccine therapy. The results with the vaccine therapy were no better than in the cases without it.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALASKA

Government Health Work in Alaska.—With the aid of special appropriations granted by Congress during the past two years the Department of the Interior, through the Bureau of Education, has been able to make considerable progress in checking the ravages of disease among the natives of Alaska. The government has recently opened a well equipped hospital in Juneau for native patients and small hospitals are maintained at three other centers of native population. A number of physicians and nurses have been employed for service in hospitals and in maintaining sanitary conditions in native villages, and the teachers of the public schools in Alaska are supplied with medicines and medical books in order to enable them, in the absence of a physician, to treat minor ailments.

CALIFORNIA

Typhoid in Oil Fields.—About 100 cases of typhoid fever have been reported in Taft and Maricopa. Dr. Frank L. Kelly, Berkeley, and Sanitary Inspector Edward T. Ross of the state board of health, are in charge of the situation and twelve deputy health officers have been appointed to assist them in their work.

Campaign for New Hospital.—On August 14, a meeting was held on the roof garden of the San Diego Hotel in the interest of a new hospital for the city of San Diego. The Sisters of Mercy who have conducted St. Joseph's Sanitarium for twenty-six years have agreed to erect a new hospital on a new site on thoroughly modern lines. Dr. Paul Wegeforth, San Diego, is secretary of the campaign committee of the hospital.

ILLINOIS

Typhoid in Elgin.—On August 22 the typhoid cases in Elgin totaled thirty-one. Dr. A. L. Mann, city physician, reported that the source of the contagion had been discovered in the water used by employees in a large local manufacturing plant. Dr. E. S. Godfrey is making an examination for the state board of health.

Chicago

Estate of Dr. J. B. Murphy.—It is reported that the estate of Dr. John B. Murphy totaled \$1,250,000, of which all but \$250,000 is in realty.

New Base Hospital Forming.—A meeting was held, August 21, to form a base hospital unit, comprising the Augustana, St. Joseph's and St. Mary's hospitals. Thirty men from the staffs of the three hospitals attended the meeting. The complete staff will include forty-six physicians, fifty nurses and fifty Red Cross assistants. The institutions were represented by Drs. A. J. Ochsner, E. H. Ochsner, Austin A. Hayden, Charles McKenna, P. J. H. Farrell and S. R. Pietrowicz.

Committee Appointed to Investigate Infantile Paralysis.—The commissioner of health and Dr. A. Augustus O'Neill have appointed a committee to undertake research on infantile paralysis. The members are: Dr. M. Herzog, chairman, and Drs. K. Meyer, H. B. Thomas, A. Hoyne and A. K. Armstrong. Other physicians have been appointed as an advisory committee. At a preliminary meeting, it is stated, the committee outlined a plan of investigation, and agreed that the work should not proceed until sufficient funds are forthcoming.

MARYLAND

Personal.—Dr. William A. Frontz has been commissioned major in the medical corps of the British army and will sail at once to take up work with the Harvard unit.—Dr. H. H. Biedler, chief surgeon of the Biedler and Sellman Sanatorium, has almost recovered from an illness that confined him to bed at the sanatorium for several weeks.—Dr. E. B. Beasley has been sent to New York by the U. S. P. H. S., to aid in combating infantile paralysis.

Infantile Paralysis.—A second case of infantile paralysis has appeared among the colored population.—Mayor Preston has suggested the fitting of certain buildings owned by

the city as special hospitals for children with infantile paralysis. The city already owns a number of buildings that might be fitted up. Dr. Blake is to find out the cost of equipping them and providing a staff of physicians and nurses.—Mrs. William Bauernschmidt, president of the Child's Hospital School, offered the state board of health last week, said the managers were ready to turn the buildings over to the city and state with the understanding that they would defray the cost of transferring the children now there to the Union Protestant Infirmary, and also pay \$833.33 per month toward the care and treatment of paralysis patients. Mrs. Bauernschmidt also said the city and state would be asked to pay for additional physicians and nurses.

MASSACHUSETTS

Infirmary Dedicated.—The new infirmary of the Medfield State Hospital was dedicated, August 3. The speakers included Lieutenant-Governor Coolidge, Dr. Edward H. French, superintendent of the hospital Dr. George O. Clark, Boston, and others.

Personal.—Dr. George M. Kline, superintendent of the Danvers Insane Hospital, has been appointed director of the Massachusetts Committee on Mental Diseases.—Dr. Charles G. Dewey, Dorchester, Boston, has also been appointed a member of the commission.—Dr. Lynman A. Jones, Swampscott, formerly district health officer, has been appointed chief of the division of hygiene of the state department of health, succeeding Prof. Selskar M. Gunn.

Diphtheria in Massachusetts General Hospital.—The Massachusetts General Hospital has been closed to new patients on account of the discovery of thirty cases of diphtheria among the nurses, physicians and ambulance drivers. Twenty-seven nurses, two physicians and one ambulance driver have been removed to the contagious department of the City Hospital and to a private hospital. The remaining employees and inmates have been examined and cultures have been taken, but no new cases have been discovered.

MICHIGAN

Health Board Annex Damaged by Fire.—The clinical laboratory of the Detroit Board of Health on Mullett Street was damaged to the extent of about \$8,000 by a fire, August 3. The laboratory equipment and many records of the health department were destroyed.

Tuberculosis Survey.—The tuberculosis survey of the Upper Peninsula is about half completed. The remainder of the work will be done before September 16. During the second week in August, Flech, Iron Mountain and Norway were the towns under inspection and in these places tuberculosis clinics were held. Thus far twenty-five counties have been gone over by the state board of health tuberculosis survey.

Tuberculosis Day.—August 10 was celebrated in Michigan as Tuberculosis Day, under the auspices of the Committee on Tuberculosis of the Michigan State Medical Society. The governor issued a proclamation requesting physicians of the state to give their services free for the examination of patients supposed to be suffering from tuberculosis. Dr. Victor C. Vaughan, Ann Arbor, chairman of this committee, sent blanks throughout the state for the personal history and physical findings of those who applied for examination.

NEW YORK

Isolation Hospitals for Infantile Paralysis.—Westchester County has appropriated \$30,000 for an isolation hospital at Eastview to care for cases of infantile paralysis in that county. On hearing of a case of infantile paralysis at Pocantico Hills, John D. Rockefeller has set aside a house on the outskirts of his property to be used as an isolation hospital.

Personal.—Mr. Elmer E. Rittenhouse has resigned the presidency of the Life Extension Institute to take a position with the Equitable Life Assurance Society.—Dr. Donald B. Armstrong has resigned as director of the department of social welfare of the New York Association for Improving the Condition of the Poor to become assistant secretary and director of the community tuberculosis experiment of the National Association for the Study and Prevention of Tuberculosis.

New York City

Two New Milk Stations.—During the lockout of the garment workers, last month, Nathan Strauss was induced to undertake to supply the strikers' babies in Brownsville and

Williamsburg districts of Brooklyn with pasteurized milk. This need has now passed but the mothers in these districts have made an urgent plea that these stations be made permanent. If the demand warrants it these stations will be made permanent.

Infantile Paralysis.—Up to August 21 there were 7,200 cases with a total of 1,650 deaths. In the state outside of the greater city there have been, since last May, 1,239 cases, with a total of 150 deaths. The largest number of cases occurring outside of the city are in certain sections of Long Island, where the number of cases in proportion to the population is greater than in the city itself.—A private citizen, whose name has not yet been made public has given \$2,000 and started a movement for a city wide canvass of all persons who have had infantile paralysis for the purpose of obtaining blood to increase the supply of serum. A committee has already obtained the names of some 700 persons who have had the disease and will send letters to them asking them to give blood. Those who are willing to do so will be asked to go to Willard Parker Hospital, where such a quantity as each individual can spare will be drawn.—A plan of follow-up work has also been matured which is designed to secure proper orthopedic treatment for paralyzed children after their recovery to which many prominent surgeons and philanthropic institutions are lending their cooperation.—The Brace Fund for which the department of health asked has now reached about \$11,000 and it has been announced that Acting Mayor Dowling will introduce a resolution before the board of aldermen in September, asking the city to appropriate \$20,000 for orthopedic appliances for the victims of poliomyelitis.—It has been definitely decided that the schools will not be opened until September 25, but pupils will be expected to report and register on September 6, 7 and 8. It is believed that no harm can come from this procedure as the board of education says the children will not be allowed to crowd together.—An appeal has been made by the laboratories of the department of health for animals, chiefly household pets, that have become paralyzed. The department wishes to use these animals for experimental purposes to determine whether they are suffering from or "carriers" of infantile paralysis.—The advisory committee of the department of health has decided to begin study of the condition of the tonsils and adenoids of children suffering from poliomyelitis to determine whether the enlargement or removal of these organs bears any relation to the disease.

The Control of Poliomyelitis.—The Department of Health of the City of New York has issued a circular of instruction to field workers regarding the procedures for the control of poliomyelitis. The incubation period of the disease and the quarantine period have been placed at fourteen days. In families where a case of poliomyelitis has occurred, all children under 16, excepting those who have had the disease, are to be quarantined for two weeks after the termination of the case. The patient must be quarantined for eight weeks from the onset of the disease; every house must be placarded and all placards dated. No case will be left at home unless physician is in daily and regular attendance; unless the attendant of the patient obeys quarantine regulations and does no housework, marketing or other household duties unless the patient and attendant have a separate room with the windows screened; unless there is a separate toilet for exclusive use of the family; unless quarantine regulations are strictly observed by the patient and other children in the family and unless the personal and bed linen of the patient are properly disinfected and after the completion of the case renovation of the premises is made. Inspectors must visit at once all cases reported by physicians, nurses, social workers and citizens; the janitor or his representative must be notified by the inspector that he will be held personally responsible by the department for keeping quarantined children in the family premises and seeing that placards are not removed; all cases of questionable diagnosis must be seen once by the borough or chief diagnostician, and spinal puncture made whenever required, full history being recorded on a special card. Nurses must visit every case reported, instruct the family regarding quarantine and every other family in the house that there is a case of the disease in the house that other children of the family will be quarantined and that should they fail to observe quarantine, steps will be taken to enforce quarantine by legal means if necessary. The nurse should also instruct regarding home cleanliness, personal hygiene, the danger of infection by flies and any general measures which may be taken to prevent infection and should also report to the branch office, without delay, all

suspicious illness of children or any case of poliomyelitis, especially not under the care of a physician; the nurse will also repeat the instructions given to the janitor or his representative by the instructor; nurses must visit patients remaining at home at least twice a week and oftener if necessary, and after the completion of the case they will issue renovation notices, following these up by visits until complied with. Sanitary police officers must visit frequently, daily if necessary, premises in which patients have been removed or remained, to enforce quarantine and to affix or replace placards; must serve summonses when quarantine regulations are broken and make the necessary appearance in court. Various social service organizations are making an intensive house-to-house survey in infected districts to instruct families verbally regarding the disease and its prevention by personal and domestic hygiene and to report illness, especially of children, and insanitary conditions. Visitors employed by three life insurance companies are also distributing literature and reporting illness and insanitary conditions. The physicians and nurses supplied by the Rockefeller Foundation, under the direction of the department of health, follow up the ramifications of all reported cases of poliomyelitis, make house-to-house inspection and report suspected cases.

NORTH CAROLINA

Sanatorium Opened.—The Anson Sanitarium, Wadesboro, was formally opened, July 4, with a surgical clinic participated in by a number of Charlotte surgeons and local men of the profession. A reception was held later and the community folk attended in large numbers. The local staff is composed of Drs. Robert D. Ross, Wadesboro; Edmund S. Ashe, Wadesboro; John E. Hart, Deepcreek; James M. Dunlap, Ansonville; Leonidas C. Smith, Polkton; T. A. Marshall and R. L. Hardison.

National Guard Medical Staff.—The medical staff of the North Carolina National Guard, lately mustered into the service of the United States, is as follows: major and chief surgeon, Baxter R. Hunter, Charlotte; majors, Henry I. Clark, Scotland Neck; James V. McGougan, Fayetteville; Abram R. Winston, Franklinton, and Francis J. Clemenger, Asheville; captains, Henry Norris, Rutherfordton; Reuben A. Campbell, Statesville; Armistead K. Tayloe, Washington; Miles B. Abernethy, Reidsville; Hodge A. Newell, Louisville; James W. Tankersley, Greensboro; William C. Horton, Raleigh, and Thomas F. Reynolds, Canton, and first lieutenants, Francis M. Davis, Canton; John H. Mease, Canton; Richard W. Spicer, Goldsboro; William B. Hunter, Wilmington; John W. MacConnel, Davidson; Benjamin M. Meriether, Asheville; Houston B. Hiatt, High Point; T. B. Burgess, Fairview; John E. Ray, Jr., Raleigh, and Raymond A. Collock, Newbern.

OHIO

Hospital Site.—An ordinance has been prepared by the health department of Columbus authorizing the purchase of a 9-acre tract of land on Frebis Avenue, as a site for the new Isolation Hospital for which bonds of \$25,000 were authorized at the election a year ago.

Appointments to Staff of Children's Hospital.—Dr. Leslie Bigelow has been appointed chief of staff of the new Children's Hospital in Columbus. Twenty other Columbus physicians, surgeons and dentists have received appointments. Eleven of those appointed are also members of the faculty of the College of Medicine and Dentistry of the Ohio State University.

New Laboratories.—The Youngstown Hospital has opened a newly equipped and enlarged department of pathology which has been placed under the charge of Dr. Charles C. Colferth. Dr. John G. Frey, city serologist of Cleveland, has established his headquarters in the laboratory adjoining the office of the health commissioner in the city hall, and is prepared to make free tests of blood.

Personal.—Drs. William R. Moore, Orland; Llewellyn G. Leeper, Dayton, and Bernard R. LeRoy, Athens, have passed the Civil Service examination for fourth assistant physician for state institutions. Dr. Samuel F. Paul has succeeded Dr. James C. M. Floyd, resigned, as a member of the board of health of Steubenville. Dr. Louis L. Syman, Springfield, chief surgeon of the Detroit, Toledo and Ironton Railroad, will hereafter devote his entire time to the supervision of the medical department of the system, looking after not only the sanitary supervision of the road, but also the physical condition of the employees. Sergts. Lemuel R.

Brigman, Cleveland, and James H. West, Tiffin, of the Hospital Corps, Ohio National Guard, Columbus, have been commissioned first lieutenants, M. C., and assigned to the Eighth Infantry. Dr. Clyde C. Roller has been appointed city physician of Akron. Dr. Louis A. Thompson, National Military Home, Ohio, formerly chief surgeon of the Soldiers' Home, Johnson City, Tenn., has been transferred to a similar position in the central branch, National Military Home, Ohio. Dr. Emery R. Hayhurst, Columbus, has resigned as chief of the bureau of occupational diseases of the state department of health, to accept the assistant professorship of industrial hygiene in the Ohio State University. Dr. Roscoe P. Albaugh succeeds Dr. Hayhurst as chief of the bureau of occupational diseases. Dr. Edward Perkins Carter of Western Reserve University, Cleveland, has been given the honorary degree of Master of Arts by Williams College, Williamstown, Mass. Dr. Joseph H. Grossman, Cleveland, has been appointed lecturer on diagnosis of tuberculosis in the School for Applied Social Sciences of Western Reserve University.

OKLAHOMA

Ruling on Chiropractors.—The attorney-general is stated to have ruled that chiropractors must take the examination of the State Board of Medical Examiners if they are doing the work of osteopaths.

Personal.—Dr. Orange W. Starr has been appointed city physician of Drumright. Dr. James L. Shuler, Durant, has opened a hospital in that place. Dr. Albert S. Hagood, Durant, has been commissioned captain in the National Guard of Oklahoma and assigned to recruiting duty for the Reserve Battalion.

CANADA

Infantile Paralysis.—Infantile paralysis is on the increase in Ontario. Eight cases developed from August 1 to August 15. They are mostly in western Ontario. No deaths have been recorded during August. During the month of July there were eleven cases and two deaths; in June two cases and no deaths. A number of Ottawa trained nurses who were recently turned back from the American border on account of being "contract labor," while enroute to help fight infantile paralysis in New York, have been admitted through a special order issued by Secretary McAdoo. The medical officer of health at Kingston, Ont., is asking the Dominion government quarantine officers to increase precautions against the invasion of infantile paralysis from New York state.

Canadian Medical Association.—The Canadian Medical Association has not met in annual session since 1913. The 1914 meeting, which was to have been held in Vancouver, B. C., under the presidency of Dr. Robert E. McKechnie, Vancouver, was cancelled on account of the war; and so many of the officers and leading members are engaged on active service that it has been held inadvisable to continue the meetings. At a meeting, however, of the executive council held in Toronto in June, it was felt that the association was being injured by this action, and it was decided to renew the meetings in 1917 at some time and place selected by the executive. With so many members away the annual fees have diminished and an effort will be made to secure new members so as to return the association to its former good financial standing. During the absence of the secretary-treasurer, Dr. William W. Francis, Montreal, with McGill Base Hospital, the work of the association has been conducted gratuitously by Dr. J. W. Scane, registrar of the Medical Faculty of McGill University.

Personal.—Dr. J. H. Radford has been appointed medical officer of health at Galt, Ont., in succession to the late Dr. Thomas W. Vardon. Dr. George C. Kidd, medical superintendent of the Coburg Hospital for the Insane, has been transferred to the Brockville Hospital for the Insane, where he will be assistant superintendent. The Military Cross has been conferred on Lieut. Peter McGibbon, C. A. M. C., Bracebridge, Alta. Drs. Eric K. Clarke and F. F. Tisdale, house surgeons in the Toronto General Hospital, have joined the staff of a military hospital at Shorncliffe, England. Dr. A. C. Delacroix, assistant resident physician at the Willard Parker Hospital, New York, has joined the staff of the Two Hundred and Thirty-Seventh American Legion Battalion at Halifax, N. S. Capt. L. D. Collin, Winnipeg, Man., has been promoted to the head of the surgical department of the Laval University Hospital with the rank of major. That hospital is now stationed at St. Cloud, near Paris, France. Capt. Victor McWilliams, Toronto, who has returned after a year's service at the front, has joined

the C. A. M. C. and is now on the staff of the training depot at Camp Borden.—Capt. Conrad G. Geggie, Quebec, has been appointed medical officer of the New Brunswick Highland Battalion. He went to the front with the first Canadian overseas force, and will be promoted to the rank of major.—Capt. Edwin Douglas, Halifax, N. S., who has been medical officer to the fortieth battalion at the front, has been transferred to the staff of Dalhousie Military Hospital, now in France.—Col. Frederick W. Marlow, A. D. M. S., Toronto, has been appointed chief medical inspector of the C. E. F. and will travel from coast to coast inspecting and investigating medical arrangements.

GENERAL

Medical Reserve Officers Ordered to Duty.—Under special orders, No. 181, War Department, August 4, the following officers of the Medical Reserve Corps were ordered on active duty: Lieuts. Rudolph Matas, New Orleans; Isadore Dyer, New Orleans; Elijah H. Siter, Philadelphia; Frederic A. Washburn, Boston, and Elliott C. Cutler, Boston.

Bequests and Donations.—The following bequests and donations have recently been announced:

Dr. Emanuel M. Baruch, New York City, a bequest of \$10,000, by Lina Matherny, a servant in the employ of Dr. Baruch for thirty years.

Medical Society of South Carolina, a bequest of \$70,000 to be used to build either an annex to the present Riverside Infirmary Building, Charleston, or to enlarge and remodel the present building so that it may conform to the requirements of a modern hospital; St. Margaret's Home, Charleston, toward a new hospital at Park View, \$10,000, by the will of Mrs. Rosa Thompson.

Physical Rejections.—The percentage of physical rejections after examination for muster into the United States service of the militia organizations of the states in the central department shows that the lowest percentage of physical disqualifications were in Iowa, 8 per cent. Illinois follows with 10 per cent.; then come Missouri, 12 per cent.; Minnesota, 13 per cent.; Michigan and Nebraska, each 15 per cent.; Kansas, 16 per cent.; Wisconsin, 17 per cent.; South Dakota, 18 per cent.; Indiana, 21 per cent., and Ohio, which is estimated at more than 30 per cent.

National Service School.—The work of the National Service School for Women at Lake Geneva, Wis., conducted under the direction of the Woman's Section of the Navy League, began August 14. During encampment the following lectures will be delivered: August 16, "Cancer and Other Malignancies," by Dr. Philip Schuyler Doane; August 18, "Woman's Place in War and Peace," by Dr. Ameen U. Fareed; August 21, "Aphasia," by Dr. Arthur Dean Bevan; August 23, "The Use of Roentgen-Ray Work in Time of War," by Dr. Dallas B. Phemister; August 25, "Sanitary Field Notes," by Col. William Stephenson, M. C., U. S. Army; August 28, "Base Hospital Work," by Dr. George G. Davis; August 28, "Efficient Women and National Preparedness," by John J. Halsey, and August 30, a subject unannounced by Dr. Frank Cary, all of Chicago.

Amendment to Treasury Decision on Narcotic Law.—Under date August 17, the Commissioner of Internal Revenue announces the following amendment to Treasury Decision 2292, as amended by Decision 2323:

In entering items calling for narcotic preparations on the order forms issued by the Commissioner of Internal Revenue, in accordance with the provisions of Section 2 of the Act of December 17, 1914, the quantity of narcotic drug to the fluid ounce, where put up in packages of fifteen ounces or less, shall be indicated in ounces, and where put up in packages containing sixteen ounces or more, may be entered in pints, quarts or gallons, provided the number of each, and not the aggregate quantity of these units in a higher unit, is entered on these order forms.

Where these order forms call for preparations or remedies in solid, powder, or other than liquid form, the quantity in ounces should be entered thereon, or if in tablet, pill, ampule or suppository form, the units or totals thereof need only be stated. The name of the particular narcotic drug in such preparations or remedies, tablets, pills, ampules or suppositories should be entered on these forms.

Appointments to the Navy.—Surg.-Gen. William C. Braisted, U. S. Navy, announces that the next examination for appointment in the Medical Corps of the Navy will be held on or about October 23 at Washington, D. C., Boston, New York, Philadelphia, Norfolk, Va., Charleston, S. C., Great Lakes (Chicago), Ill., Mare Island, Calif., and Puget Sound, Wash. The first stage of examination is for appointment as assistant surgeon in the Medical Reserve Corps, and embraces anatomy, physiology, materia medica and therapeutics, general medicine, general surgery and obstetrics. Successful candidates are then ordered to attend the Naval Medical

School and during this time are on pay with allowances for quarters, heat and light, and at the end of the course, if successful in passing the examination, are commissioned assistant surgeons to fill vacancies. Full instructions may be obtained regarding these examinations by addressing the Surgeon-General of the Navy, Navy Department, Washington, D. C.

Medical Reserve Officers Discharged.—By direction of the president the following officers of the Medical Reserve Corps have been honorably discharged from the service of the United States, their services being no longer required: Lieuts. Gustavus I. Hogue, Milwaukee, Wis.; Charles A. Cattermole, Canon City, Colo.; Clarence E. Yount, Prescott, Ariz.; James F. Presnell, Chicago; Frank P. Williams, Boston; George A. Clotfelter, Hillsboro, Ill.; Howard A. Grube, Soldiers Home, Mich.; Fred A. Pittenger, Boise, Idaho; Henry W. Burnett, Providence, R. I.; Charles D. Center, Quincy, Ill.; Merlon A. Webber, Portland, Me.; Custis L. Hall, Boston; William J. Cranston, Augusta, Ga.; Frank H. Jackson, Houlton, Me.; Francis B. Johnson, Charleston, S. C.; Charles A. Speissegger, Jr., Charleston, S. C.; Gerald P. Lawrence, Columbus, Ohio; Gilbert E. Seaman, Milwaukee, Wis.; Luther H. Reichelderfer, Washington, D. C.; Allen J. Jervy, Charleston, S. C.; Harold M. Hayes, New York; Charles H. Parkes, Chicago; Homer S. Warren, Chicago; Eliot Bishop, Brooklyn; Leonard D. Frescoln, Philadelphia; William Marshall Jr., Milford, Del.; Henry S. Satterlee, New York; Henry T. Byford, Chicago, and Bernard J. Beuker, Atwood, Mich.

Increased Interest in Red Cross.—The American Red Cross announces that during the six months ended July 21 its membership has increased from 27,000 to about 210,000, an increase of nearly 800 per cent. In the same time the number of Red Cross chapters organized throughout the country increased from 110 to 199. The personnel required for twenty-five base hospitals with 500 beds each for the army has been selected and enrolled from the staff of some of the best hospitals of the country, several naval base hospitals are now being organized, and funds for the purchase of equipment for sixteen of the army base hospitals, which cost \$25,000 each, have been subscribed. In addition to the work the personnel required for two field columns for transferring sick and wounded from transfer hospitals to Red Cross base hospitals has been selected from the staff of two hospitals of the country and \$10,000 has already been subscribed toward the equipment of one of these field columns.—A mobile base hospital has been organized at Barnes Hospital, connected with Washington University, St. Louis, at the request of the American Red Cross. Dr. Fred Murphy is head director; Dr. Malvern B. Clopton, chief of the surgical service; Dr. Walter Fischel, chief medical officer; Dr. Eugene L. Opie, chief of laboratory work, and Miss Julia Stimson, head nurse.

Opportunities for Young Physicians in the Army Medical Corps.—By a recent ruling of the War Department the age limit for entrance to the Medical Corps of the Army has been raised from 30 to 32 years. Owing to the increase in the army which became effective, July 1, there are now 20 vacancies.

Not only is the age limit raised under the new condition but the opportunities for promotion are greatly increased. A study of the length of service of the officers of the Medical Corps promoted by the passage of the act increasing the size of the army shows that the junior captain promoted obtained his majority after only nine years in the service; the junior major was promoted to lieutenant-colonel after eighteen years in the corps and the junior lieutenant-colonel became a colonel twenty-seven years after he entered the corps. The sequence of nine in these promotions being accidental. The maximum pay for major is \$4,000 a year, for a lieutenant colonel \$4,500 a year and for colonel \$5,000 a year.

The Army Medical Corps offers an excellent field for the recent graduate. His position is permanent. From the outset his pay is \$2,000 a year, with quarters or an allowance of \$36 a month in lieu thereof; he is also given fuel and light or allowance therefor; when on government duty he receives liberal traveling expenses; he has also a leave allowance of one month per year on full pay. His income is not dependent on the caprice of patients. The government provides him with all incentives and facilities for study, books, instruments and appliances and encourages him in all ways to improve his opportunities. His pay increases 10 per cent. every quinquennium for twenty years, and when the time comes for his retirement, he receives three quarters of his pay for the remainder of his life.

Full particulars regarding admission to the Medical Corps of the Army and further information will be furnished by the Surgeon-General, U. S. Army, Washington, D. C., on application.

WAR NOTES

American College Men in Ambulance Corps.—Twenty graduates of American universities left Paris for the front, August 16, as members of the newly formed Section 9 of the American Ambulance field service.

Typhus Epidemic in Saloniki Region.—The *Scientific American* states that "a question frequently asked is why has not the allied army of 600,000 men at Saloniki joined in the general offensive of the Allies. A possible answer comes to us from a correspondent, who states that he has recently received a letter from London which states that the inactivity is due to the fact that typhus is epidemic in the entire territory into which these troops would be sent, and that until it was under control there would be no forward movement."

Red Cross Shipments to Foreign Countries.—The American Red Cross since between Sept. 7, 1914, and July 1, 1916, to the allied powers, has made 217 shipments consisting of 32,605 packages which include purchased supplies valued at \$366,021.24 and donated supplies, designated, amounting to \$408,908.68 and undesignated, amounting to \$227,091.95, a total of \$1,002,021.87. During the same period forty-eight shipments were made to the central powers consisting of 6,667 packages of which the purchased supplies were valued at \$71,762.26; the designated donated supplies at \$191,519.59 and the undesignated donated supplies at \$47,450.51, making a total value of \$310,732.36. In addition to these shipments, supplies valued at \$110,875.75 were purchased by the American Red Cross and forwarded to France in three shipments. Fifty complete hospital tents were also purchased for the French Red Cross at a cost of \$8,795 for which the American Red Cross received reimbursement. In addition to the listed supplies sent to the central powers there have been shipped by the American Red Cross to the Austrian Red Cross in Vienna, thirty-four cases of antitoxin valued at \$131,986.50, and to the German Red Cross at Berlin, thirty-four cases valued at \$229,595.60, which were paid for by the Austrian and German Red Cross societies, respectively.

Relief of Belgian Children.—The Rockefeller Foundation has recently received an appeal for the relief of about 500 children who have been living in the fighting zone in that part of Belgium which has not been occupied by the German forces. Arrangements had already been made and money subscribed for the removal of 760 children similarly situated, to the canton of Fribourg, Switzerland, where provision has been made for their protection, maintenance and education. The needs of the 500 additional children have overtaxed the resources of the hospitable Swiss and therefore, an appeal was made to America to contribute \$73,000 for the first year which will cover the cost of caring for these 500 children. The Rockefeller Foundation on July 12 instructed the director of this War Relief Committee to authorize the removal of the children from Belgium, and the carrying out of the plan for their maintenance in Switzerland, and toward the necessary cost for the first year, the Belgian Relief Fund of New York City appropriated \$25,000; the New England Belgian Relief Committee has appropriated \$5,000 and has undertaken to secure an additional \$5,000 and the Refugees' Relief Fund has appropriated \$1,000 and agreed to furnish 500 a month. Further contributions may be sent to the Belgian Relief Fund, 10 Bridge Street, New York City, marked "Belgian Children Fund" or to the New England Belgian Relief Fund, 422 Boylston Street, Boston.

OUR TROOPS ON THE BORDER

Inspection of Feet.—Maj. William W. Reno, M. C., U. S. Army, Fort Bliss, Texas, has been detailed to inspect the feet of the 150,000 militiamen along the Mexican border.

Colored Glasses to be Provided for Soldiers.—The War Department has informed the American Red Cross that the quartermaster's department will make a gratuitous issue of colored glasses, or goggles, to the troops on the border for the protection of eyes from the glare and sand.

Base Hospital Enlarged.—The base hospital at Fort Bliss, Texas, which was recently enlarged to accommodate 500 patients, is being still further enlarged so as to double its capacity. The local Red Cross society has turned over all supplies collected in the last three months to Lieut.-Col.

Paul F. Straub, M. C., U. S. Army, for use of the men at this point.

Pennsylvania System Provides for Its Soldiers.—Dr. Busby of Philadelphia, accompanied by four other physicians of that city, representing the Pennsylvania System, held a conference in El Paso, July 24, with Gen. Charles H. Clement, commanding the Pennsylvania division, in regard to the needs of the militiamen who are employees of the Pennsylvania System and to plan for the distribution of a fund of \$100,000 subscribed by the railway for the relief of the men and their dependent families.

PARIS LETTER

PARIS, July 27, 1916.

The War

AN ASSOCIATION OF SURGEONS AT THE FRONT

A body has just been organized with the title of Association des médecins du front. The intention is to group all those surgeons who have followed the campaigns of 1914, 1915 and 1916, whether they are still with the colors or in civil life. The seat of this association is at Bordeaux. It is strictly resolved to avoid all intervention, direct or indirect, with military authorities on behalf of its members who, having faithfully observed discipline and rules, expect nothing from favor. No speech or discussion on political or religious subjects will be permitted at the meetings. The objects of this association are (1) to multiply and strengthen the bonds of friendship and comradeship between the surgeons who have served at the front and to provide an opportunity for the manifestation of these sentiments after the war; (2) to draw up a list of comrades who have died for their country; to honor their memories and to offer to their families the condolences and support of the association; (3) to defend the interests common to all members of the group. During the hostilities the association will interest itself in questions of rent, taxes, insurance and replacement. After the war it will do what is possible to facilitate the reconstitution of their practices by negotiating with colleagues who have continued the exercise of medicine. It will assist the younger members to find employment, and it will bring pressure to bear on the authorities that official functions, as vaccination and inspection of assistant children, may be given preferably to those who have seen service, and that in various competitions those who have seen service may have advantages over those who have remained in civil life. Finally, the association will exert itself to help its members who have been mutilated in the course of the war.

VOCATIONAL REEDUCATION OF THE MUTILATED

In previous letters were mentioned the first foundations created for the vocational reeducation of the wounded and mutilated. Since then a great number of these schools have arisen, national, regional, departmental, communal or private; but, notwithstanding the considerable sums expended, the number of those who have been taught a remunerative trade and thereby rendered definitely capable to support themselves is really very small. When one inquires of these schools what are the figures relating to their results, the answer given by many of them is that only a few score of their pupils have received complete training. Some even do not go so far as ten; only seven or eight schools run into three figures. It is difficult to get the general total, but it is unlikely that it is more than a few thousand. The causes of this immense difference between the known wants and the results obtained are doubtless multiple; but in the front rank one is obliged to place the mentality of the pupil himself. Too generally he desires at most a little place, a small function and a modest situation. It is quite necessary to modify this state of mind. In the first place they must be clearly given to understand that they run no risk of a reduction of pension because of reeducation. An effort must be made to convince them that they are not definitely worthless and incapable. For this purpose, an energetic propaganda is necessary. The same difficulty has been felt in other countries, and this moral reeducation of the mutilated has been especially organized. The propaganda for this purpose for workmen and agricultural laborers is entrusted to people of their own occupations. Technical advisers have been appointed to prove to them that they can assure for themselves a satisfactory future. On the other hand, the Commission of the Senate on the Army has approved Mr. P. Strauss' report on the proposition adopted by the Chamber of Deputies which renders obligatory the vocational reeducation of the mutilated benefiting under the law of military pensions.

AMBULANCE TREATMENT OF FIREARM WOUNDS OF
BONE SHAFTS

While the question of immediate intervention or abstention for firearm wounds of joints has given rise to important discussions, the corresponding question for lesions of the shaft has been comparatively neglected. This renders interesting the communication made to the Société de chirurgie de Paris by Dr. R. Picqué, hospital surgeon. He describes three types of lesions, and on this classification he bases the therapeutic indications: (1) lesions from bullets in direct flight at moderate distances; (2) lesions by artillery projectiles or by spent bullets at great distances; (3) lesions from bullets in direct flight or in ricochet at short distances. Wounds of the first class are comparatively rare in the present war, and they present themselves in all varieties from simple symmetrical fissures described by Delorme to the most comminuted fracture of the fundamental "butterfly wing" form described by Bornhaupt. In such cases, abstention is indicated, and the surgeon who systematically opened up the orifice in the soft tissues in an attempt to remove all the fragments would disturb the long butterfly wing fragments which are well covered with periosteum and scarcely movable. Immobilization is more important here than surgical action. But this primitive abstention must be accompanied by a continuous vigilance. In case infection manifests itself by subacute osteomyelitis or finally by fistulas, the surgical action must be undertaken, the affected area must be thoroughly cleaned, all splinters must be removed, etc. Artillery projectiles or spent bullets produce characteristic voluminous irregular and not very profound wounds of the most varied shapes and sizes. In this, if splinters are visible, the majority of them will be found movable, hanging merely by fragments of periosteum or contused muscle and themselves seriously affected in their nutrition by the shock of the projectile. The remains of the medullary canal frequently contain fragments of projectile, and the marrow is contused. The worst kind of infection threatens in such wounds, which often conceal, together with fragments of the projectile, pieces of clothing, of the military booklet or of the identification disk. These were the lesions which, at the commencement of the war, produced so large a portion of fatal results. The first point in the treatment, therefore, will be to open up the wound for immediate disinfection and to assure drainage. The first step here combines the free division of the aponeurosis, hemostasis, the reestablishment of the nervous circuit, resection of contused muscle, and a thorough cleansing out of all interstices in order to remove foreign bodies. The latter are generally fragments of clothes at the orifice of entry, and bone splinters at the orifice of exit. The second step is the removal of the bony fragments: not blind extraction of splinters adherent or not with the periosteum, without regard to topography or size, but careful and methodical subperiosteal removal of fragments in order to provide free drainage for the medullary canal.

Trench warfare has increased the frequency of serious injuries due to bullets in ricochet. Such projectiles are still possessed of penetrative force superior to that of the majority of shell fragments. They carry with them into the wound débris gathered from the various obstacles with which they have come in contact, and in such circumstances when like the bullet S they are of heterogeneous composition; they act like the cruelest of dumdums. If they come in contact with the bone, they pulverize it and break themselves into innumerable fragments, thus producing the extreme type of wounds that one reads of as caused by explosive bullets. In the immediate neighborhood of the fragments there will be found very few splinters of bone, simply a great loss of substance between two extremities of the fracture. But the soft tissue in the neighborhood is filled with fragments of bone and projectiles. Such wounds are more menaced with infection than others so largely opened. There can be no doubt as to the necessity for intervention in this case. It is necessary by free opening and by the use of the curet and forceps to remove from this soft tissue all that one can of the multiple foreign bodies and to bring into good shape the extremities of the fracture. The result of this resection is frequently a false joint. By applying this method, Picqué has been able to reduce greatly the number of amputations for fractures of the shaft caused by firearms. In 5,378 cases, he was obliged to perform primary or secondary amputation in only thirty-nine.

FRANCE DAY IN GREAT BRITAIN

The French national fête day, July 14, was observed in Great Britain as France's Day for the benefit of the French Red Cross. The results were very satisfactory.

CANADIAN ASSISTANCE FOR THE FRENCH WOUNDED

The president of the Canadian Red Cross, Mr. Marshall, arrived recently in France to distribute material assistance to various works occupying themselves with the welfare of the wounded. After coming to an understanding with the president of the Franco-American committee, M. Hanotaux, the Canadian Red Cross distributed the following subsidies: 50,000 francs (\$9,650) to the Société de secours aux blessés militaires; 50,000 francs to the Association des dames françaises; 50,000 francs to the Union des femmes de France; 50,000 francs to the Fédération nationale des mutilés; 50,000 francs to the Oeuvre de secours aux réformés; 50,000 francs to the different organizations for the blind. In addition to these gifts of money, the Canadian Red Cross distributed to the French hospitals 5,000 cases of dressings and clothes and fifteen automobile ambulances. Again, a new hospital, the Laval Hospital, has been added to the important Canadian and French sanitary section at the hippodrome at St. Cloud. This is a gift of the Canadian government, which has chosen a staff from among the members of the university founded in 1852 by Mgr. de Laval at Montreal. This formation includes thirty-seven officers and a staff of 200 volunteers and seventy nurses.

Death of Dr. Alexandre Layet

The death is announced of Dr. Alexandre Layet, formerly professor of hygiene at the Faculté de médecine de Bordeaux, member of the Superior Council of Hygiene, and national correspondent of the Académie de médecine.

LONDON LETTER

LONDON, Aug. 7, 1916.

Sir William Ramsay

The eminent chemist, Sir William Ramsay, has died at the age of 63. He was the nephew of the Scottish geologist, Sir A. C. Ramsay, and came of a family which had been concerned in chemical processes for seven generations. He attended the University of Glasgow, his native city, until 1875 and then went to study chemistry under Bunsen at Heidelberg. In 1880 he was appointed professor of chemistry at University College, Bristol, and in 1887 he succeeded William son at University College, London. He is best known for the discovery of the "inert gases" of the atmosphere. Taking advantage of the fact that heated magnesium absorbs nitrogen, he treated nitrogen from the air with it, and found that the gas was not wholly absorbed and that the residue was denser than nitrogen prepared by chemical means. The inference was that some other constituent was present. The same conclusion had been reached by Lord Rayleigh by another method in which the nitrogen was removed by the electric spark. The result was that the existence of a new element, argon, was announced by the two investigators jointly to the British Association at Oxford in 1894. Ramsay next proceeded to examine the nitrogen given off by certain minerals, and in one of these, uraninite, he detected helium, a gas which more than a quarter of a century before had been found in the sun by the spectroscope, but which had not previously been known to exist on the earth. Three years later he found that the gas which had been called argon was not homogeneous, but contained also three companion gases—neon, krypton and xenon—and thus added three substances to the list of the elements. Later helium provided him with another triumph, for in 1903 he and his pupil, Professor Soddy, were able to prove, as had been suggested would be the case in view of the fact that it is constantly found in radioactive minerals, that it is one of the disintegration products of radium and its emanation. He soon realized that the study of radium would throw light on the nature of the elements and their transformation into one another. He demonstrated that radium was constantly disappearing and reappear in new elemental forms. He mapped out the series of elements due to the degradation of radium and thought that in the course of his experiments he had found evidence of similar disintegration of more common elements. He stated that he had found traces of lithium in the residues of solutions of copper sulphate and nitrate exposed to radium emanation. He did some work on the therapeutic application of radium. He made an exhaustive investigation into the properties of the celebrated Bath waters, and demonstrated that the one thing which distinguished these waters was the remarkable radioactive power. He could attach no therapeutic significance to the mere mineral constituents of the

waters, which were much the same in kind and degree as those found in the London drinking supply. He pointed out that radium is best applied for therapeutic purposes in the shape of emanation or niton than as a salt of radium, on the ground that in the latter case there is considerable risk of loss of the precious radium.

The Annual Meeting of the British Medical Association

The eighty-fourth annual meeting of the British Medical Association has been held in London. In consequence of the war, the scientific and social side was entirely dropped and only political matters were discussed. Some of these were of great importance. The principal one was the position occupied by the physician with reference to the proposed late treatment of venereal diseases. As stated in previous matters, the government, following the advice of the commission appointed to investigate the subject, is about to organize laboratory facilities and skilled free treatment, the measures being entrusted to councils of counties and to county boroughs. Seventy-five per cent. of the cost is to be provided out of the imperial exchequer. Clinics are to be established, and salvarsan or its substitutes to be provided gratuitously. Considerable apprehension was expressed as to this inroad on the work of the general physician. It was decided that a reputation should be sent to the local government board to secure a pledge that an order would be issued requiring every local authority to consult with the representative of the local medical profession throughout all stages of the scheme. One representative protested against the publicity which had been given to salvarsan and its substitutes in the recommendation and reports. There was no evidence that the drug was the proper treatment of syphilis. Mercury was the proper treatment, and the profession was confronted by wholesale proposals for treatment by salvarsan. Some of the deaths which had occurred were not due to faulty administration, as had been alleged, but to the drug itself.

The Cocain Habit Among Soldiers

Among the large number of soldiers, invalided and otherwise, in this country, cases of the cocain habit have attracted notice, and a surreptitious traffic in the drug in saloons and other places has been detected. Drastic action has been taken by the government against this scandal. The importation of cocain is prohibited except under a license, and it is made an offense to be in possession of the drug except under stated conditions. The gift as well as the sale of the drug to the victims of the cocain habit is made an offense. Cocain can be supplied only in accordance with a physician's prescription and by a legally qualified pharmacist. The prescription must be dated and signed by the physician with his full name and address, and marked with the words "not to be repeated." If repetition is required, this must be endorsed by the physician on the prescription and dated.

Substitutes for Cocain in Dentistry

The accidents arising from the use of cocain by the large number of unqualified persons who practice dentistry has led the government to restrict the use of this drug. The government has arranged to make available a sufficient supply of novocain for use as a local anesthetic, in place of cocain, by practicing dentists, whether registered or unregistered. As the supply is not immediately available in the particular forms usually required for dental purposes, and three or four weeks may elapse before it can be made available in these forms, the government has granted a temporary permit to all persons engaged, July 28, 1916, in the bona fide practice of dentistry, but not to purchase preparations containing more than 1 per cent. of cocain, adapted for use as local anesthetic in connection with dental work, subject to the condition that the preparations are used as local anesthetics in connection with such work and for no other purpose. The permit will remain in force until September 15 next. After that date it will not be legal for unregistered dentists to continue to use cocain preparations. Public notice will be given in good time stating how and where the novocain preparations can be obtained. The government calls attention to the fact that eucaïn is being manufactured on an increasing scale in this country, and it is probable that considerable supplies of this drug also will be available shortly to meet the demand for local anesthetics for dental purposes.

Physicians Killed in the War

According to the report presented to the British Medical Association, more than 400 physicians have lost their lives at the front in the past twelve months.

Marriages

WILLIAM ALBERT MUDGE, M.D., Nashwauk, Minn., to Miss Vendla E. Martin of Chicago, at Duluth, Minn., August 2.

ROBERT W. LENKER, M.D., West Leesport, Pa., to Miss May C. Yeager of Reading, Pa., at Philadelphia, August 1.

WILLIAM TURNER EIKNER, M.D., Sidney, Neb., to Miss Frances Alice Johnson of Holdrege, Neb., June 12.

BROWN S. MCCLINTIC, M.D., Peru, Ind., to Miss Eleanor Soukupp of Kansas, at Kermanshah, Persia, June 1.

EDWARD DEWALT ALLEN, M.D., Hampton, Ia., to Miss Helen Thompson of Emporia, Kan., in Chicago, recently.

ROBERT N. MILLER, M.D., Beaumont, Tex., to Miss L. K. Jones of Nashville, Tenn., at Beaumont, August 4.

RALPH STEPHEN CHAPPELL, M.D., to Miss Helen M. War-rum, both of Indianapolis, August 12.

Deaths

John B. Maloney, M.D., Key West, Fla.; University of Pennsylvania, Philadelphia, 1890; aged 48; a Fellow of the American Medical Association; formerly mayor of Key West; founder of the Louise Maloney Hospital; a member of the board of education for three years; a member of the Florida Medical Examining Board and for three terms president of the Key West Board of Trade and for several years port health officer; surgeon-major in the Florida National Guard (retired); local surgeon for the Florida East Coast Railway extension; died in the Kensington Hospital, Philadelphia, August 7.

Harry Daingerfield Barnitz, M.D., San Antonio, Texas; Georgetown University, Washington, D. C., 1880; aged 63; formerly a Fellow of the American Medical Association; a member of the State Medical Association of Texas; formerly president of the Board of Health of San Antonio; formerly president of the West Texas Medical Association and a member of the board of managers of the State Insane Hospital, Texas; acting assistant surgeon, U. S. Army, immediately after his graduation with station at Fort McKinney, Wyo.; died at his home, August 6.

John Alva McCorkle, M.D., Brooklyn; University of Michigan, Ann Arbor, 1873; aged 69; a Fellow of the American Medical Association and New York Academy of Medicine; professor of principles and practice of medicine and clinical medicine in Long Island College Hospital and president of the Long Island College; physician to the Long Island State Hospital; visiting physician to the Long Island County Hospital and consulting physician to the Norwegian, Jewish and St. John's hospitals, Brooklyn; died in New York City, August 16.

John Martin Crawford, M.D., Cincinnati; Pulte Medical College, Cincinnati, 1879; Miami Medical College, 1881; aged 70; professor of obstetrics, neurology, physiology and physical diagnosis in his alma mater from 1881 to 1889; physician to the Cincinnati Home for the Friendless; president of the Western Academy of Medicine in 1888; a banker; United States consul-general to Russia from 1889 to 1894; and since his return a lecturer on the ancient Finns and European and Asiatic Russia; died at his home, August 12, from hemorrhage.

John Macauley Eager, M.D., Surgeon, U. S. P. H. S.; Naples, Italy; College of Physicians and Surgeons in the City of New York, 1888; aged 52; who entered the Public Health Service as assistant surgeon, Feb. 16, 1891; four years later became passed assistant surgeon, and was promoted to surgeon, Dec. 19, 1907; who had been on duty in Italy, in 1910, in connection with the cholera epidemic, and was sent back to Naples for duty in 1912; died in Naples, August 18.

Major Robert Newton Winn, Jr., M. C., U. S. Army; Bellevue Hospital Medical College, 1897; aged 43; a Fellow of the American Medical Association; assistant surgeon of volunteers during the Spanish-American War; who entered the Medical Corps of the army in 1900; became captain five years later and major in 1909; chief surgeon of the U. S. General Hospital, Eagle Pass, Texas; died in that institution, August 12, from pneumonia.

John Bart Webster, M.D., Philadelphia; Medico-Chirurgical College of Philadelphia, 1887; aged 80; a Fellow of the

American Medical Association; who participated in the relief of Lucknow; was clerk of his faculty of the collegiate department of the University of Pennsylvania for many years, and later a practitioner of Atlantic City; died at his home in Philadelphia, August 9, from heat exhaustion.

Wentworth Larrabee Hayes, M.D., Cambridge, Mass.; Tufts College Medical School, Boston, 1900; aged 39; formerly a Fellow of the American Medical Association; a member of the Massachusetts Medical Society; a medical inspector of Cambridge schools and a member of the visiting staff of the Cambridge Hospital; died in South Yarmouth, Mass., August 12, from pneumonia.

Alexander Browne, M.D., Philadelphia; University of Pennsylvania, Philadelphia, 1867; aged 73; a veteran of the Civil War in which he served as steward-surgeon in the U. S. Navy and later was ordered to New Orleans during the epidemic of smallpox and yellow fever; who retired from practice about thirty years ago; died suddenly in Shenandoah, Pa., August 10.

Albert T. Mobley, M.D., New Columbia, Ill.; Kentucky School of Medicine, Louisville, 1880; aged 70; formerly a Fellow of the American Medical Association; also a druggist; who served in both the army and navy during the Civil War; died in a hospital in St. Louis, July 29, after a surgical operation for the relief of disease of the kidney.

Hugh L. McLauren, M.D., Dallas, Texas; Tulane University, New Orleans, 1884; aged 55; a Fellow of the American Medical Association; for two years superintendent of the Mississippi State Sanatorium, Vicksburg; division surgeon to the Texas, New Orleans and Pacific Railroad; died at his home, August 11, from cerebral hemorrhage.

Clinton DeWitt VanDyck, M.D., New York; Albany (N. Y.) Medical College, 1879; aged 61; a member of the Medical Society of the State of New York and for twenty-six years medical supervisor for the Metropolitan Life Insurance Company; died in Atlantic City, N. J., August 10, from cerebral hemorrhage.

Miles C. Dunn, M.D., Henderson, Ky.; University of Louisville, Ky., 1892; aged 52; a member of the Kentucky State Medical Association; a specialist in diseases of the eye, ear, nose and throat; president of the Henderson Board of Health and school board; was shot and killed on the street in Henderson, August 10.

James D. Weaver, M.D., Eatonton, Ga.; College of Physicians and Surgeons, Baltimore, 1882; aged 56; a member of the Medical Association of Georgia; a member of the state board of health; who was run over by an automobile in Eatonton, August 4; died a day later as the result of his injuries.

William Henry Yeager, M.D., Philadelphia; Hahnemann Medical College, Philadelphia, 1900; aged 44; associate professor of therapeutics and clinical medicine in his alma mater; a member of the staff of Hahnemann Hospital; died in that institution, August 4, from appendicitis.

Sylvester W. Sellew, M.D., Oil City, Pa.; Homeopathic Hospital College, Cleveland, 1882; aged 59; a member of the Medical Society of the State of Pennsylvania; was accidentally drowned while bathing at Henry's Bend, near Oil City, August 8.

Joseph Logue Lockary, M.D., Roxbury, Boston; McGill University, Montreal, 1897; aged 44; a Fellow of the American Medical Association and in charge of the Children's Clinic at Tremont, Mass.; died at St. Stephen, N. B., August 13.

Wooster Beach, M.D., Westchester, N. Y.; College of Physicians and Surgeons in the City of New York, 1854; aged 84; one of the founders and first president of the Medico-Legal Society of New York; died at his home, August 6.

William Gutch Haning, M.D., Belleville, Kan.; Rush Medical College, 1890; aged 57; formerly a Fellow of the American Medical Association; died at Rochester, Minn., August 8, after an operation for the removal of gallstones.

Charles Rideny Sharp, M.D., Nashville, Tenn.; Universities of Nashville and Tennessee, Nashville, 1911; aged 32; a member of the Tennessee State Medical Association; died at the home of his parents in Nashville, August 4.

Henry Cooledge Frost, M.D., Buffalo; Homeopathic Hospital College, Cleveland, 1874; aged 67; senior surgeon of the Buffalo Homeopathic Hospital; while taking a trip with his son, died in Montreal, July 25, from nephritis.

Girard F. Knowles, M.D., Manistee, Mich.; Hahnemann Medical College, Chicago, 1882; aged 58; formerly a Fellow of the American Medical Association; a member of the Michigan State Medical Society; died at his home, August 4, from anemia.

Samuel Ellsworth Yoder, M.D., Wymore, Neb.; University of Michigan, Ann Arbor, 1889; aged 52; a member of the Nebraska State Medical Association; died in a hospital in Lincoln, August 4, from heart disease.

James Edward Leary, M.D., Lowell, Mass.; College of Physicians and Surgeons, Baltimore, 1894; aged 42; formerly a member of the Massachusetts Medical Society; died at his home, June 11, from heart disease.

Oliver Marshall Steadham, M.D., Auburn, Ala.; Chattanooga (Tenn.) Medical College, 1894; a member of the Medical Association of the State of Alabama; died at his home, August 11, from arteriosclerosis.

Waldemar Dorfman, M.D., New York; University of Berne, Switzerland, 1882; aged 62; for six years a surgeon for the Hamburg-American Steamship Line; died at his home, August 10, from heart disease.

Adam J. Blessing, M.D., Albany, N. Y.; Albany (N. Y.) Medical College, 1886; aged 51; a member of the Medical Society of the State of New York; died at his summer home in Sacandaga, N. Y., August 6.

Solomon Sheridan Owen, M.D., Moore, Mont.; College of Physicians and Surgeons, Kansas City, Kan., 1904; aged 48; was instantly killed by the overturning of his automobile near Moore, August 6.

Eli B. Haynes, M.D., Marble Rock, Iowa; Vermont Medical College, Woodstock, 1850; aged 89; a pioneer practitioner of Floyd County, Iowa; died at his home in Marble Rock, August 10.

Everett P. Courtright, M.D., Newark, N. J.; Jefferson Medical College, 1890; aged 47; a member of the Medical Society of New Jersey; died at his home, June 28, from cirrhosis of the liver.

Kenneth D. Wise, M.D., Los Angeles; Jefferson Medical College, 1865; aged 83; a veteran of the Civil War; for forty-four years a practitioner of Los Angeles; died at his home, July 31.

George Rauchfuss, M.D., New York; College of Physicians and Surgeons in the City of New York, 1895; aged 50; for several years in the naval service; died at his home, July 31.

Earl Amzie Stickle, M.D., Kenton, Ohio; University of Michigan Homeopathic Medical College, Ann Arbor, 1909; aged 34; died in the Grant Hospital, Columbus, Ohio, July 30.

Hezekiah V. Brown, M.D., Portland, Ind.; Starling Medical College, Columbus, 1882; aged 76; a veteran of the Civil War; died at his home, July 28, from cerebral hemorrhage.

Andrew L. Van Patten, M.D., Los Angeles; Hahnemann Medical College, Chicago, 1876; aged 71; formerly of Chicago; died at his home, August 3, from heart disease.

Henri Prevost, M.D., St. Jerome, Que.; University of the Victoria College, Coburg, Ont., 1889; aged 53; died at his home, April 21, from malignant disease.

Edwin M. Orr, M.D., Hot Springs, Ark. (license, Arkansas, 1903); aged 46; surgeon to a lumber company at Parkin, Ark.; died at his home in Hot Springs, August 10.

Marion H. Dinsmore, M.D., Sharpsburg, Pa.; Hahnemann Medical College, Philadelphia, 1911; aged 34; died at his home, August 30, from heart disease.

David Henry Lancaster, M.D., Culloden, Ont.; Cleveland University of Medicine and Surgery, 1863; aged 78; died at his home, April 23, from diabetes.

Jesse Henry Deer, M.D., Zionsville, Ind.; Medical College of Indiana, Indianapolis, 1903; died August 2, at Indianapolis while being taken to a hospital.

George Wesley Shaffer, M.D., Creamridge, N. J.; Hahnemann Medical College, Philadelphia, 1877; aged 63; died at his home, about July 30.

Christian G. Weiss, M.D., Indianapolis; Hospital College of Medicine, Louisville, 1895; aged 80; also a druggist; died at his home, August 2.

Cary Nelson Dunlap, M.D., Middlebrook, Va.; College of Physicians and Surgeons, Baltimore, 1893; aged 46; died at his home, August 2.

Francis V. Carden, M.D., Coatesville, Pa.; University of Louisville, Ky., 1908; aged 33; died at his home, July 31.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

A RECENT REPORT ON FOODS AND DRUGS

The chief chemist of the Connecticut Agricultural Experiment Station, J. P. Street, calls attention¹ to the fact that now, for the first time, certain manufacturers of food products are beginning to make claims that their output is "rich in vitamins." The billboards and advertising placards, as well as circular reading notices, have long expounded the hypothetical virtues of "phosphates" as "brain food" and of other "vitalizing" ingredients in ready-to-serve foods or similar dietary preparations; hence the advent of vitamin into popular knowledge has been accorded a prompt reception. Street's presentation of the present status of the subject seems so reasonable and sane that it deserves to be quoted:

"Feeding experiments with 'purified or partly purified' foods, or with artificial mixtures containing all of the *known* ingredients heretofore supposed to be essential for the support of life, have shown that some still unknown substance or substances must be present in a food in order to make it capable of long supporting life. The nature of these substances is at present entirely unknown, their existence being assumed from the effect produced by adding small amounts of extracts of or parts of various vegetable or animal tissues to the above mentioned inefficient diets. Probably the so-called 'vitamines' include a variety of chemical substances which are widely distributed throughout the animal and vegetable tissues. As a consequence nearly all of the unmanipulated food products contain enough of these vitamins to supply the requirements of normal nutrition.

"The claim that a food is 'rich in vitamins,' even if true, adds little to its value, for, however essential these substances may be, they are so widely distributed among all of the common articles of food that every person who has an ordinary normal diet gets quite enough of them. The phrase does not carry with it the idea of any special process having been used, or even any special food having been selected, but rather that natural, unmanipulated foods are present, and that the manufacturer, alert to the advertising value of the new catch phrase, claims for his product a virtue common to the majority of our most familiar foods."

Proprietary infant foods play an important part in the nutrition of the people. A comparison of the composition of a number of widely used brands at an interval of seven years shows that the differences at the two inspection periods were, as a rule, not been great. The different brands, of course, show decided dissimilarities, such as the complete absence or the great abundance of starch, the unlike protein content, and the divergences in the quantity of fat, as well as in the sources of the nutrients in the product as sold. Most of them are, however, not intended for consumption without either some preliminary treatment or modification with milk or other adjuvants. A fair representation of the comparative composition or merits can be made, therefore, only by analyzing the products in the form intended for direct consumption. A comparison made in this way by Street shows divergences as wide as the difference of opinions among pediatricians respecting the ideal food for infants. The claims of the manufacturers are usually less modest. Three products are asserted respectively to exhibit: "the nearest approach to mother's milk that can ever be produced and remain permanent," or the "composition is nearly identical with that of mother's milk," or the "composition shows a close resemblance to mother's milk." An inspection of the composition of feeding mixtures prepared from these three foods has led the chemist to remark that the manufacturers' claims are correct, human milk in

Jersey City, N. J., Battle Creek, Mich., and in Vevey, Switzerland, must be an exceedingly variable product.

The drug situation still shows some disconcerting aspects. For example, of twenty-five samples of chlorinated lime (bleaching powder) which, according to the United States Pharmacopeia, should contain "not less than 30 per cent. of available chlorine," only three were found of full strength. Eight contained but traces of available chlorine. This is a dangerous situation when it is recalled that the public as well as the medical profession puts great dependence on the disinfecting powers of this inexpensive material, bleaching powder being commonly regarded as one of the most useful household disinfectants. There is not necessarily any intentional fraud in dispensing an inactive product. Street points out that chlorinated lime deteriorates quickly, especially in containers which are not tightly closed, so that when a deficient sample is found it is difficult to place the responsibility. The original material as it came from the manufacturer might be of inferior quality, the sample might represent stock kept too long on the druggists' shelves, or the deterioration might be due to an improper kind of container. Whatever the cause of the inferiority, the consumer would have placed dependence on a product that could not secure the desired results. Doubtless there is great need, at present, of a suitable container for so useful a product.

The results of the Connecticut inspection show the mercury ointments of the United States Pharmacopeia are often liable to be confused. A request for "mercurial ointment" may bring "blue ointment" or "ointment ammoniated mercury." The necessity for both the strong and the dilute ointments, says Street, has often been questioned. At any rate confusion certainly exists in the minds of many druggists as to the true significance of the names of the three mercury ointments carrying approximately 50, 33.5 and 10 per cent. of the metal. It further seems to be not uncommon to dispense these poisonous ointments without any warning, in the form of a special label, as to the dangerous nature of the product.

The propaganda for reform in proprietary medicines and the enforcement of the laws in relation thereto is beginning to bear fruit in that the presence of dangerous and habit-forming drugs (other than alcohol) appears to be becoming less frequent. The review of the situation in Connecticut is summarized as follows: Of the forty-nine samples examined last year, only ten contained dangerous drugs other than alcohol:

1 acetanilid	1 fusel oil
1 acetphenetidin	3 lead acetate
1 arsenic	1 silver nitrate
1 bromids	1 strychnin

The claims on the labels and in the literature accompanying the medicines, though far from perfect, likewise show an improvement. This is largely due to the Sherley amendment of the federal Food and Drugs Act which prohibits false and fraudulent therapeutic claims. The newspaper advertising of many of these preparations, however, is still viciously bad. That the day of honest advertising is approaching is obvious to any close observer, and no agency is hastening that day so much as the false and dangerous advertisements of "patent medicines."

In recent years considerable suspicion has become attached to the cheapest grades of whisky sold over the bar in our larger cities. An investigation conducted in Connecticut failed to demonstrate the presence of wood alcohol, ether or chloral in any of the large number of samples examined. Almost any alcoholic beverage may be sold under the name of whisky, provided it contains from 45 to 50 per cent. of alcohol derived from grains. It appears from this most recent investigation that the commonest means employed by the compounders and dealers to cheapen their whisky is the addition of water. This is attested by the fact that out of 123 samples of bar whisky, only fifty were of full alcoholic strength. From the standpoint of temperance, says Street, this practice may not be without its advantages, but the commercial fraud is not the less real.

1. Street, J. P.: Report of the Connecticut Agricultural Experiment Station, 1915, Part V, Food Products and Drugs.

Correspondence

E Pluribus Unum Forever

To the Editor:—Today, when we have so much agitation on the subjects of industrial accident insurance, health insurance of sundry kinds, and all manner of hospital associations, why would it not be a step in advance for the United States government, cooperating with state and counties, to establish a department of public health whereby free medical, surgical and dental care, including hospital service when necessary, would be provided for all the people? I know from personal experience, gained through seven years of service in the mines of Calaveras County, where medical attention was given to all the miners including their families for what seemed to be a nominal fee, that the general health of the community was far above the average of communities where each individual has to pay for this service, obtain it as a gratuity from the medical practitioner, or go to the county hospital.

If adequate medical service were provided by the government, the working efficiency of the people could be increased from 15 to 20 per cent. All defectives could be given the best possible treatment, deformities corrected, and a large majority of diseases now prevalent could be absolutely eradicated. In fact, they, like the dodo bird, would become an extinct curiosity.

On the other hand, if medical attention, including its collateral branches, were supplied by the government, the standing and educational requirements of those rendering it and their efficiency could be increased far in excess of the general average of the same service as now rendered. If physicians and others employed in this service were required to devote one month each year to special work along their lines, they would be kept up to date and take a greater interest in their work. They should also be allowed one month's vacation in which to rest and recuperate, for all work and no play is detrimental to human progress. A system of taxation could be arranged whereby this could be accomplished, working no hardships to the masses of people, and at the same time providing for them a health insurance that could not be equaled in any other way.

I offer the foregoing suggestions as I believe sincerely in the doctrines of equal rights to all and special privileges to none.

W. C. SHIPLEY, M.D., Cloverdale, Calif.

Federal Aid for Indigent Consumptives

To the Editor:—That the tuberculosis problem is one in which the federal government should be deeply interested, no one can dispute. I think it is open to question, however, as to how the Kent bill—for which Dr. Brown makes a strong plea in his letter to THE JOURNAL of August 5—will solve the problem. On the other hand, there are certain disadvantages to the measure advocated which must tend to increase, rather than to solve, the various problems to be met.

I speak from the point of view of those located at a resort town. It is only such who have any idea of the number of tuberculous invalids from all sections of the country—many in advanced stages and insufficiently provided with means—who migrate to the health resort, hoping that a stay of a few months will arrest the progress of the disease. It is only those living in resorts who have any idea of the number of these persons who become a burden on the community and must either be supported by the charitable institutions or returned to their homes. Now, while at first sight it might seem that the so-called federal subsidy bill would solve the problems connected with the migratory consumptive, I think that a little consideration of the question is enough to convince one that there are certain very decided objections to the plan as outlined in the bill.

I should like to point out, as the first result of the passing of this bill, the increased migration of consumptives; any locality tagged with the government seal would have its difficulties added to, not removed. And though the bill provides

that the individual may not secure federal assistance unless it is shown that he "did not migrate and was not assisted in migration to secure aid under this act," it would be difficult and perplexing to decide just who should be entitled to aid. Dr. Brown has admitted that, in California, 30 per cent. are indigent when they arrive, and 20 per cent. become so within a year. At any rate, those not eligible for admission to an institution must be either supported or returned to their homes.

Again, the government is not doing the state or municipality a favor by permitting application for a subvention; what it is doing, if the subvention be granted, is to permit the quartering of federal or interstate consumptives in institutions intended for use of the local indigent, thus depriving the latter of the full use of institutions which, at best, are able to care for only a small number of the local sick.

Further, it does not seem just or reasonable that the local taxpayer, unable as he is to care properly for his own sick, should be compelled, in addition, to contribute one half the support of the migratory cases of tuberculosis.

Moreover, the migration of consumptives is only a small part of the tuberculosis problem: the bill in no way provides for the most important questions which arise in the case of every tuberculous person discharged from an institution, namely, the questions of proper after-treatment and employment for arrested cases. In fact, I can see few virtues to the bill, but several decided disadvantages.

We do not need the law. If the resolutions of the Executive Committee of the National Association for the Study and Prevention of Tuberculosis expressed last January and confirmed by the board be acted on—resolutions providing for an endorsement of federal participation in the tuberculosis campaign, with the request for a division of tuberculosis in the U. S. Public Health Service, and the suggestion that an advisory council of the latter, or an independent commission for the study of tuberculosis be appointed and financed by the federal government—we shall have a much better weapon with which to fight tuberculosis than by the passage of the Kent bill.

THOMPSON FRAZER, M.D., Asheville, N. C.

Dr. Lydston vs. Jenner Medical College

To the Editor:—In the current prospectus of the Jenner Medical College my name appears as a member of the faculty. I wish to state that I am not, nor have I ever been, officially connected with the aforesaid school. My name, as a faculty member, was used without my knowledge or consent and without any negotiations with the institution bearing on a faculty position. My relations with the Jenner Medical College simply consist in my having consented to give a few special lectures on surgical subjects during the coming term.

G. FRANK LYDSTON, M.D., Chicago.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted, on request.

TRANSMISSION OF HEART AND LUNG SOUNDS THROUGH SOLIDS

To the Editor:—1. In the *Scientific American*, July 15, 1916, is an article entitled "New Apparatus for Internal Diagnosis." It describes the invention of Dr. J. Glover whereby heart and lung sounds can be read and diagnosed with mathematical accuracy by the fluctuations of the galvanometer. Has this invention proved of scientific value?

F. W. BREMER, M.D., Pittsburgh.

ANSWER.—A description of the principle of this apparatus will be found in *Comptes rendus de l'Académie des sciences*, May 17, 1915. Dr. Glover received the Lallemand prize in physiology in 1915 for his investigations along the line of sound conduction through solid mediums. An article relative to the clinical application of this instrument was published in the *Bulletin de l'Académie de médecine*, Feb. 22, 1916.

p. 233 and abstracted in THE JOURNAL, April 8, 1916, p. 1171. As suggested by our correspondent, the most important feature of the instrument is a galvanometer connected with a microphone which is placed in contact with the chest. Variations in the intensity of the sounds transmitted through the solid mediums of the thoracic wall cause oscillations in the needle of the galvanometer, and these oscillations can be graphically recorded. At the same time they may be heard through a telephone attachment.

It is intimated by the author that with this instrument it is possible to diagnose very early pulmonary tuberculosis by characteristic oscillations in the needle of the galvanometer produced primarily by the breath sounds. A graphic record of these oscillations can, as stated, be made.

Undoubtedly a method of accurately recording the pulmonary and cardiac sounds in health and disease would be a great advance in diagnostic methods, but this instrument is exceedingly complicated, and much work must be done with it before its norms are really established. The great value of the electrocardiograph in diagnosis suggests that this instrument may ultimately prove useful, as in some respects they are similar.

WORK OF MEDICAL MISSIONARIES

To the Editor:—Having an interest in the subject of medical missions in countries outside of the United States, I desire to institute a research among the published accounts of the labors of such missionaries. Can you give me a list of publications which will serve as a basis for my investigations?

BURTON CHANCE, M.D., Philadelphia.

ANSWER:—The following is a list of references on this subject:

- Bartlett, C. J.: Peter Parker, the Founder of Modern Medical Missions, *THE JOURNAL*, Aug. 5, 1916, p. 407.
 Van Metre, P.: Training of Medical Missionaries, *THE JOURNAL*, Feb. 12, 1916, p. 529.
 Arnold, H. D.: Preparation of Medical Missionary for his Task, abstr., *THE JOURNAL*, April 22, 1916, p. 1349.
 Hoover, A. R.: Different Types of Medical Service Called for in the Foreign Field and Personal Qualifications Essential to Success, abstr., *THE JOURNAL*, April 22, 1916, p. 1349.
 Speer, R. E.: Fundamental Objectives and Purpose of Medical Missionary Work from Standpoint of Missionary Administration, abstr., *THE JOURNAL*, April 22, 1916, p. 1350.
 Allen, B.: Preparation of Women for Medical Mission Service, and How it Should be Differentiated, if at all, from That of Men, abstr., *THE JOURNAL*, April 22, 1916, p. 1350.
 Harrison, P. W.: Preparation of Medical Missionaries in Addition to their Medical Studies, abstr., *THE JOURNAL*, April 22, 1916, p. 1350.
 Medical Missionaries, *Medical News*, *THE JOURNAL*, April 29, 1916, p. 1397.
 Boyd, N. W.: American Presbyterian Mission, Canton, China; Melrose, J. A.: Larger Meaning of Medical Missions, *Bull. Am. Acad. Med.*, June, 1914.
 Corner, G. W.: Hospital Work of Laborador Mission, *Mod. Hosp.*, August, 1914.
 Research in Medical Missions, editorial, *THE JOURNAL*, Jan. 24, 1914, p. 305.
 Van Vloten, H.: Experiences of Medical Missionary in Interior of China, *Deutsch. med. Wchnschr.*, 1915, Nos. 1 and 2.
 Merrins, E. M.: Work of Medical Missionary Association of China; Bulkley, L. C.: Medical Mission Work in Siam, *Jour. sociologie mcd.*, April, 1915.
 Training of Medical Missionaries, editorial, *THE JOURNAL*, Aug. 21, 1915, p. 723.
 Scharlieb, M.: Care of Health of Married Women Missionaries, *Brit. Med. Jour.*, May 29, 1915.

MACEWEN'S SIGN—BIOT'S RESPIRATION— BRUDZINSKI'S SIGN

To the Editor:—Please inform me (1) what Macewen's sign of hydrophalus is. 2. What is Biot's type of respiration, and what is its connection with infantile paralysis? 3. What is Brudzinski's sign and flex?

CHARLES A. SELLERS, M.D., Hartford City, Ind.

ANSWER:—1. Macewen's sign is a tympanitic note elicited on percussion over the anterior horn of the lateral ventricle. Place the bell of the stethoscope on the forehead and percuss over the squamous part of the temporal bone. The note occurs in chronic hydrocephalus, in rachitis in infants, and in tuberculous and epidemic cerebrospinal meningitis.

2. Biot's respiration is an occasional arrest of respiratory movements from a few seconds up to half a minute. It occurs characteristically in intracranial disorders, especially meningitis, but has also been observed in other grave disorders. It might occur in certain types of infantile paralysis.

3. Brudzinski's sign in meningitis is a flexure movement of the ankle, knee and hip, when the neck of the patient is bent; also, when passive flexion of the lower limb on one side is made, a similar movement occurs with the other lower limb.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

- CALIFORNIA: Los Angeles, Oct. 3. Sec., Dr. Charles B. Pinkham, Room 527 Forum Bldg., Sacramento.
 COLORADO: Denver, Oct. 3. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.
 IDAHO: Wallace, Oct. 3. Sec., Dr. Charles A. Dettman, Burke.
 MASSACHUSETTS: Boston, Sept. 12-14. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.
 MINNESOTA: Minneapolis, Oct. 3-6. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.
 MISSOURI: Kansas City, Sept. 18-20. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.
 MONTANA: Helena, Oct. 3. Sec., Dr. William C. Riddell, Helena.
 NEW YORK: Albany, Buffalo, New York and Syracuse, Sept., 19-22. Mr. Harlan H. Horner, Chief Examinations Division, The University of the State of New York, State Department of Education, Albany.
 PORTO RICO: San Juan, Oct. 3. Sec., Dr. Quevedo Baez, San Juan.

Massachusetts March Report

Dr. Walter P. Bowers, secretary of the Massachusetts Board of Registration in Medicine, reports the oral, practical and written examination held at Boston, March 14-16, 1916. The total number of subjects examined in was 14; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 41, of whom 30 passed, including 2 osteopaths, and 11 failed, including 4 osteopaths. The following colleges were represented:

College	PASSED	Year	Per Cent.
Georgetown University	(1915)	80
George Washington University	(1912)	78.5
American Medical Missionary College, Chicago	(1906)	78.2
Bennett Medical College	(1915)	78
College of Physicians and Surgeons, Baltimore	(1915)	80.2, 83.1
Johns Hopkins University	(1914)	81
University of Maryland	(1915)	77.5
Boston University	(1915)	81
Harvard University	(1914) 78.2, 81; (1915) 77.6, 82.2; (1916)	84.9
Tufts College Medical School	(1914) 76.8; (1915) 75.5, 77.2	81.3
University of Michigan Medical School	(1908)	76.5
Univ. of Minnesota, Coll. of Homeo. Med. and Surg.	(1897)	75
Dartmouth Medical School	(1901)	77.6
Long Island College Hospital	(1914)	79.5
University and Bellevue Hosp. and Medical Coll.	(1914)	80.3
Jefferson Medical College	(1915)	82.2
Woman's Medical College of Pennsylvania	(1914)	81.1
University of Vermont	(1903)	82.2
Royal College of Physicians, England	(1911)	79
University of Paris	(1908)	75

College	FAILED	Year	Per Cent.
Georgetown University	(1910)	68.9
Kentucky School of Medicine	(1905)	*
Maryland Medical College	(1912) 69; (1913) 69.7, (1914)	69.9
College of Physicians and Surgeons, Boston	(1911)	69.7
Laval University	(1906)	*

* Did not complete the examination.

Missouri March Report

Dr. J. A. B. Adcock, secretary of the Missouri State Board of Health, reports the oral and written examination held at St. Louis, March 20-22, 1916. The total number of subjects examined in was 14; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 21, of whom 17 passed and 4 failed. One candidate was granted a reregistration license by examination. The following colleges were represented:

College	PASSED	Year	Per Cent.
Bennett Medical College	(1914)	75, 85.9
College of Med. and Surg., Physio-Med., Chicago	(1911)	77.8
Chicago College of Med. and Surg.	(1915) 78.1; (1916)	75
Rush Medical College	(1915)	84.8
Ensworth Medical College	(1909)	82.1
Kansas City Hahnemann Medical College	(1915)	79.8
Marion Sims Beaumont Medical College	(1903)	75
National University of Arts and Sciences	(1915)	80.1
St. Louis College of Physicians and Surgeons	(1906)	75.8*
St. Louis University	(1915) 82.4; (1916)	84.4
University Medical College, Kansas City	(1911)	75.6
Washington University	(1915)	81.4
University of West Tennessee	(1915)	79.7
Dallas Medical College	(1904)	77.9*

College	FAILED	Year	Per Cent.
St. Louis College of Physicians and Surgeons	(1913)	59.1
Meharry Medical College	(1915)	62.7
University of West Tennessee	(1914) 64.8; (1915)	64

* Graduation not verified.

Book Notices

THE MICROSCOPY OF VEGETABLE FOODS. With Special Reference to the Detection of Adulteration and the Diagnosis of Mixtures. By Andrew L. Winton, Ph.D., with the Collaboration of Dr. Josef Moeller, Professor of Pharmacognosy, University of Vienna, and Kate Barber Winton, Ph.D., Second Edition. Cloth. Price, \$6.50. Pp. 701, with 635 illustrations. New York: John Wiley & Sons, 1916.

The title by no means covers the contents of the book, as the different parts comprise: equipment, methods and general principles; grain, its products and impurities; oil seeds and oil cakes; legumes; nuts; fruit and fruit products; vegetables; alkaloidal products and their substitutes; spices and condiments, and commercial starches. The present edition, generally speaking, is the same as that published ten years ago, although a considerable number of drawings have been replaced or entirely new ones introduced, and the text of some of the chapters has been partially or wholly revised. "Additions have been made to the sections on wheat and flour, a complete revision of such parts of the chapter on oil seeds as treat on mustards, rapeseeds, cruciferous weed seeds, and linseed, a description of the histology of alfalfa with distinctions from red and alsike clover, a revision of the sections on pomes and drupes, with practical hints on the examination of almond pastes, jams, preserves and other fruit products, and rewritten descriptions of the cucurbitaceous fruits used as foods and adulterants."

The material is presented in an excellent form; the text and drawings are clear and should be useful even for one who is not particularly familiar with the use of the microscope and microscopic characteristics. The book is especially valuable, since the authors have for a great number of years been engaged in practical microscopic work. But it would be of still greater value to men working along these lines of microscopic work were it more comprehensive. The bibliography of microscopic work done since 1905 is rather incomplete, the literature references up to date being given only in a few chapters. Fortunately, this is usually not such a serious drawback in microscopic work, since morphologic or anatomic characteristics are fairly constant. However, since the book discusses also the detection of adulteration and diagnosis of mixtures, one misses the mentioning of new adulterants as well as that of improved methods of detection which have been reported in recent literature. It is noted further that the authors are still of the same opinion concerning quantitative microscopic analysis as that expressed in the first edition: "By microscopic analysis we learn the ingredients, but gain little idea of their proportion." Excellent work has been done in late years on quantitative microscopic analysis, and it might have been well to mention those results, which undoubtedly must be known to the authors. No mention has been made of the occurrence and nature of common molds and means for their detection in vegetable products. Figure 250, referred to in the discussion of agar agar as showing a number of diatoms, does not represent those which are commonly found in agar agar and which are considered characteristic of this product. The chapter on apparatus could well have been considerably extended, so as to include the comparison microscope, an easy means, especially for the untrained analyst, to compare two different objects microscopically at the same time. The fluorescence microscope as a means for the detection of cocoa shells in cocoa powder or ergot in flour might also have been mentioned. A more complete discussion of microchemical means for the detection and identification of either characteristic plant tissues or bodies in the tissue would have been of great help to the analyst in some of his difficult problems. A reference to the progress of microsublimation would probably have been in place, since this is often an easy and quick means to identify certain drugs or to detect extracted vegetable products, for example, tea freed from caffeine by extraction.

The foregoing suggestions have been made with the desire that they might be considered by the authors in a future edition. The present edition is undoubtedly the best book on the subject in the English language.

Medicolegal

Liability of Physician for Injury to Nurse While Taking Her to Case

(*Loftus vs. Pelletier (Mass.) 111 N. E. R. 712*)

The Supreme Judicial Court of Massachusetts sustains exceptions to a verdict ordered for the defendant, and holds that, in accordance with a stipulation of the parties, judgment in the sum of \$1,600 must be entered for the plaintiff. The court says that the plaintiff, a district nurse, was hired and paid by a women's club to attend patients who could not afford a nurse, when called on to do so by the physician in charge of such a patient. She testified that it was "a common thing for the different doctors to take you to their cases when they were making their calls" when the patient was so far out of town as the patient was to whom the defendant was taking her in his automobile when she was injured. The patient "was over 2 miles from town." The defendant testified that: "It was her (the plaintiff's) duty to go with me on my request." Unfortunately, in this instance, the automobile skidded and turned over, the plaintiff being thrown over the wind shield and injured. The mere fact of the car's skidding is not considered evidence of negligence, but it is held that, under all of the circumstances of the case, it was a question for the jury whether the skidding was not caused by the defendant's negligence in driving at a speed of more than 30 miles an hour in going around a sharp curve when the crowned surface of the road was loose and wet. The defendant's main defense, however, was that the plaintiff and he (the district nurse and the physician) were engaged in a common enterprise, and that since it has been held that those engaged in a common enterprise are both liable for an accident caused in the carrying out of that enterprise, and that the contributory negligence of one in such a case is to be imputed to the other or others engaged in it, it follows that one of those engaged in the enterprise cannot sue another of them if the one was injured through the negligence of the other. But the court does not find it necessary to consider whether it could have been found that the plaintiff and the defendant were engaged in a common enterprise, or whether, if they were, the defendant's contention that neither one could sue the other was well founded. The question to be decided was whether it had to be ruled as matter of law that the relation between the plaintiff and the defendant was that of persons engaged in a common enterprise, and the court holds that it could not have been so ruled. Furthermore, the two pieces of testimony by the plaintiff and the defendant, taken together, warranted a finding that a right to be transported to the patient was an implied term of the plaintiff's contract of employment when the patient lived some 2 miles out of town, and that under that contract the plaintiff was bound to accept the defendant's automobile as the method of that transportation when it was offered to her. From these findings it followed, or at least could have been inferred, that at the time of the accident the plaintiff was being carried under her contract of employment, that is to say, that she was being carried by the defendant for hire.

Upholds Requirement of Extra Heavy Plumbing Material

(*Kleinhein vs. Board of Commissioners of City of Wichita et al. (Kan.), 157 Pac. R. 1190*)

The Supreme Court of Kansas affirms a judgment in favor of the defendants in this action to restrain the board of commissioners from enforcing a city ordinance requiring waste pipes and fittings and all plumbing brass goods to be extra heavy, no goods of light weight or cast from yellow brass and known to the trade as competition goods to be used. This ordinance was passed pursuant to authority contained in a state statute providing that each city with a population of 7,000 or more having a system of water supply or sewerage shall prescribe rules and regulations for the materials, construction and inspection of all plumbing and sewerage, and the

board of health or proper authorities shall further provide that no plumbing work shall be done, except in case of repairing leaks, without a permit first being issued therefor on such terms and conditions as the city shall prescribe. The court briefly summarizes the evidence for and against the reasonableness of the ordinance. It says that extra grade plumbing goods are all heavier than those designated as "standard" and are all more expensive. Extra grade brass fixtures are cast from "red brass," or brass in which the copper constituent largely preponderates over the zinc. "Yellow brass" fixtures are made of drawn or rolled brass, the seams being brazed by electricity. In yellow brass the zinc constituent largely preponderates over the copper. Competition goods are simply goods sold in competition with those of extra grade. There was evidence that standard goods stand the tests of initial inspection as well as those of extra grade, are quite as durable as those of extra grade, and consequently are just as sanitary. The advantage in their use is that the builder who must build modestly can do so with satisfaction to himself and safety to the public and at a considerable saving in costs. There was also some evidence tending to show that independent plumbers are not able to procure extra grade material on equal terms with members of the association of master plumbers. Touching the merits of the case, the court's own remarks are few. It says that the plaintiff's claims are supported by high medical authority, and quotes an editorial from *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*, Aug. 29, 1914, p. 784. Then it adds that it is just possible that the foregoing views are those of a bacteriologist who is biased somewhat by his specialty and that effective plumbing may produce effects deleterious to health beyond those described. However this may be, the court has here a subject open to debate which has been duly considered by the legislature and by the city commissioners, and this court cannot declare as a matter of fact that the statute has no direct or substantial relation to the public health and welfare. This being true, the statute is valid. The ordinance obeys the mandate of the statute, and, so far as the court can see, does no more than carry out the intention of the legislature. This being true, the court cannot set aside the ordinance.

Surgeon Present at Interview Between Others a Competent Witness

(*C. H. & D. Ry. Co. vs. Gross (Ind.)*, 111 N. E. R. 653)

The Appellate Court of Indiana, Division No. 2, says that a surgeon who was called as a witness in this personal injury case had been in the service of the defendant company for several years. He selected other surgeons to treat the injuries of plaintiff Gross, and gave them, and also nurses general directions to that end, and also occasionally called on the plaintiff personally after he was injured and prescribed for him. Several days after the plaintiff was injured, certain representatives of the defendant company, under arrangements made with and by this surgeon, had an interview with the plaintiff in the reception room of the hospital in which he was a patient for the purpose of ascertaining from him the facts respecting the collision of the trains, and the circumstances under which he was injured. The surgeon went with the company's representatives to the interview, and was present for the double purpose that the representatives might be permitted to talk with the plaintiff, and to see that he was properly cared for while being removed from his ward to the reception room. Although present at the interview, the surgeon did not participate in it. At the trial, the company sought to show by the surgeon what the plaintiff said to its representatives in narrating the events preceding and attending the collision. On objection that the matter was privileged, the trial court excluded the testimony. It did not appear that the surgeon was present on that occasion for the purpose of or preparatory to treating the plaintiff or his injuries, or for any other ailment, or that the information was sought or needful to that end. In fact, it affirmatively appeared that the interview was of an entirely different nature, and for purposes other than those related to the plaintiff's treatment as a patient. Under such circumstances, the evidence should have been heard.

Miscellany

CONFERENCE OF STATE HEALTH OFFICERS WITH UNITED STATES PUBLIC HEALTH SERVICE, ON POLIOMYELITIS

On the call of the surgeon-general of the United States Public Health Service, representatives of thirty-nine states and of the District of Columbia met in Washington, August 17 and 18, to see what could be done toward establishing uniformity with respect to the quarantine restrictions imposed and to be imposed on persons suffering from acute anterior poliomyelitis, persons exposed to that disease, and persons coming from localities in which the disease is prevalent. Representatives of ten railroad companies, one insurance company, and of seven cities were present as guests of the conference.

In discussing the symptomatology of poliomyelitis, Dr. George Draper of New York expressed the opinion that any quarantine based solely on the cases of the disease that show paralysis is without value. The disease is not essentially a paralytic disease, and during the prevalence of the malady every sick child should be presumed to be suffering from poliomyelitis until the contrary is proved. Particular importance is to be attached in the diagnosis of the disease to pain on anterior flexion of the spine. The child tries to avoid any motion or manipulation involving such flexion, and shows evidence of being hurt if it is insisted on.

Dr. C. H. Lavinder of the Public Health Service, in charge of the epidemiologic work of the service in New York, said that in addition to the work incident to such investigations an entomologic survey of the infected area is being made, and paralytic phenomena in animals are being studied. Dr. Lavinder called attention to the importance of uniformity in the methods employed by state health officers and other agencies engaged in the epidemiologic study of this disease, and the conference later adopted certain standard forms which it recommended for this purpose.

Dr. G. W. McCoy, director of the Hygienic Laboratory, Public Health Service, reported that special studies are under way to determine the nature of the paralytic phenomena so often reported as prevailing among domestic animals during outbreaks of poliomyelitis, to determine the susceptibility of domestic animals to poliomyelitis as it occurs in man, and to find, if possible, some method whereby early diagnosis will be facilitated.

Dr. Haven Emerson, commissioner of health, New York City, said that in order to determine whether there is any relation between poliomyelitis and the milk supply, and if so what that relation is, an intensive study is being carried on, correlating from all possible standpoints the facts pertaining to the cases in one borough with the facts pertaining to the milk consumed in that borough. An effort is being made to determine whether there is any distinct type of child that is more apt to be attacked than children of other types. The results of different modes of treatment are being studied. Under the direction of Dr. A. H. Doty, and through funds provided by the Rockefeller Foundation, all discoverable exposures to infection and contact cases are being investigated by a corps of physicians and nurses employed for that purpose. The occurrence of secondary cases in households infected by poliomyelitis has thus far been found to be about as frequent as the occurrence of similar cases in scarlet fever.

Dr. Emerson said that the most important measures looking toward the prevention of the spread of poliomyelitis were immediate reporting, prompt diagnosis, and hospitalization. Patients should be put under fly screens as soon as possible. The movements of children should be restricted, and massing of them in parades, on picnics, at the movies, etc., should be avoided. The interest excited by the presence of the disease should be seized on for the more general and effective enforcement of sanitary regulations. New York regulations recognize the incubation period of poliomyelitis as two weeks, and regard the patient as infective for four weeks. Some New York physicians are personally using cleansing nasal sprays, say of normal salt solution, as a routine part of their

toilet on leaving hospital wards where there are poliomyelitis patients. Leading pediatricians, however, have advised against any effort to popularize the procedure, on the ground that possible traumatism from its use in unskilled hands and the likelihood of the use of the same atomizer or other apparatus by several persons would constitute a danger that would more than offset the possible good. No case of poliomyelitis has been traced to any physician or nurse. No relation has been discovered between the removal of tonsils and adenoids and the occurrence of poliomyelitis, but it was advised that no such operations be done during the prevalence of the disease, lest dangerous portals for possible infection be thereby opened and the patient be made more susceptible to infection by the loss of blood and the weakness incident to the operation.

Dr. Wade H. Frost of the Public Health Service, who is now engaged in epidemiologic work in New York, called attention to the fact that there is no known cultural method of identifying the organism that causes poliomyelitis. It can be recognized only through animal experimentation. Monkeys can be infected by the introduction of the virus into the nasal chambers even though no great traumatism be done to the mucous membrane, or by direct inoculation. Such methods are, however, too slow to be of much practical value in the recognition of the disease for the purpose of treatment or of quarantine, and they are not available to the average physician or health officer. So far as Dr. Frost knew there was no recorded case of the accidental dissemination of poliomyelitis among the monkeys in any animal house connected with any bacteriologic laboratory, even though infected animals were present, and no special precautions were taken to prevent the spread of the disease to the other monkeys, some of which might be demonstrated by subsequent inoculation experiments to be susceptible. He knew of no case in which an attendant at such an animal house had contracted poliomyelitis from infected monkeys or had been suspected of having carried the disease to others.

According to Dr. Frost, in the epidemiologic study of an outbreak of poliomyelitis there were ordinarily from 75 to 90 per cent. of the recognized cases that could not be traced to any preexisting case, the variations between the extremes stated depending on the character of the evidence that the investigator demanded as proof of such exposure. Among persons known to have been exposed, the incidence is relatively small. In view of the widespread dissemination of poliomyelitis without known exposure, a large number of carriers must exist if the disease is limited to the human race. Insect carriers have not, however, been absolutely excluded. Possibly the disease exists among domestic animals, or at least some disease that is due to the same virus, and is spread by direct contact, as with cats and dogs, or by dust or insects; but if this is the case, the disease as it prevails among such animals cannot be ordinarily of a paralytic type.

Dr. Ernest C. Levy, health officer, Richmond, Va., suggested that the endemic form of poliomyelitis might depend on some cause other than that which is responsible for outbreaks of the disease such as that now prevailing, and urged that studies be made to determine whether such is or is not the case.

Uniformity of procedure looking toward the prevention of the spread of poliomyelitis from state to state, and from one community to another within the same state, was recommended by the conference, along the following lines:

Quarantine by one state against another state, or by one community against another community within the same state, was disapproved, on the ground that the federal government, through the United States Public Health Service, can perform all the duties necessary in interstate relations, and that the state can perform like functions with respect to quarantine between communities within its own borders.

All cases of poliomyelitis should be reported immediately to the local health authorities and to the health authorities of the state, and the latter should make weekly reports to the United States Public Health Service. The Public Health Service should issue each week a summary of the reports received.

A state health authority, believing its territory to be in danger of invasion by poliomyelitis from another state, should call the attention of the United States Public Health Service to the situation, which should thereupon investigate the supposedly dangerous area. Should any area be found to constitute a menace to interstate travel, the Public Health Service should define that area, and thereafter the general restrictive measures laid down for the prevention of the spread of the disease should be in force with respect to it. Before any person 16 years old or less may leave the restricted area he should provide himself with a health certificate and permit to travel, and notice should be sent by the authority by which such certificate and permit are issued to the state health authority of the state of destination. Such health certificates and travel permits should be based on medical inspection and be void unless the journey begins within twenty-four hours after the issue of the permit. It is recommended that they be issued without fee. They must be signed by an officer of the United States Public Health Service, by the state health officer, or by a person empowered by the state health authority so to do.

A person 16 years of age or less who removes from an infected area to another locality should be kept under medical observation daily for two weeks from the date of his health certificate and travel permit.

Common carriers should instruct their agents and ticket sellers, when poliomyelitis is unusually prevalent, that travelers with children 16 years of age or less must be provided with health certificates and travel permits.

For the local control of poliomyelitis, the conference defined certain minimum requirements. Every known or suspected case of the disease should be immediately reported to the local health authority, and if poliomyelitis exists the premises are to be placarded. The minimum quarantine period for the patient is six weeks, and even after quarantine is raised he is to be excluded from schools and all public gatherings for two weeks more. Any person continuing to reside on the infected premises must remain there until quarantine has been raised, but with the permission of the health officer and after disinfection of person and clothing he may remove therefrom. Permission for the removal of children from the infected premises is to be granted, however, only when they are going to premises on which not only adults but children reside. Children so removing must be confined on the premises, in the house, for two weeks from the date of their arrival, and must be kept under observation by the health authorities.

Children, and teachers and other persons employed in or about a school building, who have been exposed to poliomyelitis, are to be excluded from the building and grounds for two weeks following the last exposure, and until after disinfection of persons and clothing. Whenever schools are closed on account of an outbreak of poliomyelitis, children under 16 years of age must be confined on their own premises.

If poliomyelitis occurs on premises in which foodstuffs are handled in the course of trade, the removal of such foodstuffs from the infected premises is to be prohibited until after quarantine has been raised; and the premises and their contents, and all utensils connected with the business have been disinfected.

No article whatsoever is to be taken from the infected premises during the period of quarantine. Carpets, rugs, curtains, bedding and similar articles from the infected premises are not to be exposed to the open air for airing, sunning, shaking or beating, without the express approval of the health officer. Library and school books must be burned. Domestic animals which have been in contact with the patient must be subjected to a thorough disinfecting bath before removal from the infected building or apartment, and must thereafter be confined in an outbuilding.

The usual provisions for the screening of the sickroom and the disinfection of articles exposed to infection and of excreta are to be followed.

The conference recommended that, whenever poliomyelitis is unusually prevalent, assemblages of children in public places be prohibited and that schools be opened only after

thorough medical supervision by a health authority. When schools have been closed and are to be reopened, beginning should be made with the high schools, and the schools for the lower age groups should be opened only as provision can be made for complete medical examinations. Measures to prevent the dissemination of human excreta and other bodily discharges and contamination by them, the suppression of flies, the prohibition of the common drinking cup, and a general educational campaign for cleanliness, with particular instruction of parents and children concerning personal hygiene, especially of the mouth and nose, were recommended by the conference.

The epidemic prevalence of poliomyelitis in certain states now was accepted by the conference as an indication of the likelihood of epidemic prevalence next year in states not gravely affected at the present time, and it was recommended that the preventive measures endorsed by the conference be continued in force at least until the incidence of the disease has subsided to or below its usual level.

Society Proceedings

COMING MEETINGS

Am. Assn. for the Study and Prev. of Inf. Mort., Milwaukee, Oct. 19-21.
American Association of Railway Surgeons, Chicago, Oct. 17-19.
American Roentgen Ray Society, Chicago, Sept. 27-30.
Colorado State Medical Society, Glenwood Springs, Sept. 5-7.
Idaho State Medical Association, Twin Falls, Oct. 5-6.
Indiana State Medical Association, Ft. Wayne, Sept. 27-29.
Minnesota State Medical Association, Minneapolis, Oct. 11-13.
Missouri Valley Medical Society, Omaha, Sept. 21-22.
Oregon State Medical Association, Portland, Sept. 14-15.
Pennsylvania State Medical Society, Scranton, Sept. 18-21.
Utah State Medical Association, Salt Lake City, Sept. 12-13.
Wisconsin State Medical Society, Madison, Oct. 4-6.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Insanity, Baltimore

July, LXXIII, No. 1

- 1 Psychiatry and Its Opportunities. E. N. Brush, Baltimore.—p. 1.
- 2 Stage Mad-Folk in Shakespeare's Day. P. Butler, New Orleans. p. 19.
- 3 Intellectual Efficiency in Relation to Insanity. A. J. Rosanoff, Kings Park, N. Y.—p. 43.
- 4 Psychiatric Needs of Large Community. O. Copp, Philadelphia.—p. 79.
- 5 Some Considerations of General Paresis from Histologic Standpoint. S. T. Orton, Philadelphia.—p. 89.

American Journal of Medical Sciences, Philadelphia

August, CLII, No. 2

- 6 *Coincidence of Latent Syphilis and Diabetes. A. S. Warthin and U. F. Wilson, Ann Arbor, Mich.—p. 157.
- 7 Dermoids of Mediastinum; Report of Cases. A. E. Hertzler, Kansas City, Mo.—p. 165.
- 8 *Relief of Chronic Obstructive Jaundice by Palliative Operations. J. F. Erdmann and C. G. Heyd, New York.—p. 174.
- 9 *Wassermann Reaction in Its Relation to Tuberculosis. C. G. Snow and A. T. Cooper, U. S. Army.—p. 185.
- 10 Care of Subacute Yellow Atrophy of Liver. A. Fraser, New York.—p. 202.
- 11 *Aneurysm of Thoracic Aorta; Its Incidence, Diagnosis and Prognosis. I. I. Lemann, New Orleans.—p. 210.
- 12 *Unusual Case of So-Called Pseudoleukemia (Lymphosarcoma). L. M. Warfield and H. T. Kristjanson, Milwaukee, Wis.—p. 222.
- 13 Case of Mediastinal Leukosarcomatosis (Sternberg). F. P. Weber and F. Wolf, London.—p. 231.
- 14 *Acute Myeloblastic Leukemia in Its Relation to Primary Anemia; Report of Case. S. W. Sappington, Philadelphia.—p. 238.
- 15 Nature of Bactericidal Property of Vaginal Secretion. T. Harada.—p. 243.
- 16 Calcium and Magnesium Metabolism in Case of Chronic Gout. J. Rosenbloom, Pittsburgh.—p. 256.
- 17 Case of Chronic Family Jaundice. I. H. Levy and J. L. Kantor, Syracuse.—p. 258.
- 18 Autoserobacterins. M. G. Wohl, Omaha.—p. 262.

6. Coincidence of Syphilis and Diabetes.—Six cases cited by Warthin and Wilson show that a combined interlobular and interacinacinar type of pancreatitis with loss of the islands

of Langerhans is extremely frequently associated with old latent syphilis. In the great majority of cases the pancreatitis is localized and patchy in character, and more rarely severe and diffuse. Diabetes may be associated with the more marked degrees of syphilitic pancreatitis; and in their necropsy service all of the diabetes cases have been so associated; but a number of cases of syphilitic pancreatitis of similar degree of severity have not presented the clinical symptoms of diabetes. It seems very probable therefore, that latent syphilis is the chief factor in the production of the form of pancreatitis most frequently associated with diabetes, but that diabetes is not always coincident with severe degrees of this type of pancreatitis.

8. Chronic Obstructive Jaundice Relieved by Palliative Operations.—The cases cited by Erdmann and Heyd may be epitomized as follows: 1. Carcinoma of the duodenum and papilla of Vater; cholecystostomy and posterior gastro-enterostomy; secondary operation; cholecystojejunostomy; recovery. 2. Carcinoma of the duodenum, with biliary obstruction; transfusion; posterior gastro-enterostomy and cholecystogastrostomy; recovery. 3. Carcinoma of the common duct; cholecystogastrostomy; death. 4. Carcinoma of the pancreas; hepaticoduodenostomy; death. 5. Carcinoma of pancreas; cholecystocolostomy; recovery. 6. Carcinoma of pancreas and ampulla of Vater; posterior gastro-enterostomy; cholecystostomy; recovery, secondary cholecystocolostomy; death. 7. Carcinoma of pancreas; hydrops of gallbladder; cholecystostomy; choledochostomy; death. The authors maintain that all cases of obstructive jaundice are entitled to operative consideration. There is a certain definite percentage of cases that are cured because there has been a mistake in the diagnosis. The immediate relief from itching, in addition to the prolongation of life, is an exceptionally strong argument for operation.

9. Wassermann Reaction in Tuberculosis.—As a result of their examination of 290 tuberculous patients, Snow and Cooper are firmly convinced that tuberculosis need not, in the absence of syphilis, present a positive Wassermann reaction. The percentage of nonsyphilitic, tuberculous patients whose blood may bind complement with noncholesterinized antigens is so small as to be practically negligible. Complete fixation, namely, a strong Wassermann reaction with noncholesterinized antigen, in a tuberculous patient, is as adequate presumptive evidence of syphilis as it is in a non-tuberculous. The serums of nonsyphilitic tuberculous patients may give partial to complete complement fixation with cholesterinized antigen in about 31 per cent. of cases.

11. Aneurysm of Thoracic Aorta.—Lemann emphasizes the fact that if we wait for the complete classical clinical picture of thoracic aneurysm as described in our textbooks, we shall miss the vast majority of cases in which the prognosis of the disease is such as to preclude any aid to the patient. Only two phenomena were present in any considerable percentage of the cases, pain and dulness. The pain may be substernal, vertebral, may extend down either arm or up the side of the neck to the occiput. The pain may be continuous or may occur as typical attacks of angina. Percussion seems to yield earlier information of an intrathoracic growth than any other method of physical examination. The dulness in Lemann's cases was always outspoken and required no particular method nor manipulation to demonstrate. It was so often the first and only phenomenon to direct attention to intrathoracic abnormality that he is convinced that if more attention is paid to it in routine physical examinations many "latent" aneurysms will be turned to light. The abnormal dulness to which attention is called may be found in two locations. The first in the region of the manubrium.

When an abnormality in the anterior mediastinum exists, the area of relative dulness is converted into one of flatness, and the conditions are reversed so that instead of the manubrium being more resonant than the body of the sternum it is duller. In addition to this the limits of the flatness (or dulness) are no longer marked by the sternal border, but extend more or less into the first and second intercostal spaces, according to the size and location of the abnormal solid mass in the mediastinum. The second location of

abnormal dulness is over the vertebrae. Under normal conditions, percussion over the thoracic spine yields a resonant note except over the bodies of the first, second and sometimes the third vertebrae. These are dull. In cases in which dulness extends lower than the body of the third thoracic vertebra there exists some abnormality in the posterior mediastinum. Added significance is lent to this vertebral dulness when there is also paravertebral dulness whether on the one side or the other, but particularly on the left side.

12. So-Called Pseudoleukemia.—The case cited by Warfield and Kristjanson was unusual in that it appeared to be typical lymphosarcoma on first admission. On readmission, the blood picture was that of acute lymphatic leukemia and glands removed from the axilla just before death showed a picture indistinguishable from the appearance which the authors believe is typical of Hodgkin's disease.

14. Acute Myeloblastic Leukemia.—Sappington cites a case of grave anemia which presented in the last eight days of life a blood picture of acute myeloblastic leukemia with extraordinary numbers of nucleated red cells.

American Journal of Orthopedic Surgery, Boston

August, XIV, No. 8

- 19 Opportunity for Orthopedist in Preventive Medicine Through Educational Work on Posture. J. E. Goldthwait, Boston.—p. 443.
- 20 *Treatment of Caries of Spine by Bone Transplants; Report of Twenty-Three Cases. R. L. John, Philadelphia.—p. 450.
- 21 *Obstetric Paralysis. Orthopedic Problem. J. W. Sever, Boston. p. 456.
- 22 Presence of Roentgenologic Shadows Associated with Subdeltoid Bursitis; Presence of Similar Shadows in Other Parts of Body. J. M. Berry, Albany, N. Y.—p. 476.
- 23 Certain Aspects of Injuries of Lower Back. R. Hammond, Providence, R. I.—p. 484.

20. Treatment of Caries of Spine by Bone Transplants.—In the twenty-three cases reported by John an excellent result was obtained in seven cases, moderately good in three cases, poor in one case, indifferent as to operation in eight cases, one patient died as result of operation and not traced or too recent to consider in three cases. Of the six patients who died under treatment, one patient died of acute miliary tuberculosis in forty days after operation; one, of ether pneumonia, in forty hours after operation; three patients died of tuberculous meningitis in seventeen days, two months and three months, respectively; and one case of secondary sinus infection twenty-six months after operation. John points out that the danger of arousing and disseminating a more or less latent infection by the trauma of the operation is more grave than has been generally conceded. Even in those cases in which the operation has been most successful in ankylosing the vertebrae, the good results in several instances have been only local, the disease soon appearing in a new focus. In other words, the disease is arrested locally, but not generally.

21. Obstetric Paralysis.—By numerous dissections on infantile cadavers Sever has shown that traction and forcible separation of the head and shoulder puts the upper cords, the fifth and sixth cervical roots of the brachial plexus under dangerous tension. Any sudden force applied with the head bent to the side and the shoulder held, would injure these cords. Further observation shows that forcible abduction and elevation of the arm and shoulder put the lower cords of the plexus, the eighth cervical and first thoracic, on a stretch, and when much force is applied it may lead to a tear, rupture or other injury to these segments. This condition is seen in breech cases, with arm extended. It may also follow sudden strain when the arm is elevated, such as the so-called "hostler's paralysis," caused by the sudden elevation and strain of the arm, which occurs when a hostler holds a rearing horse. With the shoulder held and the head carried to one side, with the clavicle intact, considerable force was necessary to injure the plexus. The suprascapular nerve always snapped first, apparently for the reason that it had not so much freedom of play as the others. Even with considerable force, the fifth and sixth nerves could not be completely torn across at Erb's joint, but frayed out inside the sheath, following a partial tearing or rupture of the sheath, which always gave way first. In some cases there could be

produced an evulsion from the spinal cord of the fifth and sixth roots. The upper arm type of paralysis is much more frequent than the lower arm type. The prognosis for a useful arm is good in the upper arm type and bad in the lower arm type.

Bulletin of Johns Hopkins Hospital, Baltimore

August, XXVII, No. 306

- 24 *Value of Roentgen-Ray Examinations in Diagnosis of Cancer of Stomach. F. H. Baetjer and J. Friedenwald, Baltimore.—p. 221.
- 25 Seventy Cases of Brain Tumor. G. J. Heuer and W. E. Dandy, Baltimore.—p. 224.
- 26 *Experimental Tuberculous Meningitis. C. R. Austrian, Baltimore.—p. 237.
- 27 *Alcohol Injection Treatment for Pruritus Ani. H. B. Stone, Baltimore.—p. 242.

24. Roentgen-Ray Study of Cancer of Stomach.—Baetjer and Friedenwald selected fifty consecutive cases, including those only concerning which they could feel confident of the correctness of the diagnosis. Of these, the growth was located in thirty-four instances about the pylorus, in nine involved the body of the stomach without interfering with the orifices, and in seven the cardia was involved. Of the fifty cases, the gastric secretion was obtained in forty-six. There was a normal acidity in four instances; a hypochlorhydria or an absence of acid in thirty-six instances, and a hyperchlorhydria in six instances. In the thirty-six cases showing a hypochlorhydria, lactic acid was present in twenty-eight instances, and the Oppler-Boas bacillus in twenty-four. Occult blood was present in the stools in forty-two of all the cases. A palpable tumor was observed in thirty-four cases. A dysphagia in seven; pain was present in forty-nine; vomiting in forty-four; gastric hemorrhage in fourteen; melena in eight; occult blood in forty-six; dilatation of the stomach in twenty-four cases. The Roentgen ray gave positive evidence of disease in forty-six instances, of which four were early cases and forty-two were late cases. In two of the four early cases the roentgenogram gave a positive diagnosis of carcinoma. In the other two, however, an ulcerative lesion was found which was thought to be benign. The Roentgen-ray evidence, then, was positive in forty-two of the late cases. It was positive, so far as the lesion was concerned, in all of the cases, but positive in only 95 per cent. of the cases as regards the actual diagnosis of carcinoma. In the early cases the Roentgen ray showed a lesion in all; in two of them, however, it was thought to be benign, but exploration proved the condition malignant. This method of examination, in the authors' experience, possesses about the same diagnostic value as any of the other early signs of this disease, when taken alone, but in conjunction with the clinical evidence a positive diagnosis can almost always be made.

26. Experimental Tuberculous Meningitis.—Thirty-five rabbits were utilized by Austrian in making his observations. Twenty received inoculations of the bovine type of tubercle bacilli, and fifteen were injected with bacilli of the human type. The growth of a culture two weeks old was suspended in 0.85 per cent. salt solution. The resulting suspension was then diluted with salt solution to the approximate density of a 0.05 per cent. solution of lecithin in 0.85 per cent. salt solution. From 1.0 to 1.5 c.c. of such a suspension were slowly injected with very little pressure into the spinal canal, either through a needle inserted into the canal in the lower lumbar region, or into the cranial cavity according to the procedure of Manwaring. These experiments demonstrated that the injection of tubercle bacilli into the spinal canal of rabbits caused the development of meningitis. The clinical syndrome produced was definite, and the symptoms were typically those of meningeal inflammation. The signs most constantly noted were dulness and coma, or restlessness, excitability and hyperesthesia to touch and light, anisocoria, paralyses, muscular hypertonicity, even opisthotonos. It is suggested that the ready production of meningitis in rabbits by the intraspinal injection of infectious material might be used to identify the nature of a meningeal infection in man. It would be a simple procedure to introduce into the spinal canal of a rabbit 1.0 to 2.0 c.c. of the spinal fluid of a patient thought to have tuberculous meningitis, and in a few days examine

tion of the rabbit's meninges might give evidence of the tuberculous nature of the patient's disease.

27. Alcohol Injection Treatment for Pruritus Ani.—The success of alcohol injections for producing localized lasting anesthesia, in facial and other forms of neuralgia, suggested to Stone the application of the same principle to the abolition of unpleasant sensations from the anal and perianal regions. The method has been tried in seventeen cases. There is not much pain associated with the injection. There is some soreness during the first twenty-four hours, after which the only subjective sensation remarked is numbness. The itching is immediately abolished and the area injected is largely or completely anesthetic. No case so far has shown the slightest evidence of disturbance in the action of the sphincter. One patient has returned for a second injection, eight months after the first, for a recurrence of itching. The area in which the itching is complained of is carefully noted. Under general or local anesthesia, the injection is then made so that this whole area is anesthetized. The needle is carried entirely through the skin vertically and then is inclined sharply to the side so that it lies nearly parallel to the skin surface. This method accomplishes practically the same thing as the operative treatment for pruritus, and is indicated in those cases of great intensity in which the usual measures have failed.

Illinois Medical Journal, Chicago

August, XXX, No. 2

- 28 Medical Legislation—Recent and Contemplated. C. S. Drake, Springfield.—p. 81.
- 29 Surgery of Colon As Applied to Intestinal Stasis. A. J. Ochsner, Chicago.—p. 86.
- 30 Traumatic Hernia, So-Called. C. W. Hopkins, Chicago.—p. 89.
- 31 Appendicitis From Standpoint of Ordinary Surgeon. C. A. Buswell, Chicago.—p. 94.
- 32 Chronic Appendicitis From Standpoint of Internist. J. C. Friedman, Chicago.—p. 100.
- 33 Surgery From Patient's Viewpoint. C. U. Collins, Peoria.—p. 105.
- 34 Atypical Form of Splenic Disease. A. B. Kanavel, Chicago.—p. 110.
- 35 Splenectomy in Pernicious Anemia. P. M. Parrish, Decatur.—p. 112.
- 36 Splenectomy. M. L. Goodkind, Chicago.—p. 115.
- 37 Id. N. M. Percy, Chicago.—p. 118.
- 38 Preparation and Use of Vaccines in Chronic Bacterial Localizations. A. Gehrman, Chicago.—p. 120.
- 39 Radium Therapy. F. E. Simpson, Chicago.—p. 123.
- 40 Clinical Significance of Vicarious Gastrorrhagia. F. Smithies and R. Bowen, Chicago.—p. 126.
- 41 Malignant Endocarditis. A. H. Baugher, Chicago.—p. 132.
- 42 Management of Empyema in Childhood. A. M. Miller, Danville.—p. 138.
- 43 Interpretation of Roentgenograms. F. S. O'Hara, Springfield.—p. 140.

Journal of Cutaneous Diseases, Boston

August, XXXIV, No. 8

- 44 Dermatologist, Proper Teacher of Syphilis. J. Zeisler, Chicago.—p. 583.
- 45 Congenital and Bone Syphilis. A. Post, Boston.—p. 589.
- 46 Paastes. D. W. Montgomery, San Francisco.—p. 596.
- 47 Case of Nevus Anemicus. J. E. Lane, New Haven, Conn.—p. 602.
- 48 Argyria From Unusual Source. A. Davidson, Los Angeles.—p. 605.

Medical Record, New York

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- 49 Cultivation of the Organisms of Vaccinia, Variola, and Varicella. H. Greeley, Brooklyn.—p. 265.
- 50 A Practical Method of Treatment for "Inoperable" Cancer of the Breast. C. W. Strobell, New York.—p. 271.
- 51 Epidemiology and Preparedness. C. E. North, New York.—p. 277.
- 52 Vaccines in Acute Infection. E. Bonime, New York.—p. 282.
- 53 History of Condensed Milk, With a Note on Its Therapeutical Uses. P. Batholow, New York.—p. 284.
- 54 Probable Future Evolution of Insurance Medicine. H. E. MacDonald, Los Angeles.—p. 286.

Michigan State Medical Society Journal, Grand Rapids

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- 55 Dysmenorrhea With Antelexion and Retrocession. F. A. Pember-ton, Boston.—p. 365.
- 56 Sleep and Sleep Disturbances. W. W. Kahn, Detroit.—p. 366.
- 57 Constipation in Infants. J. B. Jackson, Kalamazoo.—p. 369.
- 58 Therapeutic Application of Ovarian Extract. W. H. Morley, Detroit.—p. 372.
- 59 Sinusitis—Acute and Chronic. L. J. Goux, Detroit.—p. 377.

- 60 Plea for Larger Surgical Instinct in Obstetrics. E. T. Abrams, Dollar Bay.—p. 381.
- 61 Demonstration of Case of Phagadema. U. J. Wile, Ann Arbor.—p. 386.
- 62 Case of Constitutional Syphilis Associated with Hallucinatory Mental States. A. L. Jacoby, Ann Arbor.—p. 388.
- 63 Case of Multiple Pregnancy with Eclampsia; Abdominal Cesarean Section with Recovery. R. A. Bartholomew, Ann Arbor.—p. 390.
- 64 Tendency of Diphtheria Bacillus to Localize in Upper Respiratory Tract and Importance of This Fact in Routine Culture Work. D. O. Walthall, Ann Arbor.—p. 392.
- 65 Lantern Slide Demonstration of Month's Roentgenograms. J. G. Van Zwaluwenburg, Ann Arbor.—p. 395.

Missouri State Medical Association Journal, St. Louis

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- 66 Interpretation of Roentgenograms of Chest in Tuberculosis. J. J. Singer, St. Louis.—p. 369.
- 67 Paracutic Deafness and Treatment. W. M. Reed, Kansas City.—p. 372.
- 68 Mental Clinic and Social Service in Care of Insane in Their Homes. F. M. Barnes, Jr., St. Louis.—p. 374.
- 69 Function of Observation Ward at City Hospital. M. A. Bliss, St. Louis.—p. 377.
- 70 Hospital for Insane and Mental Hygiene of Community. G. A. Johns, St. Louis.—p. 379.
- 71 Conservatism in Surgery of Female Pelvis. C. L. Cooper, Kansas City.—p. 381.
- 72 Care of Delicate Infant During Hot Weather. J. M. Brady, St. Louis.—p. 383.
- 73 Necessity for Studying Medical History. R. E. Schlucter, St. Louis.—p. 385.
- 74 Fetal vs. Maternal Impression. A. G. Pohlman, St. Louis.—p. 391.

New York Medical Journal, New York

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- 75 The Story of Dementia Praecox. F. X. Dercum, Philadelphia.—p. 289.
- 76 Congenital Syphilis. The Prognosis and Modern Treatment. F. Wise, New York.—p. 293.
- 77 Our American Voice and Articulation. C. P. Grayson, Philadelphia.—p. 298.
- 78 Vincent's Bacillus in the Cervix. Guthrie McConnell, Waterloo, Ia.—p. 300.
- 79 Health Insurance From the Viewpoint of a Physician. A. C. Burnham, New York.—p. 301.
- 80 Modern Methods of Transfusion. L. M. Kahn, New York.—p. 304.
- 81 Hereditary Chorea. Early History and Remarks on a Barely Mentioned Psychic Peculiarity Which May Accompany It. C. King, Franklinville, N. Y.—p. 306.
- 82 Gonorrhea and Its Complications. Treatment With the Atoxic Antigonococcus Vaccine of Nicolle and Blaizot. A. Hyman, New York.—p. 308.

Ophthalmic Record, Chicago

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- 83 Chronic Infection of Faucial Tonsils as Causative Factor in Production of Paralysis of Accommodation; Report of Two Cases. C. A. Veasey, Spokane, Wash.—p. 379.
- 84 Scissor Movement in Retinoscopy. C. Sheard, Columbus, Ohio.—p. 382.
- 85 Keratitis Associated with Rental Caries; Report of Cases. H. W. Blum, New Orleans.—p. 389.
- 86 New Muscle Substitution Operation for Congenital Palpebral Ptosis. J. B. Roberts, Philadelphia.—p. 397.
- 87 Trephining in Buphthalmos; Disappointment. H. Gifford, Omaha.—p. 402.
- 88 Tubular Vision; Its Underlying Causes. L. D. Brose, Evansville, Ind.—p. 403.
- 89 Improved Elliot Operation for Glaucoma. J. G. Huizinga, Grand Rapids, Mich.—p. 410.
- 90 Explosion of Snellen Eys. A. Rochester, Chicago.—p. 412.

Southern Medical Journal, Birmingham

August, IX, No. 8

- 91 *Study of Spartein Sulphate. W. H. Zeigler, Charleston, S. C.—p. 671.
- 92 *Clinical Value of Various Digitalis Drugs and Preparations. J. T. Halsey, New Orleans.—p. 677.
- 93 Bowel Fluxes of Babies. I. L. Van Zandt, Fort Worth, Texas.—p. 679.
- 94 Fractional Method of Gastric Analysis. D. VanderHoff, Richmond, Va.—p. 683.
- 95 Artificial Pneumothorax. J. J. Lloyd, Catawaba Sanatorium, Va.—p. 685.
- 96 Application of Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis. M. F. Sloan, Towson, Md.—p. 689.
- 97 District Tuberculosis Nursing Plan in Florida. J. Y. Porter, Jacksonville, Fla.—p. 699.
- 98 Real Value of Climate. C. M. Hendricks, El Paso, Texas.—p. 703.
- 99 *Some of Problems in Public Health Education. J. D. Davis, Munday, Texas.—p. 707.

- 100 Malaria Survey of Impounded Water. H. R. Carter, Baltimore.—p. 708.
- 101 Report on Typhoid in Birmingham with Recommendations for Its Eradication. L. L. Lumsden, Washington.—p. 711.
- 102 Penetrating Wounds of Abdomen, with Injury to Viscera; Report of Two Cases. R. C. Dorr, Batesville, Ark.—p. 715.
- 103 Surgical Treatment of Nephritis. R. E. Stone, New Orleans.—p. 720.
- 104 Surgery of Colon. F. Y. Cronk, Guthrie, Okla.—p. 722.
- 105 Local Anesthesia. H. P. Cole, Mobile.—p. 724.
- 106 Silvol Treatment for Chancroids. G. R. Livermore, Memphis, Tenn.—p. 726.
- 107 Education of Railway Employee in First Aid Work. A. C. Scott, Temple, Texas.—p. 727.
- 108 Leukosarcoma of Choroid; Report of Case. H. Moulton, Fort Smith, Ark.—p. 738.
- 109 Suspension Laryngoscopy. R. C. Lynch, New Orleans.—p. 741.
- 110 Harelip and Cleft Palate. T. E. Carmody, Denver.—p. 744.
- 111 Medical Trust. I. W. Cooper, Newton, Miss.—p. 749.

91. **Study of Spartein Sulphate.**—From Zeigler's observations it appears that spartein is not toxic to the frog. The heart is slowed and weakened by a depressant action on the heart muscle and by a stimulation of the vagus endings. Spartein slows the turtle's heart by stimulation of the vagus endings and by a depression of the heart muscles. Spartein slows the heart of the rabbit. It slows the respiration, decreases the flow of urine, and causes a fall in blood pressure. Spartein causes a preliminary rise of blood pressure in the dog, followed by a fall. The fall was not so marked when small doses were given. The kidney oncometer shows a decrease in volume in a majority of the experiments. There is a slight increase in urine flow with the rise and the first fall. The experiments did not prove conclusively the cause of the rise in blood pressure, but the results obtained with the kidney oncometer tend to show that it is due to a vasoconstrictor action. The fall is due to stimulation of the vagus. This is proved by first injection of atropin and afterward by spartein. Atropin seems to increase the toxicity of spartein.

92. **Clinical Study of Various Digitalis Drugs.**—The discussion of the relative value of the various drugs making up this group is started by Halsey by the statement that, from the standpoint of the clinician, they differ from each other mainly in the rate and certainty with which they are absorbed and excreted and in their local action before absorption. Clinically there appear to be no qualitative differences of practical significance in their all important actions on the circulation. And all who have sufficiently investigated their clinical effects have reached the conclusion that once it has been absorbed in sufficient amounts, digitalis produces all the desirable effects which may be produced by any of the others. Further, it has been established that, contrary to very generally held views, digitalis is absorbed more rapidly and certainly and is less irritant to the stomach than any of its congeners. Many of the older textbooks (and some of the newer ones) state that, as strophanthus is absorbed more rapidly and is less irritant to the stomach, it is to be preferred to digitalis where prompt action is desirable or where the digestion is disturbed. The real facts, Halsey says, are directly opposed to this. There is but one way to give strophanthus and that is intravenously, using, if it be obtainable, either the crystalline strophanthin or ouabain in dosage not to exceed one half of a milligram ($\frac{1}{20}$ of a grain), reserving such use of it for cases urgently needing a "digitalis" effect, and never giving it, except in still smaller amounts, to patients who have been taking digitalis or any of this group in the recent past. This dose may be repeated, if needed, in eighteen to twenty-four hours. Its effects are usually apparent in fifteen to thirty minutes and persist for twenty-four hours. Used in properly chosen cases and in proper doses, the prompt and useful effects of this drug are among the most gratifying. In regard to the clinical value of apocynum and squill Halsey states positively that he has never seen either of these drugs do good in any case in which digitalis had failed after a fair trial. They have no advantages under any clinical conditions over a good preparation of digitalis.

As to digitalis Halsey prefers the tincture. For various widely advertised proprietary digitalis preparations Halsey

claims that a number of extravagant and false or misleading claims are made. Among the commonest of these is the claim that the preparation in question is free from cumulative action. Any preparation of digitalis free from cumulative action is also without therapeutic value. In digipuratum the digitalis active principles are present in a form in which they are insoluble in the stomach. Consequently they do not irritate the gastric mucosa, although after absorption they like all digitalis bodies, stimulate the emetic center and consequently can and do cause vomiting. Digipuratum is, however, a preparation of very uniform strength, and were it not for its high cost Halsey says he would never use any other for oral administration. Digitalin, as commonly used, is the so-called digitalin germanicum, which is a mixture of varied composition and of uncertain strength. Different samples vary in strength so that some are more than twice as powerful as others. One sixtieth of a grain of this preparation is equal in therapeutic activity to from 3 to 5 minims of an average tincture of digitalis.

99. Abstracted in THE JOURNAL, Dec. 11, 1915, p. 2118.

Surgery, Gynecology and Obstetrics, Chicago

August, XXIII, No. 2

- 112 Bone and Joint Disease in Relation to Typhoid. J. B. Murphy, Chicago.—p. 119.
- 113 *Primary Treatment of Wounds in Civil Practice. M. F. Porter, Fort Wayne, Ind.—p. 144.
- 114 Separation of Lower Femoral Epiphysis; Report of Two Cases. W. R. MacAusland, Boston.—p. 147.
- 115 Indications For and Results of Cerebral and Cerebellar Decompression in Acute and Chronic Brain Disease. C. A. Elsberg, New York.—p. 153.
- 116 *Transplantation of Free Flaps of Fat. A. B. Kanavel, Chicago.—p. 163.
- 117 Peripenic Muscle; Some Observations on Anatomy of Phimosis. G. Jefferson, Victoria, B. C.—p. 177.
- 118 Gas Bacillus Infection; Surgical Bacteriology. J. C. Bloodgood, Baltimore.—p. 182.
- 119 Beginnings of Birth Control Movement. J. A. Field, Chicago.—p. 185.
- 120 Some Practical Aspects of Birth Control. R. S. Yarros, Chicago.—p. 188.
- 121 Therapeutic Value of Radium in Pelvic Cancers. H. Schmitz, Chicago.—p. 191.
- 122 Simple Sterilization of Women by Cautery Stricture at Intra Uterine Tubal Openings, Compared with Other Methods. R. L. Dickinson, Brooklyn.—p. 203.
- 123 *Genital Elephantiasis Following Extirpation of Inguinal Glands. J. T. Windell, Louisville.—p. 214.
- 124 *Pseudomyxomatous Cysts of Appendix and Ruptured Pseudomucinous Ovarian Cyst. F. W. Bailey, St. Louis.—p. 219.
- 125 Diathermy in Malignant Tumors of Bladder. L. E. Schmidt and G. Kolischer, Chicago.—p. 223.
- 126 *Simple Technic for Resection of Prolapsed Rectum. G. W. Brock, Atlanta.—p. 225.
- 127 Uncomplicated and Convenient Intestinal Anastomosis Clamp. J. R. Eastman, Indianapolis.—p. 225.
- 128 Use of Fat Transplantation in Kidney and Bladder Surgery. G. Kolischer, Chicago.—p. 227.
- 129 Simple Mechanotherapeutic Apparatus for Military Hospital. J. M. Flint, New Haven, Conn.

113. **Treatment of Wounds in Civil Practice.**—Porter says that in his work in cleansing wounds and the areas immediately surrounding them, gauze has largely replaced the brush and curet; time, patience and care have supplanted vigor; and strength in antiseptic solutions has been abandoned in favor of quantity. Even where there is strong reason for believing that foreign bodies are imbedded and are likely to cause trouble, he says, it will be better to allow them to remain at the primary dressing and await until Nature has had a chance to complete her defenses before attempting their removal. To postpone amputation until the symptoms of shock have subsided is regarded as a grave mistake. A hypodermic injection of morphin and atropin is given, artificial heat applied, a transfusion is done, hypodermoclysis or rectal injection is given if necessary while the patient is being anesthetized, or if the need for this stimulation is not urgent the amputation is quickly done and a sufficient amount of normal salt solution is injected into the open mouth of the vein in the stump after removal of the tourniquet, and the wound is closed and dressed. Extreme caution is urged about removing bits of tissue which seem hurt beyond recovery. The objection to this "trimming" process is that it opens new atria for infection, causes unnecessary sacrifice of

issue, increases the bleeding, and adds to the time anesthesia. As a rule dry dressings are preferred. Raw surfaces should be covered by narrow strips of protective to prevent sticking of the dressing and the consequent disturbance of the granulations when the dressing is changed. A nonodorous, non-irritating antiseptic powder used freely in lacerated wounds is advantageous. Porter believes that prophylactic measures against tetanus are uncalled for and would better be withheld in the treatment of all accidental wounds save those received under circumstances rendering infection by the tetanus bacillus probable.

116. Transplantation of Fat.—Out of thirty-two cases reported by Kanavel secondary infection with loss of the fat occurred in four breast cases, and here the result was probably due to the nature of the operation and the large field and the osteomyelitis cases. Therefore, the author thinks it would seem safe to say that fat can be transplanted into any ordinary field with the assurance that it will not act as a foreign body. Clinically, it would appear to live and become part of the structure in which it is placed. His results would seem to indicate that the greatest value of fat transplantation is to be found in its use in plastic operations to restore mobility and remove disfigurement, as a protection to prevent contracture about vessels and nerves, and to prevent adhesions about tendons and joints. Its use in tuberculous joints and bones is still a fruitful field of study, and the same may be said of its use in traumatic epilepsy, though it can be used safely to obliterate defects in brain tissue. In the author's hands the use of fat transplants in large, open potentially infective areas, such as are present after breast amputations, etc., and in osteomyelitis, has not been satisfactory.

123 and 124. Abstracted in *THE JOURNAL*, January 15, pp. 5 and 217.

126. Resection of Prolapsed Rectum.—The modification commended by Brock consists in performing the Mikulicz operation over a proctoscope or a round billet of wood, introduced through the lumen of the prolapsed mass.

FOREIGN

Articles marked with an asterisk (*) are abstracted below. Single reports and trials of new drugs are usually omitted.

British Medical Journal, London

July 22, II, No. 2899

- Industrial Diseases. J. W. Edwards.—p. 97.
- Head Injuries in War. A. W. Addinsell.—p. 99.
- Treatment of Hernia Cerebri. S. Smith.—p. 102.
- Treatment of Fractured Mandible Accompanying Gunshot Wounds. H. P. Pickerill.—p. 105.
- Treatment of Chlorin Gas Poisoning by Venesection. A. S. Hebblethwaite.—p. 107.
- Death After Nitrous Oxid-Oxygen and Local Anesthesia. W. J. McCardie.—p. 109.

Journal of Tropical Medicine and Hygiene, London

July 15, XIX, No. 14

- Paracholera Caused by *Vibrio Gindha Pfeiffer* 1896. A. J. Chalmers and N. E. Waterfield.—p. 165.

Lancet, London

July 22, II, No. 4847

- *Cardiac Disabilities of Soldiers on Active Service. J. Parkinson.—p. 133.
- Enteric-Like Fever in Anglo-Egyptian Sudan. A. J. Chalmers and N. MacDonald.—p. 139.
- Gangrene of War; Gaseous Cellulitis or Emphysematous Gangrene. A. J. Hull.—p. 144.
- *Cardiac Symptoms Following Dysentery Among Soldiers. E. B. Gunson.—p. 146.
- *Radical (Excision) Treatment of Gastric Ulcer. J. Cuning.—p. 147.
- Treatment of Hemorrhoids by Interstitial Injection. T. Bird.—p. 149.
- Unusual Case of Albuminuria. O. Leyton.—p. 150.

Cardiac Disabilities of Soldiers.—Parkinson records the result of an inquiry into the various conditions which lead to active service to report sick with symptoms suggestive of heart disease. It is based on ninety cases. There were

twenty-two among the ninety cases in whom other diseases were demonstrable. Valvular disease was present in twenty-eight. Forty men complained of cardiac symptoms, especially breathlessness and preeordial pain, but in whom no physical sign of heart disease could be found. Parkinson says that this is not a specific variety of heart disease and needs no such name as "soldier's heart." In about half the cases in this series the disability had been present to some extent in civil life and was therefore not the result of military service. The relative cardiac inefficiency may be: (a) a sequel of acute rheumatism, dysentery, influenza or other infection; (b) the result of myocardial changes due to age, especially in soldiers over 40; (c) associated with functional nervous disorder, particularly in cases in which the palpitation is a prominent complaint; (d) due to endowment with a heart of limited efficiency, so that the individual has always been short winded and fails to improve under training. The cause may be a congenital incapacity for full development of the heart, an unrecognized infection during infancy, or the absence of physical training during adolescence. A simple exertion test, such as climbing twenty-five to fifty steps, reproduces the symptoms in these patients and so furnishes valuable information on the functional efficiency of the heart. Some degree of myocardial disease is present in a number of cases.

11. Cardiac Symptoms Following Dysentery.—In a series of sixty-five cases of dysentery recorded by Gunson three fatal cases all presented signs of considerable circulatory embarrassment. The pulse became extremely feeble and at times was imperceptible at the wrist. The extremities were cold and clammy. In the terminal stages cardiac dilatation occurred and was associated with extreme cyanosis, particularly of the face, head and neck. Temporary relief of symptoms was afforded by epinephrin. Of the patients who recovered 17 per cent. presented symptoms of circulatory inefficiency, persisting into the third week of convalescence, when the patients were transferred to England. Dyspnea, palpitation, preeordial pain, vertigo and a sense of exhaustion were the chief complaints. The exhaustion met with in the severe cases was greater than the muscular atrophy and weakness seemed to justify, though there was no evidence pointing to organic disease of the central nervous system. The high incidence of persistent cardiac symptoms is attributed mainly to the fact that the majority of the patients continued on duty in the trenches until completely exhausted; another factor was the exertion of walking to the lavatory, necessary even during the early stages of the disease, owing to the exigencies of active service. Cardiac symptoms during convalescence from dysentery, Gunson says, are of importance in relation to soldier's heart, as dysentery unquestionably contributes a certain number of cases to this group. Therefore, after a severe attack of dysentery adequate rest in bed should be assured to obviate consequent cardiac derangement.

12. Radical Treatment of Gastric Ulcer.—Cunning claims that all gastric ulcers can be excised except those which are adherent to important structures in the neighborhood, and that gastrojejunostomy is useless for these. When the ulcer is adherent to important structures the stomach can be detached from the base of the ulcer, the opening closed, and the base of the ulcer, after being scraped and being now excluded from the stomach, will give no further trouble.

Medical Journal of Australia, Sydney

June 24, I, No. 26

- 15 Field Ambulance with Fourth Infantry Brigade in Gallipoli. J. L. Beeston.—p. 497.
 - 16 Case of Epithelioma of Lip. C. E. Corlette.—p. 499.
- July 1, II, No. 1
- 17 Metric System in Prescribing. J. C. Verec.—p. 1.
 - 18 Second Case of Intra-Orbital Growth Removed by Krönlein's Operation (Osteoplastic Resection of Outer Wall of Orbit). F. A. Pockley.—p. 5.

July 8, No. 2

- 19 Criminology as Branch of Medicine. W. A. T. Lind.—p. 19.
- 20 Calcified Glands Mistaken for Ureteral Calculus. D. Kelly.—p. 23.
- 21 Jackson's Parietoeolic Membrane Producing Symptoms. C. E. Corlette.—p. 23.

Sei-I-Kwai Medical Journal, Tokyo

July, XXV, No. 7

- 22 Investigation of Diabetes Mellitus Among Japanese. (To be continued.) S. Iwai.—p. 35.

Archives Mens. d'Obstétrique et de Gynécologie, Paris

June, V, No. 4, 5 and 6, pp. 93-188

- 23 Research on the Normal Human Placenta at Different Stages of the Pregnancy. (La villosité du placenta, ses formations mitochondriales et ses processus d'élaboration.) M. de Kervily.—p. 93. To be continued.
- 24 *Uterus and Tubes Found in Inguinal Hernia in Man. A. Brindeau.—p. 150.
- 25 *Tuberculosis of Uterine Cervix, Probably Primary. M. Metzger.—p. 157.
- 26 The Midwife System at Buenos Aires. (La sage-femme à Buenos Ayres.) P. Pellissier.—p. 160.

24. **Uterus in Inguinal Hernia in Man.**—Brindeau's patient was a virile man of 35, apparently normal except for inguinal hernia. The sac contained a uterus of normal adult size, with both tubes, and on drawing them out both testicles came with them. One testicle seemed normal but the other was very small. The danger of injuring the testicles was too great to risk removing the uterus, so the small testicle was resected and the uterus was utilized to block the large inguinal canal, suturing it to the ring. Brindeau found eighteen similar cases recorded in Neugebauer's book on hermaphroditism, and gives a brief summary of each. A few of the men had families. In 25 per cent. of the cases the uterus was double. The testicles were rarely normal. In a few cases the uterus was continuous with a vagina which opened into the urethra. It is generally better to remove the uterus at the herniotomy. His compilation includes Webster's two cases.

25. **Tuberculosis of Uterine Cervix.**—Metzger's patient was a woman of 33 who for four years had had occasional vaginal hemorrhages outside of the menses, which were regular, and there was occasionally a greenish yellow discharge. She had taken treatment but no one knew what was the trouble, and there was no improvement. When Metzger saw her she had no pain, but tired easily and had grown very thin. The uterine cervix showed two small irregular ulcerations, with slightly raised edges, surrounded by sound mucosa. They bled at the slightest touch. There was no discharge from the uterus. The diagnosis of cancer was rendered improbable by the limited area covered by the ulcerations, although the affection was of several years' standing, and by the absence of fetid odor. Microscopic examination of an excised scrap confirmed the probable tuberculous nature of the lesion although no tubercle bacilli were found. As the woman seemed free from tuberculosis otherwise, her husband was examined and an old apical tuberculous process was evident. He had a history of hemoptysis and expectoration but had no cough at the time. The testicles showed no signs of tuberculosis but there had been a urethral discharge about four years ago for a time which finally subsided without treatment. This may have been a genital manifestation of his tuberculous infection and have been the source of his wife's genital lesion. She has apparently entirely recovered since the amputation of the cervix last March, and has been gaining regularly over 2 pounds a month.

Bulletin de l'Académie de Médecine, Paris

July 11, LXXVI, No. 28, pp. 17-34

- 27 *Dangers of Radiotherapy. Gaucher.—p. 17.
- 28 *Systematic Measures for Detection of Tuberculosis in Soldiers. (Note sur les mesures prises dans le camp retranché de Paris pour le dépistage, l'isolement et l'élimination de l'armée des tuberculeux militaires.) Sieur and L. Bernard.—p. 21.
- 29 *Disinfectant for War Wounds, Germicidal and Leukocyte-Attracting. P. Duret.—p. 23.
- 30 Apparatus for Mobilizing Stiff Joints. Leullier and others.—p. 25.
- 31 Resemblance between Course of Typhoid under Serotherapy and After Vaccination. G. Etienne.—p. 30.

27. **Dangers of Radiotherapy.**—Gaucher has been much disappointed with the effects of Roentgen and radium treatment of skin affections and especially of superficial cancer. They do not ward off recurrence and Roentgen ulceration may develop even as long as ten years after the exposures.

In a recent case of the kind a young man has had a Roentgen ulcer develop on the back of the hand and wrist—the area that had been exposed to the Roentgen rays on account of a nevus ten years before. Gaucher has seen radiotherapy cure lupus completely, while he has often seen it induce an epitheliomatous transformation of the lupus. Radium is perhaps less dangerous than the Roentgen rays, but he knows of several cases of ulceration following radium exposures and leaving deforming scars after the ulceration had healed. In a quite recent case a man of 60 with syphilitic sclerous glossitis and gummas of the tongue had been given radium treatment. The gummas on the dorsum of the tongue ulcerated and soon became transformed into inoperable epitheliomas. He declares that the Roentgen rays and radium in the treatment of skin affections, and especially of cutaneous cancer, have not given the anticipated results. They should be used with prudence and only in cases in which other modes of treatment are not applicable or have not given results.

28. **Care of Tuberculous Soldiers.**—Sieur and Bernard have organized in the Paris district a series of consulting offices for those suspected of tuberculosis, with services for exact diagnosis and a series of hospital sanatoriums. The four consulting offices are open in turn and all suspects are sent there. The differentiating service is connected with them and has 616 beds at its disposal. One of the services is reserved for officers and one for the wounded who are suspected of being tuberculous. The men are then classified as free from tuberculosis or having it in a masked form (asthma, emphysema, bronchitis), and this group is dismissed. The men with slight manifestations of tuberculosis are sent to the hospital-sanatoriums for a course of treatment, hoping that they can be cured and resume their place in the army. The third group comprises those more seriously affected. They are sent to the country sanatoriums and get their discharge from the army. The fourth group comprises the men with acute or the terminal stages of tuberculosis. These are kept in the special services to save them injury from being moved. The four hospital-sanatoriums have a total of 990 beds and after a few months' course of treatment the men are returned to the army if improved, and if not are sent to the regular sanatoriums. No "convalescence furloughs" are permitted and no one is discharged definitely from the army until he has taken a course of treatment in the hospital-sanatorium and then at a regular sanatorium. By these measures those really tuberculous are sifted out at once from the suspects; they are isolated at once and get proper treatment, while, as the regulations are uniform there can be no complaints of discrimination or favoritism.

29. **Germicidal and Cytophylactic Disinfectant.**—Duret thinks that the two-salts solution he uses combines all the advantages of Dakin's disinfectant while free from the irritating action of boric acid on the tissues. It is isotonic with the blood serum and acts by the formation of hypochlorite of magnesium, which gradually yields up its chlorin to the tissues. He triturates in a mortar 28 gm. chlorinated lime with 18.2 gm. magnesium sulphate and then mixes with them 1,000 gm. water, and filters through cotton moderate packed in a funnel. The insoluble compounds are held back by the filter. One liter of the solution can produce 3.17 g. available chlorin. It keeps well; even after twenty days uncorked flasks there were still 2 gm. chlorin to the liter. After thorough mechanical cleansing of the wound he flushes it profusely with this solution at a temperature of 35 C. The cleansing and disinfecting action is hastened by combining it with hydrogen dioxid. His tests have shown that 85 c.c. of hydrogen dioxid of twelve volumes is enough to decompose the whole of the hypochlorite in the solution. The fluids are in separate receptacles but are mixed as they enter the wound either from separate catheters or brought together through a single catheter. The hydrogen dioxid is diluted (100 gm. to 900 gm. water). The bubbling clears out the wound and the disinfectant is thus aided to find its way into every crevice, an aseptic solution of magnesium hypochlorite being left behind in the wound. The wound cavity is then rinsed out with the magnesium hypochlorite solution alone.

Journal de Médecine de Bordeaux

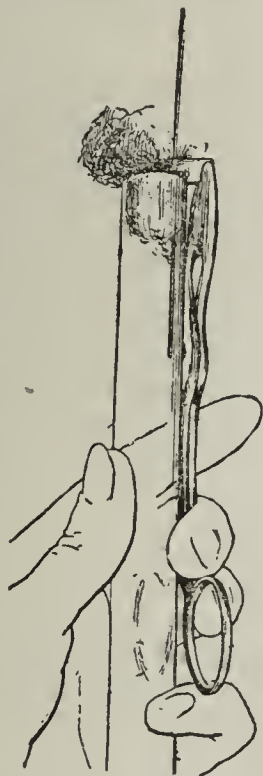
July, LXXXVII, No. 9, pp. 167-186

- 32 *Differential Diagnosis of Typhus. (Notes sur quelques cas de typhus exanthématique. Difficulté du premier diagnostic dans une épidémie.) Arnould.—p. 167.
- 33 *Primary Chancre on the Conjunctiva; Three Cases. (Chancre induré de la conjonctive bulbaire chez un enfant de dix ans.) H. Fromaget.—p. 170.
- 34 The Radish from the Therapeutic Standpoint. (Les radis en hygiène et en médecine.) P. Carles.—p. 173.
- 35 Aviators' Osteoma at the Back of the Neck (from Fall). Vorbe and L. Rocher.—p. 174.
- 36 *Needle with Handle for Aseptic Puncture. (Aiguille pour ponctions aseptiques.) Brandeis.—p. 174.

32. **Early Differential Diagnosis of Typhus.**—Arnould comments on the difficulty of detecting the first cases of typhus. When it becomes epidemic, the retrospective diagnosis is of little use. In the cases he has encountered there was always a period of slight fever with lassitude and depression and then the temperature ran up suddenly high. It may drop again the next day or two, but then flies up again and keeps high. During the prodromal stage there was always general and painful lassitude, sometimes accompanied by pain in the lumbar region or spine. Sensory disturbances were common, tinnitus, congestion of the conjunctiva, and insomnia. Cold baths, even repeated, had no effectual influence on the temperature. This was constant and may aid in differentiation. In none of the cases were any petechiae found during the early stages of the disease, and the exanthem often resembled the rose spots of typhoid. It was never typical enough to differentiate the disease alone. The diagnosis was placed on a stable basis only by exclusion of typhoid at necropsy in the first fatal case. The eleven patients were all orderlies on a hospital ship, and each had been vaccinated against typhoid.

33. **Primary Chancre on the Eyeball.**—Fromaget emphasizes that the hard chancre on the bulbar conjunctiva of the eye of 10 and in his two other cases resembled in every respect the ordinary primary lesion of syphilis. The mere aspect reveals its nature and laboratory tests confirm it, but a pseudomembranous coating may cause doubt in some cases. The slow, gradual, painless development of the chancre excludes phthiria. In his cases the chancre cleared up promptly under salvarsan without leaving a trace or involving the iris or other parts of the eye, but the insidious impregnation of the organism continued its course, as was evident from the swelling of glands at the back of the neck and in both axillae.

36. **Improved Puncture Needle.**—Brandeis' needle is made with a square side piece at the center. This serves as a handle. He seizes it with forceps parallel to the needle and works the lower end of the needle into the pipet, between its cotton plug and all, after the needle has been passed through a flame and the cotton and top of the pipet singed. The forceps, the needle and pipet then form a solid whole as they are seized with one hand, leaving the other hand free.

Puncture needle
with handle.

Le Nourrisson, Paris

IV, No. 3, pp. 129-192

- 7 Sterilization of Milk by Heat. (Sterilisation du lait par la chaleur.) A. B. Marfan.—p. 129.
- 8 *The Symptoms of Tuberculosis in Infants. II. (Les formes envahissantes de la tuberculose du nourrisson.) Combe.—p. 155.
38. **Tuberculosis in the Nursling.**—In this instalment of his study of the symptoms of tuberculosis in infants, Combe describes typical cases of lymph-borne generalized tuberculosis and the localized forms and also those of blood-borne and bronchial origin. They include acute, subacute and chronic cheesy pneumonia and also the blood-borne types

of miliary tuberculosis, acute and chronic, localized or diffuse and surgical tuberculosis of various types. The clinical picture of each in infants is described with a few roentgenograms. The tuberculosis may develop so insidiously that when the symptoms of miliary tuberculosis or cheesy pneumonia develop they seem to appear like lightning from a clear sky. But necropsy always discloses the preexisting glandular lesions. In older children the tuberculosis generally requires some intercurrent infectious disease, measles, whooping cough or some physical or emotional stress to break down the gland barrier and permit the general invasion by the tuberculosis. In older children, likewise, the invasion is not so general, as the defensive forces are better organized and the bacilli find a lodgment only at scattered points. He reiterates that in infants the generalized invasion is the rule, and it may occur by way of the lymph, the blood or the bronchi.

Paris Médical

July 22, VI, No. 30, pp. 69-84

- 39 Organization of System of Graduated Work in Sanatorium for the Tuberculous. (Organisation et mise en œuvre d'une cure de travail dans un sanatorium populaire.) F. Dumarest and A. Vigné.—p. 69.
- 40 *Red Light and Roentgenoscopy in Extraction of Projectiles from the Tissues. (Extraction rapide des projectiles de guerre par le chirurgien seul à l'aide de la lumière rouge et des repérages successifs sur l'écran radioscopique.) H. Petit.—p. 76. (Modification à la technique du Dr. H. Petit pour l'extraction des projectiles.) A. Mouchet and R. Toupet.—p. 80.
- 41 Suggestion for the Medical Students Serving with the Army to Complete Course by Correspondence. (Les étudiants en médecine mobilisés. Leur affectation et leur emploi dans l'armée. Leur scolarité.) Granjux.

40. **Red Light as Aid in Operating Under Roentgenoscopy.**—Petit says that by using red light and plenty of it the surgeon can have the Roentgen rays switched on and off repeatedly without a moment's loss from dazzling or fatigue of the eyes. He can thus operate under direct visual control at every step of the procedure, and with a confidence and precision unattainable under other conditions to date. He has applied this method in 148 cases and with constant success after the first tentative cases. In order to avoid danger of dermatitis, he does not use the fluorescent screen constantly, but has it switched on and off, consulting it as a steersman consults his compass. The total exposure is thus only a few minutes in all. The light bulbs can be covered with red paper.

Presse Médicale, Paris

July 20, XXIV, No. 40, pp. 313-320

- 42 Artificial Arms and Hands. (Prothèse du membre supérieur. Amputation de l'avant-bras.) Ducroquet.—p. 313.
- 43 *Interpretation of Oscillometer Findings in Studying the Lesser Circulation. (Essai d'interprétation des graphiques oscillatoires avec l'appareil Pachon.) G. Colleville.—p. 316.

43. **The Oscillometer in Estimation of the Reserve Force of Heart and Lungs.**—Colleville presents the findings with Pachon's oscillometer in a number of typical cases of various affections, striving to estimate the outlook for recovery from the biologic responses to certain tests. He applied the oscillometer according to Martinct's directions (summarized in THE JOURNAL, March 4, 1916, p. 776). They are based on the assumption that the heart and vessels form a single mechanical system so that any reaction at any point in the system is felt at various other points. The changes induced by graduated exercises and the recuperation therefrom reveal the ability of the cardiovascular apparatus to maintain the normal balance between the parts. Colleville's findings confirm anew the assumption that the nervous system—which regulates the tone of the cardiovascular system—is the most important element in the prognosis of those apparently convalescing from tuberculosis. When the nervous system is weak and depressed, the normal reaction to and recuperation from exercise do not occur. Under some stimulus to the nervous system, the oscillometer findings may increase to the normal type or even above it. The practical conclusion from his research is thus the necessity for treatment of the neurasthenia—the result of the toxic action of the disease—

before pronouncing the definite prognosis of tuberculosis. After a course of strychnin or other measures to tone up the nervous system, the oscillometer findings may throw an entirely different light on the outlook.

The respiratory capacity depends not only on the elasticity of the lung but also on the intrapulmonary circulatory dynamic force. The oscillometer permits these two factors to be estimated separately, so that breathing exercises can be undertaken to augment the elasticity of a still elastic lung or the heart can be forced to do more work by giving heart tonics. A sound person rapidly recuperates after exercise, and this occurs also even when the elasticity of the lung or the peripheral circulation is somewhat impaired, provided that the myocardium and the nervous system have sufficient reserve force.

Correspondenz-Blatt für Schweizer Aerzte, Basel

July 15, XLVI, No. 29, pp. 897-928

- 44 *The Medical Aspect of Workmen's Compensation and the Lessons from the War. (Unfallmedizinische Lehren aus Kriegslazaretten und Invalidenschulen.) C. Schlatter.—p. 897.
- 45 Differential Diagnosis between Displacement of the Intestine and Gynecologic Affections. A. Goenner.—p. 910.
- 46 Further Indications for Fat-Poor Special Milk. (Weitere Indikationen der Verabreichung fettarmer Spezialmilch.) F. Brandenburg.—p. 914.

44. Accident Medicine and the Lessons from the War.—Schlatter comments on the gigantic progress that has been made within the last year in the aftertreatment of the wounded, to ward off crippling. At the same time, he adds, there is a fundamental difference in the spirit with which wounded soldiers take their training. They are fired with zeal to overcome their deformity and return to fight for their country or to take up some self-supporting occupation. After an industrial or railroad accident, on the other hand, the victim is liable to profit financially by exaggerating and perpetuating his disability, instead of striving to overcome it. Schlatter describes the minute classification of the disabilities in the big Vienna training school for the wounded. It has accommodations for nearly 4,000. The difficulty of obtaining skilled teachers to train the wounded is reduced to the minimum by referring all with stiff shoulders to one ward, the stiff knees to another ward, the stiff elbows to another and so on. More than thirty trades are taught there, besides typewriting, stenography and other business courses. There are special schools for those who have lost an arm, and especially skillful one-armed men have been imported for teachers.

The great lesson from it all for accident medicine is that deforming contracture should not be allowed to develop after the injury. Immobilization kept up too long or in an incorrect position is now realized as having been the source of much avoidable deformity in the past. The experiences of the war have shown that muscular contracture is best avoided for the hand by immobilizing it in slight dorsal flexion; for the shoulder with abduction of the upper arm for 30 or 40 degrees; for the elbow, by flexion at a right angle or slightly obtuse angle with the hand in slight supination; for the fingers, in slight flexion, as this allows objects to be held between the thumb and the ankylosed fingers, while there is no grip if the fingers are straight in their stiffness. Schlatter remarks that many an indemnity has had to be paid for disability after fracture of a finger or destruction from a felon which might have been avoided if the finger had been curved enough to seize objects. He warns further to be on the alert not to allow talipes equinus to develop after an injury of the leg, from the weight of the bed-clothes or other cause. After injury of a nerve, prophylactic fixation is indispensable as otherwise the paralyzed muscles will stretch and the antagonists contract, with crippling contracture as the result.

It has been learned that immobilization for the purpose of relieving pain after crushing injuries can be dispensed with if compression is applied at once to prevent extravasation of blood. With a severe sprain of the foot the shoe is left on, to exert compression, and massage is begun the second and third day, applying it centrally from the joint, aiming

to induce aspiration and open the passage to the thrombosed vessels. Puncture to relieve blood and serous effusions in a joint may relieve, but should be followed at once with compression. It has been found that not only after fracture but after severe distortion of the ankle firm boots with flatfoot insoles should be worn.

The amputation stump is healed early with massage, baths, hot air, etc., and exercised early and often. Hirsch's advice to toughen the stump is giving fine results. The physician or the man himself pounds on the stump with his fist or a wooden hammer one or two hundred times a day. Some article is placed in the bed that he can push his stump against, and an upholstered stool is given him to practice his stump on, using it like an artificial leg. By these means the stump is soon made ready for a correct prosthesis. No crutches are given the amputated, but a walking plaster cast may be applied at first. This is easy to make, with two iron strips and a foot plate. If it works loose, a new one is made. When the stump has finished retracting, a leather contrivance takes the place of the plaster. The stump is ready for the permanent artificial leg in from six months to a year. The fact that the loss of a hand or arm need not entail disability is another great lesson from this war, especially as the employers of labor are realizing this.

Gazzetta degli Ospedali e delle Cliniche, Milan

July 16, XXXVII, No. 57, pp. 881-896

- 47 *Clinical Diagnosis of Epidemic Cerebrospinal Meningitis. F. Pancrazio.—p. 883.

47. Clinical Diagnosis of Epidemic Cerebrospinal Meningitis.—Pancrazio expatiates on the difficulty of differentiating meningitis in some cases, especially in the aged, in the pregnant and in infants. Lumbar puncture should be repeated if the first test shows the fluid apparently sterile. It may be limpid even when meningococci are found in it. He relates a number of puzzling cases in detail, showing the various types that may be encountered, contrasting each with the other diseases which seemed probable at first. He also gives illustrations showing the characteristic attitudes assumed by meningitis patients, the knees drawn up, the head drawn back, and the characteristic herpes, which may develop by the second day of the disease but usually not until the third or fourth day. He lays great stress on the inequality of the pupils, the strabismus, and the contralateral reflex of the legs (flexing one leg on the pelvis causes the spontaneous flexion of the other leg, and extension induces a similar contralateral reflex). Bending the head forward may induce flexion of the legs on the thigh and of the thighs on the pelvis. There may be also a special type of respiration in which the excursions of the diaphragm and of the thorax are not synchronous, the abdomen sinking in during the phase of inspiration at times. Photophobia is often pronounced from the first. Pressure on the internal aspect of the thigh at the line between the middle and lower thirds of the thigh, along the canal of the adductors, causes sudden pain so that the patient exclaims and withdraws his leg, while pressure on the neighboring regions causes no disturbance. This sign is said to have been found even during the prodromal stage of meningitis but Pancrazio has not found it constant in his cases; marked in some, it was absent in others. He says of Kernig's sign that while it is constant in epidemic meningitis he has found it also pronounced in certain cases of meningism complicating typhoid, etc.

The malignant form of the disease and the protracted form are particularly liable to be misinterpreted. Syphilitic meningitis seldom comes on with a sudden onset; there has usually been a period of recurring dizziness, headache, generally frontal, some impairment of vision and there is no fever, but the Kernig and some other signs may be positive. In examining an unconscious patient, the fever, the attitude the pupil changes, the absence of a blue line on the gums and of enlargement of the spleen, absence of signs of syphilis or cardiovascular disease and of albuminuria should all be taken into account; this clears the field for the diagnosis of meningitis. In one of the cases reported the symptoms were apparently those of typhoid and the pathognomonic symptoms

of epidemic meningitis did not develop until late in the second week when lumbar puncture disclosed the meningo-coccus.

Brazil-Medico, Rio de Janeiro

June 24, XXX, No. 26, pp. 201-208

- 48 *Preliminary Report on Method for Determining Tension of Carbon Dioxid in Alveolar Air. (Sobre os principios para um novo metodo de determinação da tensão de Co^2 no ar alveolar.) M. O. de Almeida.—p. 203.

July 1, No. 27, pp. 209-216

- 49 Beriberi with Flaccid Paralysis in Boy of Nearly 3. (Um caso de beriberi infantil.) M. Gesteira.—p. 209.

48. **Determination of Carbon Dioxid Tension in the Alveolar Air.**—Almeida gives a formula which, he thinks, will much facilitate the estimation of the carbon dioxid tension in the alveolar air. The air expired in a deep and in an ordinary expiration is collected in two gas-meters. The total quantity of carbon dioxid contained, respectively, in the two expirations are represented by Aa and Bb , A and B representing the total volume of each expiration, and a and b the percentage of carbon dioxid. As each expiration is the sum of the alveolar air and the air of the dead space, its composition is evidently equal to the air inspired by the individual, and we can state it in the two equations:

$$Aa = (A - E)T + Eg$$

$$Bb = (B - E)T + Eg$$

E representing the volume from the dead space, and T the alveolar tension of carbon dioxid, and g the tension of carbon dioxid in the inspired air.

The two equations thus represent a system with two unknown quantities, T and E . To determine the value of T we subtract one equation from the other, which gives:

$$T = \frac{Aa - Bb}{A - B}$$

Almeida says that this formula shows at once its advantages. It permits the analysis of the alveolar air in the simplest manner, without the necessity for complicated apparatus, as the volumes of A and B are so large the analysis can be made with ordinary apparatus such as are found in the usual laboratory, without any special measures for analysis of minute quantities. The method is particularly useful for experimentation on animals. He discusses in conclusion a source of possible error with other technics, and shows how this possibility is practically eliminated with his formula. As experience is gained with it, the amounts expired can be reduced more and more, thus increasing the precision.

Semana Medica, Buenos Aires

XXIII, No. 21, pp. 597-624

- 50 *Sclerosis of Pulmonary Artery. (Cardiacos negros de A. Ayerza.) C. P. Mayer.—p. 597. To be continued.

- 51 Vaccine Therapy of Whooping Cough. (Consideraciones sobre 6 casos de coqueluche tratados con la vacuna coqueluche del doctor Krauss.) A. D. d'Atri.—p. 607.

- 52 Examination of Puncture Fluids. (Liquidos de puncion.) G. Costa.—p. 611.

No. 23, pp. 625-652

- 53 Intradermal Suture; Technic. G. B. Arana.—p. 625.

- 54 Final Outcome of Prostatectomies. G. Borra.—p. 645.

- 55 Arsenotungstic Reaction with Phenyl-Dimethyl-Dimethylamino-Pyrazolon. (Una nueva y sensible reaccion de la piramidon.) L. Guglielmelli.—p. 646.

- 56 Sodium Iodid. A. A. da Matta.—p. 647.

50. **Sclerosis of Pulmonary Artery.**—The main points of Laver's article were summarized in an abstract of the first instalment (abstract 72, June 10, 1916, p. 1896).

Siglo Medico, Madrid

July 8, LXIII, No. 3265, pp. 433-448

- 57 *The Determination of Pepsin in the Urine. (La pepsina de la orina y su importancia para el diagnostico.) C. Fernandez-Arroyo.—p. 435.

- 58 *Injury of the Middle Colic Artery during Operations on the Stomach. L. Urrutia.—p. 434.

57. **Pepsin in the Urine.**—Arroyo has been testing the urine for pepsin by various technics and tabulates the findings in forty cases for comparison. He found the Fuld and Hirayama method the most reliable. The findings were variable in different cases of the same affections and at different times

in the same case, so that the presence of pepsin in the urine is of no value in the diagnosis of disease of the digestive apparatus. The only constant finding he could discover was that little if any pepsin could be found in the urine of the pregnant women he examined.

58. **Operative Injury of the Middle Colic Artery.**—Urrutia accidentally severed the middle colic artery in the course of a gastrectomy for cancer of the pylorus in a man of 35. He arrested the spurting blood by ligating both stumps and no disturbance of any kind followed. This shows, he says, that the ligation of this artery does no clinical harm. When there has been trouble after ligating this artery, other factors must have been responsible for it.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

July 22, II, No. 4, pp. 277-372

- 59 *Agglutination in Typhoid in the Vaccinated. (De beteekenis der reactie van Gruber-Widal voor de diagnose "febris typhoidca" bij de ingeenten.) H. Aldershoff.—p. 284.

- 60 Community Problems and Heredity. (Iets over het verband tusschen gemeenschapsproblemen en eenige resultaten der moderne erfelijkheidsleer.) J. P. Lotsy.—p. 296.

- 61 Nutritional Value of Whole Wheat Bread. (Over de voedingswaarde van volslagen krombrood.) E. C. Van Leersum and J. Munk.—p. 316.

59. **Agglutination After Vaccination Against Typhoid.**—The reports in this line have been conflicting in the last year, and Aldershoff has been investigating this subject in several hundred persons. He studied the agglutinating property in sixty-seven persons who had never had typhoid, in 156 who had an attack from a few months to years before, in addition to groups of the vaccinated, healthy or with disease suggesting typhoid. His conclusions from research on these seven groups are to the effect that macroscopic agglutination of living typhoid bacilli at a dilution above 1:25 is suspicious of typhoid if the individual has never had typhoid. In 69 per cent. of those who have had typhoid, the agglutinating property is lost by the end of the seventh month. In 18 per cent., however, it is retained for years, but finally very slowly dies out. With the Spronck antityphoid vaccine, the agglutinating property was lost in six months by over 90 per cent. of those vaccinated. In those who have had typhoid, if the agglutinating property is still evident, inoculation with antityphoid vaccine may increase it, but if it has been lost, then the vaccination will not restore it in a certain percentage of the cases. Inoculation with the vaccine, in those who have been vaccinated before, does not restore the agglutinating property in all the cases. In a group of persons who were having or had passed through a second attack of typhoid fever, he found that the agglutinating property was absent in a certain proportion of them. Persons vaccinated against typhoid who acquire typhoid fever may not have any agglutinating power. Positive agglutination in them is conclusive only when the titer of the agglutination rises, and it is certain that it is not a question of co-agglutination from infection with some bacillus of the typhoid family. The work issues from the central laboratory of the National Public Health Service for the Netherlands.

Hygiea, Stockholm

July, LXXVIII, No. 13, pp. 881-992

- 62 *Primary Gonococcus Epididymitis. (Om primär epididymit—och urethritis posterior.) G. Ahman.—p. 881.

- 63 *Mycogenous Leukemia with Destructive Process in Internal Ear. (Ett fall av myelogen leukämi med labyrintförstöring.) D. Rudberg.—p. 898.

- 64 Holding Process for Sterilization of Milk. (En ny pasteuriseringsmetod för mjölk och dess praktiska betydelse.) L. Wolff.—p. 905.

62. **Primary Epididymitis.**—Ahman thinks that the four cases he reports may throw some light on the etiology of epididymitis and posterior urethritis. In each case the men had been under repeated observation for a few years as they were being treated for old syphilis. No signs or symptoms of gonorrhea had been observed by him in any of them at any time, and they had no history of gonorrhea. One was a merchant of 29 and as soon as Ahman had informed him that he was free to marry, he wedded a widow. In two days

he was back at the office with severe gonococcus epididymitis and posterior urethritis and the bride was found to have chronic gonococcus trouble. The circumstances were much the same in the other cases—after months of abstention a night of venereal excesses. Toward the latter part of the orgy conditions must have been such as to induce aspiration into the urethra. P. Asch has called attention to the possibility of aspiration in these circumstances, and Oppenheim and Löw have further confirmed its possibility by discovery of antiperistaltic movements in the vas deferens under certain conditions. Ahman had examined the prostate and its secretion with special care a few days before in the bridegroom and found them normal. The evidence is thus all in favor of the trouble being a primary epididymitis and posterior urethritis. They soon yielded to treatment without involving the prostate.

63. Leukemia Involving the Internal Ear.—The man of 44 had been robust until 1915 but after a thorough chilling he began to feel languid and have headache, with subjective noises in the ears, and he gradually became deaf in the left ear. The right ear became affected in an acute form later, as the myelogenous leukemia developed in a pronounced type. Rudberg reviews the analogous cases on record, including Alexander's fifteen with necropsy in 12, a total of about twenty-four on record. The leukemia trouble in the labyrinth may be from hemorrhages or leukemic infiltration or both.

Norsk Magazin for Lægevidenskaben, Christiania

July, LXXVII, No. 7, pp. 845-988

- 65 *Foreign Bodies in the Esophagus, Trachea and Throat. (Om fremmedlegemer i spiserør, luftrør, og strupe.) F. Leegaard.—p. 845.
- 66 *Detection of Typhoid Bacilli in Search for Carriers. (Undersøkelse paa tyfusbaciller i avføring.) B. Wilmann.—p. 879.
- 67 Disproportionate (Eunuchoid) Growth in Length of Limbs in Women; Two Cases. (Uproportionert vekst hos kvinder.) C. Schiøtz.—p. 909.
- 68 *Case of Paralysis of the Vagus Nerve. (Et tilfælde av vaguslammelse.) L. Nicolaysen.—p. 948.

65. Foreign Bodies in Esophagus and Trachea.—In all but one of the cases reported and illustrated by Leegaard, the foreign body was extracted by the natural route under direct visual inspection or was passed in the stools later. It is easier to introduce the esophagoscope with the patient seated, but this may have been responsible for the foreign bodies slipping down into the stomach in three of the cases. "For this reason," he adds, "Jackson, the American virtuoso in this line, places the patient in the reclining position, regardless of his age." Leegaard is now convinced that this is better for children, at least, as the physician does not have to combat the attraction of gravitation as when the patient is sitting up. In one case the irritation from the foreign body had caused the tissues to swell so that they hid completely the foreign body, demonstrating anew the advantages of prompt extraction before inflammatory reactions have had time to develop. He comments further on the advantage of aspirating out of the esophagus the mucus secreted under the irritation from the foreign body. A water-jet-pump aspirating device answered the purpose in his cases. A dilatation esophagoscope was very useful in some cases. When there is danger of injuring the esophagus by drawing the foreign body up and out, he insists that it is better to let it slide down into the stomach. It can then be followed with the Roentgen rays and the abdominal surgeon can extract it with comparatively little trouble if circumstances demand. The intestines have such a wonderful capacity for carrying off foreign bodies without harm that it is seldom necessary to interfere.

In four of his fifteen cases the foreign body was part of a set of false teeth, swallowed while sleeping. A foreign body of this kind usually catches at some point almost at once as it enters the esophagus, which is one of the reasons why adults can be examined sitting. In four of the fifteen cases there was a stricture from having swallowed lye at some time. Any tendency to a stricture helps in catching and holding the foreign bodies. In two of the cases a plum stone was caught between two such strictures. In one of the cases a

metal foreign body which had been swallowed entailed an infectious process in and around the esophagus. In time this caused a protrusion in the back. It was during Roentgen examination of this hump that the foreign body in the esophagus was casually discovered. He further reports a series of twelve buttons or beads removed from the trachea in different cases.

Unless the Roentgen picture is unmistakable, it may prove misleading, as in one of his cases in which a woman of 29 related that she had swallowed a piece of bone a week before, and it had stuck in her gullet. She could feel it there, and the sound also gave the impression of a foreign body. Esophagoscopy was dubious as a low protrusion in the lining prevented inspection of the whole passage. The roentgenogram showed a shadow, a handsbreadth above the diaphragm, which was assumed to be cast by the foreign body. In order to reach it a rib was resected and the esophagus opened, but nothing was found. The patient died from post-operative pneumonia, and necropsy revealed that the shadow had been cast by a bunch of calcified glands. A negative roentgenogram is decisive, if certain that the foreign body incriminated is of metal, but otherwise not, if the technic is correct. Esophagoscopy is the more reliable of the two. He used Killian's suspension laryngoscope with good results in some cases, especially in a young child who got a small bone in his larynx while eating bean soup beside his mother.

66. Detection of Scanty Typhoid Bacilli in the Stools.—Wilmann gives a historical sketch of this line of research, and describes his own tests to isolate the typhoid bacilli when they are present only in small numbers. As they are liable to be unevenly distributed, he mixes a large lump of the feces with physiologic salt solution in a mortar and takes one of two drops of the mixture to sow on the Drigalski-Conradi medium, spreading it on four or five plates. Comparative tests of this method have demonstrated its superior reliability, especially in seeking for carriers and in convalescents. The livelier movements of the typhoid bacilli are an aid in differentiation. He obtained almost pure cultures of these bacilli in tests with equal numbers of them and of colon bacilli, each in 2 c.c. saline. One drop of each emulsion was placed on a small groove in filter paper and placed on the bottom of a glass cylinder, about 8 cm. tall, which was then filled cautiously with bouillon, covered, and placed in the thermostat. At intervals thereafter one drop from the surface of the bouillon was transferred to the Drigalski-Conradi culture medium which was then incubated for twenty-four or forty-eight hours. Some of the plates inoculated after an interval of only two hours showed three colonies of colon bacilli and eighty of typhoid; after four hours only four of the former and 200 of the latter. The typhoid bacilli are so much more motile than the colon bacilli that they work through the layers of filter paper much quicker than the colon bacilli. This occurred the same even when a 1 cm. layer of sand, pulverized pumice stone or chalk was poured on the filter paper. Positive findings were obtained with this motility test even when all other tests were negative, especially when the suspension of the larger amount of feces was used. Complete details of twenty-one applications of the test, controls, and results are given. They show among other things that the motility of the colon bacillus is greater than is attributed to it by the textbooks. By the end of six hours the majority had worked up to the surface. Attempts to hold back the colon bacilli by adding an agglutinating serum to the fluid were not successful. Litmus-milk sugar-agar seemed to work a little better than the Drigalski-Conradi medium. He advises, in testing for carriers, to give a laxative beforehand to drive more bile into the feces, as lurking typhoid bacilli are usually ensconced in the bile apparatus.

68. Vagus Paralysis.—In Nicolaysen's case a married woman of 43 had a scirrhus cancer of the breast with metastases in spine and lungs. The pulse was between 120 and 140 and this was explained at necropsy by the discovery that the cardiac plexus was entirely involved in the cancerous growth, thus arresting the normal inhibiting action of the vagus on the heart. The clinical diagnosis of vagus paralysis was thus confirmed.

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RINGWORM OF HANDS AND FEET*

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Ringworm of the glabrous skin presents well-known characteristics readily recognized by all. The cases described in this paper do not present the ordinary clinical symptoms of ringworm of the body, but are examples of what is ordinarily termed dyshidrosis or eczema of the vesicular-vesiculopustular or intertriginous type. What proportion of these is mycotic will require investigation of a large number of cases by many observers to determine, but it appears to be large.

HISTORICAL

Tilbury Fox¹ was probably the first observer to report a recognized case of trichophyton infection on a volar surface. The diagnosis in his case was simplified by the fact that the lesion began on the dorsal surface of the hand as a typical ringworm, and gradually progressed until it involved the interdigital and palmar surfaces of the fingers. In 1888, Pellizari² reported the occurrence of seven cases of infection of the palms and soles in a series of 150 cases of trichomycosis capitis. The first careful and systematic study, however, was not made until 1892. In January of that year, Djélaleddin-Moukhtar,³ working in Garnier's clinic, presented two cases before the Société de dermatologie. They were of the eczematoid dyshidrotic type, with abundant mycelial threads, and excited much interest and discussion by the Société. During that year, four more papers by the same writer appeared. In the last of these⁴ he col-

lected reports of twenty-five cases, seventeen of which were personal observations.

In 1908, Whitfield⁵ described five cases of ringworm of the hands and feet "indistinguishable from an ordinary outbreak of acute vesicobullous eczema." In 1910, Sabouraud⁶ reported six cases of intertriginous eczema of the feet, four of which gave cultures of *Epidermophyton inguinale*, and one case with lesions on the hand. In February, 1911, Whitfield⁷ recorded observations in seven additional cases. In November, 1911, Sabouraud presented his observations on the subject at a special meeting of the Dermatological Section of the Royal Society of Medicine. The discussion was opened by Whitfield⁸ with a paper in which he classified the clinical types and reported fifteen additional cases.

In the general discussion which followed, most of the members present told of having encountered the disorder among their private patients.

Since 1911, the most comprehensive paper on the subject is that of Kaufmann-Wolff.⁹ She made a clinical, histologic and mycologic study of twenty-five cases which formerly would have been accepted as dyshidrosis. In America, Montgomery and Culver¹⁰ reported an infection of the feet, following eczema marginatum of the groin, from which *Epidermophyton*

inguinale was grown. In 1915 Hartzell¹¹ reported four cases which he had seen "in the past few years."

In 1916, Lane¹² reported two cases, both of which were in women. One patient had lesions on the plantar surface of the foot, and the other had lesions involving the nails and both dorsal and palmar surfaces of the fingers.

Classification.—Whitfield⁸ classified the different manifestations into three types: 1. Acute vesicobul-

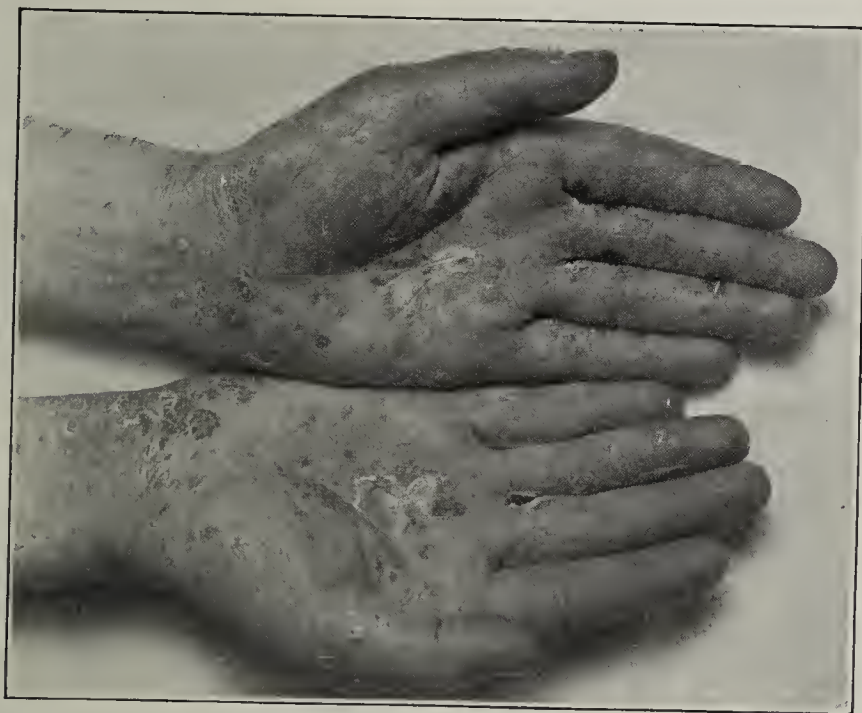


Fig. 1 (Case 1).—Vesicopustular lesions on hands and feet.

Read before the Section on Dermatology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June,

Fox, Tilbury: Brit. Med. Jour., 1870.

Pellizari: Gior. ital. d. mal. ven., March, 1888.

Djélaleddin-Moukhtar: Ann. de dermat. et de syph., 1892, p. 152.

Djélaleddin-Moukhtar: Ann. de dermat. et de syph., 1892, p. 894.

5. Whitfield: Lancet, London, July 25, 1908.

6. Sabouraud: Ann. de dermat. et de syph., 1910, p. 289; Les teignes, Paris, 1910.

7. Whitfield: Brit. Jour. Dermat., 1911, xxiii, 35.

8. Whitfield: Brit. Jour. Dermat., 1911, xxiii, 375.

9. Kaufmann-Wolff: Dermat. Ztschr., 1914, xxi, 385.

10. Montgomery, D. W., and Culver, G. D.: Eczema Marginatum of the Toes, THE JOURNAL A. M. A., April 4, 1914, p. 1076.

11. Hartzell: Am. Jour. Med. Sc., 1915, cxlix, 96.

12. Lane: Boston Med. and Surg. Jour., 1916, clxxiv, p. 271.

lous: Sudden onset, with all the characteristics of a vesicular eczema or dyshidrosis. Pus formation usually absent. No grouping, and no spreading margin. 2. Chronic intertriginous of toes: Secondary to acute vesicular type. Whitened, sodden mass of epithelium between the toes. 3. Chronic hyperkeratotic: Enormous and irregular masses of overgrown horny layer. Usually on the feet; may involve the entire plantar surface. Scattered vesicles and pustules may be found.



Fig. 2 (Case 2).—Chronic keratotic lesions of feet.

Kaufmann-Wolff⁹ agrees essentially with Whitfield's classification. She found that her twenty-five cases fell into three groups: 1. Vesicular: Grouped; accompanied by marked itching; mostly occurs in hot weather; sago-grain vesicles. 2. Squamous: Resembles a scaling dyshidrosis, usually with a central primary lesion. Results from confluence of vesicles. 3. Pyodermic: Resulting from secondary infection.

These types are due to variations in location, duration of the lesions, and to seasonal changes. A patient may present one type on one occasion and another (or all three) the next time he is seen.

CLINICAL DESCRIPTION

The essential lesion is probably in all cases a vesicle, which may be solitary or multiple, grouped or widely disseminated. The vesicle is deeply seated, only slightly elevated, and has the appearance of a sago-grain embedded in the epidermis. The content is usually clear, unless secondarily infected, and as a rule there is no erythema surrounding new vesicles. In the course of a few days to a week, the fluid is absorbed, leaving a brownish macule. Eventually, the roof of the dried vesicle becomes torn and desquamation begins, exposing a red, smooth, shiny surface, with a collaret of upturned scales (Case 1).

The subsequent development depends on (1) the number of vesicles and their distribution; and (2) the location of the lesions. A third factor is probably to be added, namely, the type of the invading organism; but as yet we have insufficient mycologic data to include this.

If the vesicles have remained discrete, they may desquamate and leave slightly scaling areas, which have not even attracted the attention of the patient, but which may still harbor the organism long after the subsidence of the vesicle. Instead of desquamating, the roof of the vesicle may produce a yellowish-brown, keratotic button, 1 to 2 mm. in thickness, in which many mycelial threads may be found, and beneath which there may be little or no trace of the usual shiny red surface (Case 9). The hyperkeratoses so frequently observed are probably formed in this manner.

If, however, the vesicles have been grouped, large confluent vesicles, or even bullae, may result. Should such a group occur in a comparatively dry area, as, for example, the center of the palm or sole, or high up on the arch of the foot, desquamation may take place, leaving a circular, fairly well defined, shiny red area, denuded of corneous layer (Case 4).

Unmolested, this lesion may heal spontaneously, or new vesicles may continue to form around the entire periphery, with extension in all directions; or they may form only at one point, with extension in one direction.

Irritated with caustics or macerated with moist dressings, the lesion may be transformed into an eczematoid dermatitis or a severe pyoderma. In either case, the finding of the fungus microscopically, or the growth of a pure culture, becomes very difficult.

The location of the lesion determines largely the conditions in which the organism must proliferate, and hence the type of lesion; whether it shall be a relatively flat surface of thin, dry corneum, constantly exposed to the air, such as may be found on the palm of a sedentary person; in a greatly thickened corneum as that of the heel of a hyperhidrotic foot; or whether it shall be located in the thin, warm, moist, macerated and closely approximated surfaces of the fourth interspace of the foot.

The isolated vesicle on the hand usually exfoliates. In some cases, scaling areas very much like the relic of a mild toxic erythema will be the only evidence of its having existed. The grouped vesicles may develop into a dry or slightly moist, well defined eczematoid area (Case 8).

On the heel, and especially along the outer margin of the plantar surface, marked hyperkeratoses may be developed; and in the midst of these hyperkeratoses solitary vesicles containing the fungi (Cases 2 and 3) may occur. This would seem to indicate that the chronic keratotic type is the result of repeated vesiculation in a thickly cornified area, which is not subject to maceration.

Of all the cases under observation, the interdigital surfaces of the fourth interspace of the toes is the



Fig. 3 (Case 3).—Chronic dyshidrotic type.

region most commonly affected, as was pointed out by Sabouraud,¹³ who maintained that a cutaneous fold is always the point of origin of the lesions induced by *Epidermophyton inguinale* or *plicarum*. He says:

All the interdigital folds become involved, but those of the fourth and fifth toes to the greatest degree. In the depth of the fold is a sort of caseous magma, white and easily lifted. Beneath this, the epidermis is white, brilliant, moist, macerated and thickened; scraping removes large plaques, which resemble a sort of adherent false membrane. As one passes from the fold, the lesion becomes more definitely vesicular, but the

13. Sabouraud: Ann. de dermat. et de syph., 1910, p. 291.

vesicles are few in number and in different stages of evolution.

Infrequently, the process extends backward on the plantar surface of the foot as a fairly well defined area of desquamation (Case 4), or merely a slight scaling may be present. As a rule, however, the changes are limited to the interdigital surfaces of the fourth interspace and to the plantar surfaces of the fourth and fifth toes. At the base of the fifth toe, a superficial fissure, which is partly interdigital and partly plantar,

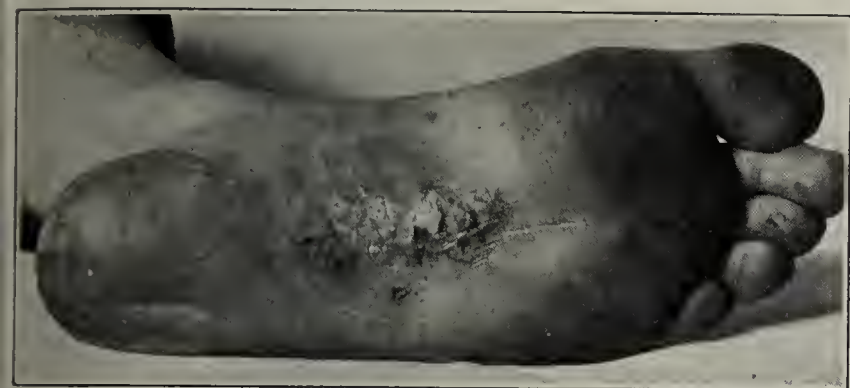


Fig. 4 (Case 4).—Grouped vesicles on left sole.

is commonly met. In some cases a similar fissure is seen in the flexor folds of all the toes.

In seeking material for examination, this caseous magma and the white, sodden epithelium should be discarded. Although the organisms are usually to be found in it, nevertheless frequent disappointment will occur and a failure to establish the diagnosis result if it be depended on. The superficial scales should be removed with the curet down to the point where the squames become pinkish and are attached rather firmly, with perhaps but one loose margin.

The reason for the localization of the disorder in the fourth interspace of the foot is that the shoe causes the fifth toe to be in a constant state of flexion and adduction. Eventually, the last two toes become so molded, one against the other, that it is difficult to separate them and renders proper cleansing difficult. Hence, as time goes on, the exfoliated epidermis, instead of being daily removed, remains and becomes macerated in this warm, moist pocket. This offers ideal conditions for the growth of *Epidermophyton inguinale*.

That the invading organism, which in most foot cases is *Epidermophyton inguinale*, prefers a moist, warm place, is shown by the fact that (1) both this disorder and eczema marginatum are common in the tropics, and that they heal when the patient goes to a high and dry climate and recur when he returns,¹⁴ (2) the folds (axillary, mammary, inguinocrural and croto-crural) are the points of origin of eczema marginatum, and (3) hyperhidrosis is frequently present in infected hands and feet. Furthermore, Fischer¹⁵ has reported an interesting epidemic, consisting of ten cases, occurring in hospitalized pulmonary patients who had had hot applications to various areas about the chest. The regions so treated developed vesicular eruptions, which at first were thought to be due to the heat applied, but which were subsequently found to be infections due to *Epidermophyton inguinale*.

ANALYSIS OF CASES

The group of cases forming the basis of this report consists of sixty-five patients seen in the ordinary rou-

tine of private practice. Of this group, fifty-four were male and eleven were female, a preponderance of male over female 5 to 1. This high ratio may be merely an accidental one in a group too small to admit of generalization, or it may be due to the recognized fact that eczema marginatum occurs more frequently in men than in women. Pringle¹⁶ saw an epidemic of eczema marginatum in which seven men were affected out of twenty in an institution housing forty, half of whom were women. In another institution, he saw twenty men infected without a single infection in a female. In our series, only eleven cases, one of which was in a female, gave a history of having had eczema marginatum; two had eczema marginatum coexisting, and one was followed by eczema marginatum while under observation. Two women described typical eczema marginatum occurring in their husbands in past years. This small number of eczema marginatum cases in our series would be insufficient to account for the high ratio of men to women. Moreover, the group of twenty-five cases of Djélaledin-Moukhtar included fifteen women and only ten men. In a series of thirty-five cases of eczema marginatum, composed of twenty-nine men and six women, with lesions on various regions of the body, Nicolau¹⁷ observed only four cases in which the feet were simultaneously involved. In two other cases, only the feet were affected, and one of these, a woman, developed a lesion in the groin two years later.

Familial transmission was observed in seven families. In two of these, eczema marginatum of the groin and infection of the feet were observed in both father and son. In two families, eczema marginatum had occurred previously, followed by infection of hands or feet (or both) of wife and husband. In two families, the husband had been treated years ago by Dr. Hyde for "dyshidrosis" of hands and feet, and recently both husbands and wives have been found to have both



Fig. 5 (Case 5).—Severe intertriginous type, with extension to plantar surfaces.

feet infected. In one family, the daughter was treated in 1915 for an infection of the feet continuing two months. In April, 1916, her father was seen with the same condition, which had been present "many years." One woman, with both feet infected, gives a good description of an attack of eczema marginatum occurring several years ago in her husband.

The age of the patients varied from 9 to 54 years. The duration ranged from 1 week to 20 years. In

14. Castellani: Arch. f. Dermat. u. Syph., 1908, xciii, 23.
15. Fischer: Berl. klin. Wehnschr., 1915, No. 10, p. 21.

16. Pringle: Brit. Jour. Dermat., 1911, xxiii, 394.
17. Nicolau: Ann. de dermat. et de syph., 1913, p. 65.

three cases, the condition had existed from three to six weeks; in nine less than ten months; in twenty-six more than one year; in eighteen more than two years, and in seven more than ten years.

Plotting the seasonal variation in the number of cases shows the maximum to have occurred in September, with May as the next highest month. This agrees with the statements of many patients that they have exacerbations in spring and autumn, or that they

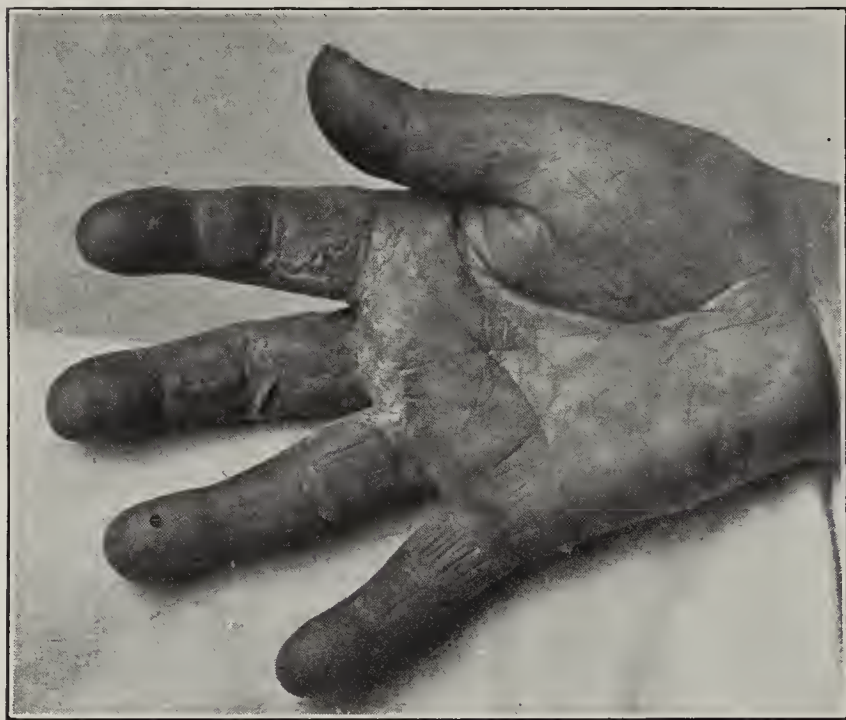


Fig. 6 (Case 6).—Localized intertriginous and palmar lesions of right hand.

“have trouble with their feet when the first warm weather comes.” Nineteen stated that they were always worse in warm weather.

The subjective sensation varied from being unaware that there was a disorder present to incapacity for walking. One such extreme case occurred in a boy who was carried into the office. Three men were scarcely able to get about, and appeared with feet bandaged and covered with house slippers. Itching was the most constant symptom, and was complained of by fifty-seven patients.

Foot infections were observed in sixty cases; hand infections in twenty-three cases; feet only in forty-two cases; hands only in five cases, and both hands and feet in eighteen cases. In Djélaledin-Moukhtar's series, the hand cases outnumbered the foot cases by 16 to 9.

The diagnosis of “dyshidrosis” had previously been made by trained observers in twelve cases. Of these, three had been so treated by Dr. Hyde and three by the writers. “Eczema” was next in order of frequency, with a total of six cases. One patient had been treated for “ivy poisoning.”

The average number of visits made by each person was 3.5. The largest number of visits made by one person was thirteen. Thirteen patients made only one visit each; twenty-one patients made four or more visits; five patients made eight or more, and three made ten or more visits. The disorder recurred in six cases after apparent healing.

MICROSCOPIC EXAMINATION

The demonstration of the fungi in the tissue is readily made, as a rule; but occasionally considerable difficulty is encountered, particularly in those cases which have had a secondary dermatitis produced by

irritants, or those in which a marked pyoderma has developed.

If vesicles are present, those which are showing signs of absorption, or even those which are beginning to desquamate, should be selected, because in the older ones the fungi will be found in greater numbers. The top should be removed with a thin, sharp blade, inverted on a glass slide, and covered with a drop of a 15 per cent. solution of sodium or potassium hydroxid. Over this is placed a cover glass, and the slide is heated until the fluid boils. Pressure is then applied to the cover glass, reheating and adding more solution as necessary, until the tissue is pressed out into a thin smear. Sabouraud¹⁸ prefers a 30 per cent. solution, and insists that the tissue should be placed in a watch glass and boiled in this solution until it disintegrates.

The vesicles are so deep seated that unless care is exercised only the most superficial part of the roof will be removed and the vesicle may remain unopened. Only by cutting into the vesicle and liberating the fluid can one be sure of getting the entire roof, which is essential for the demonstration.

In the absence of vesicles, squames may be used with good results.

The morphology of the organism in the tissue has resembled, in this group of cases, that of *Epidermophyton inguinale*. The spores are never found in groups, but always in chains. They have a tendency toward a quadrilateral shape, and are somewhat loosely attached to each other. Interspersed with the chains of spores are slender mycelial threads running in all directions. After standing for days or weeks in sodium hydroxid, the spores may become swollen to several times their former size.

MYCOLOGY

As yet, no culture work has been sufficiently extensive to establish firmly the fungi involved in volar and intertriginous affections. Djélaledin-Moukhtar makes no mention of cultures, but Sabouraud,¹⁸ having seen some of the cases, is convinced that they were ordinary ringworm with merely accidental volar involvement, due probably to *Trichophyton violaceum*,

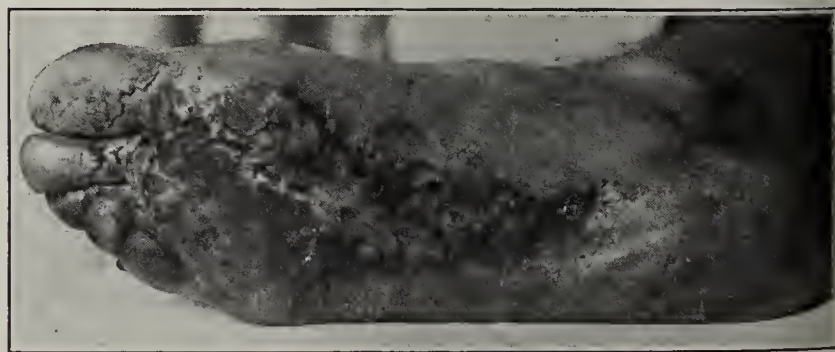


Fig. 7 (Case 7).—Extensive intertriginous and plantar desquamation with secondary infection.

asteroides, *acuminatum*, or *granulosum*, and in no wise connected with eczema marginatum. In 1910, Sabouraud was able to cultivate *E. inguinale* from four of six foot cases. Whitfield,⁷ in 1911, did not succeed in getting a culture in any of his seven cases. Later in the same year⁸ he reported fifteen additional cases, but speaks of only four cultures, three of which were *E. inguinale* and a fourth an unidentified organism, thought to have been helminthosporium. Sabouraud¹⁹

18. Sabouraud: Arch. f. Dermat. u. Syph., 1912, cxiii, 927.

19. Sabouraud: Brit. Jour. Dermat., 1911, xxiii, 390.

saw an intertriginous infection of the foot in a patient, who had just returned from the East, due to *Epidermophyton rubrum*, first described by Castellani.²⁰ Sabouraud,¹⁸ in 1912, reported having seen twenty-three cases of eczema marginatum of the hands and feet in one and one-half years, but does not state how many yielded cultures. Kaufmann-Wolff,⁹ in a series of twenty-five cases, obtained in all of them an organism which grew rapidly in a white or yellowish culture.



Fig. 8 (Case 7).—Photomicrograph of fungi in squames.

It was submitted to Sabouraud, who thought it probably *Trichophyton equinum*. Montgomery and Culver¹⁰ grew *E. inguinale* from their case. Gougerot and Gancéa²¹ recovered a yeastlike organism from an intertriginous foot case. The colonies were shiny, white or creamy, with a central button surrounded by a flat areola. Microscopically, it was found to be composed of filaments, pseudofilaments and budding cells. Hudelo and Montlaur²² reported a similar organism found in three cases of intertriginous lesions of the feet, and one case with intertriginous lesions on the hands. Saphier²³ grew a fungus resembling *Trichophyton gypseum* from vesicles in the plantar and interdigital surfaces of the left foot.

The culture of the organisms, particularly in tissue taken from the feet, is attended by several difficulties, chief among which is the overgrowth by various cocci or by *Penicillium glaucum*. If discrete vesicles are present in nonmacerated epidermis, the chances of obtaining an uncontaminated culture are good. The region should be carefully cleansed, and the tops of the vesicles removed and cut into small bits with sterile knife and forceps and immediately planted on the surface of the agar. Despite the greatest care, however, one may get a troublesome growth of colonies of cocci, through which the fungus may find difficulty in growing.

The greatest difficulty was encountered in attempting to grow the fungus from the squames of the intertriginous lesions of the feet. In these moist and macerated squames, many varieties of organisms are found, all of which are rapid growing, whereas *E. inguinale* requires from five to eight days to develop.

In order to secure the greatest surface with the smallest amount of agar, ordinary square shouldered whisky flasks were used. When properly prepared, the surface of the agar, with the flask on its side, is just level with the side of the neck. In making the plants, the flask can be placed flat on the edge of the table, and by means of a platinum loop small bits of tissue can be distributed evenly over the whole surface of the agar, with very little danger of contamination from the air. Two dozen plants, or two subcultures, will be easily accommodated in one flask, with room for the colonies to develop without interference. As a rule, *E. inguinale* colonies become pleomorphic and stop growing before the sides of the flask are reached. The "proof agar" of Sabouraud,²⁴ which consists of 4 per cent. crude maltose and 1 per cent. peptone, has been used in all of the cultures.

Owing to an inability to get material for the culture medium, our work was not begun until March, 1916. Since then, cultures have been made in seventeen cases. We intend to carry on this part of the work, a more extended report of which will be reserved for the future.

Of the seventeen cases, six yielded typical cultures of *E. inguinale*. Four of these were foot cases, one with lesions on the feet and groin, with the same organism in almost pure culture in each region, and one with vesicles on the hand, which had been preceded by eczema marginatum of the groin, axillae and neck.

The culture appears as a small, greenish-yellow point, which becomes powdery on the surface, with the color, as suggested by Sabouraud, of an unripe lemon beneath. The center gradually becomes acuminate, and may become elevated to the height of 1 cm. In the course of from three to six weeks, a fluffy, pure white tuft, or "duvet," appears at one or many points. This is known as the pleomorphic stage, and eventually overgrows the culture. Subcultures made from this have the same characteristics, and the original form cannot be recovered. If *E. inguinale* is grown on peptone agar without carbohydrate, this pleomorphic



Fig. 9 (Case 7).—Culture of *Epidermophyton inguinale* 3 weeks old.

form will not appear. Microscopically, the fungus is easily identified by the fruitlike bodies.

In four cases, a pure white culture of aerial hyphae was obtained. Microscopically, this is seen to be a mycelial thread, with short branches at right angles alternating at opposite sides of the stem, with a spore on the end of each. We have not identified this organism. In one of this group was found a fungus appearing somewhat similar to *E. inguinale*, except that the

20. Castellani: Brit. Jour. Dermat., 1910, xxii, 147.
21. Gougerot and Gancéa: Bull. Soc. franç. de dermat. et de syph., 1914; ibid., December, 1915, p. 335.
22. Hudelo and Montlaur: Bull. Soc. franç. de dermat. et de syph., 1914; ibid., December, 1915, p. 403.
23. Saphier: Arch. f. Dermat. u. Syph., 1916, cxxii, 626.

24. Sabouraud: Les teignes, 1910, p. 112.

center is of a cream color, surrounded by a region of soft buff, and around the whole is a narrow margin of bright orange-yellow.

Three cases yielded a cream-colored colony, with a central button and a margin of pure white. This may be the same organism described by Kaufmann-Wolff.

Three cases gave almost pure cultures of white, shiny, smooth and moist colonies. Microscopically, the organism appeared as budding spores and short, or pseudofilaments. This corresponds with the description of the organism found by Gougerot and Ganc  a.²¹

DIAGNOSIS

The diagnosis depends on the microscopic examination of the tissues. All vesicular, scaling or desquamating areas of the interdigital or volar surfaces of the hands and feet should be carefully examined for the presence of fungi. One negative examination is not sufficient evidence to dismiss the case as nonparasitic. Sabouraud describes a case in which he was unable to find the fungus at the time of the first visit, but when the patient was next seen, three months later, the demonstration was easily accomplished.

In all the cases in this series, mycelial threads were found in the vesicle tops or in the squames of the volar surfaces. Five other cases were seen in which it appeared that the organisms were present, and which yielded to treatment, but the fungi were not found, and therefore these cases have not been included.

TREATMENT

The treatment consisted of three preparations. In the severe pyodermic or eczematoid-dermatitis cases, a preliminary soothing treatment of naftalan combined with zinc oxid and starch was used. This was followed by 5 per cent. chrysarobin in traumaticin (chloroform solution of gutta percha) which was painted on until a good reaction occurred. Ordinarily, the chrysarobin in traumaticin was immediately prescribed and directions given for five daily applications. The patient was asked to return for observation after resting for a period of three days. If necessary, the treatment was repeated.

In another series of cases, an ointment recommended by Whitfield was used. This contains 2 parts of salicylic acid and 4 parts of benzoic acid in 30 parts of ointment base. It is applied daily and can be used for several weeks without producing irritation.

Chrysarobin was used alone in thirty-six patients, who made an average number of 3.6 visits. The ointment mentioned above was used alone in eight patients, by whom an average number of two visits was made.

The number of cases in which the ointment was used is obviously much too small for comparison, but it appears to be somewhat more efficient than chrysarobin.

CONCLUSIONS

1. Eczematoid and dyshidrotic lesions of the volar surfaces due to mycotic infection are much more common, at least in the Middle West, than the number of reported cases indicates.

2. The disorder occurs more frequently in men than in women, more frequently on the feet than on the hands, and more frequently in the warm and damp than in the cold and dry season.

3. The essential lesion is a deep-seated vesicle, in the roof of which mycelial threads may be found.

4. The areas affected, in the order of frequency, are (a) the fourth interspace of the foot; (b) the plantar surface of the arch, and (c) over the tuberosity of the fifth metatarsus.

5. The disorder frequently follows or precedes eczema marginatum, and is due in many cases to the same organism.

6. The pathogenic fungus may remain dormant in the cutaneous folds of the feet throughout the winter months. With the advent of warm weather an acute attack of vesication, desquamation and maceration may occur.

25 East Washington Street.

ABSTRACT OF DISCUSSION

DR. WILLIAM T. CORLETT, Cleveland: A number of years ago Dr. L. W. Ladd of Cleveland called my attention to the presence of the trichophyton in lesions about the toes, and since that time I have been able to recognize that many of the so-called eczemas of the feet and less frequently of the hands are caused by this parasitic fungus. Of course, trichophytosis of the nails of the hands and feet has been recognized for many years, but it is only in recent years that the

responsibility of the trichophyton for other lesions about the extremities has become known. When the nature of the eruption is suspected the microscope will reveal its true nature.

DR. H. C. BAUM, Syracuse, N. Y.: I never dreamed that such a large proportion of troubles of this sort might be due to a fungus infection. We now have the explanation of why the Roentgen rays were efficacious where other methods of treatment had failed.

DR. RICHARD L. SUTTON, Kansas City, Mo.: At the meeting in San Francisco last year, in discussing ringworm of the palms, I stated that the condition must be an extremely rare one. Since then I have found cause to change my mind. While visiting in Portland, a few days after the close of this session, Drs. King and Parker showed me two characteristic examples of the disorder, and a few weeks later Dr. William Allen Pusey, of Chicago, presented to me several photographs of ringworm of the palm. In their review of the literature the authors overlooked the recent report of Lane of New Haven, who described several cases of the affection.

DR. JAY F. SCHAMBERG, Philadelphia: There was a time when scabies was held to be of internal origin, of which assertion the symmetry of the lesions was regarded as corroborative evidence. It would be interesting in the cases of eczematoid ringworm to determine whether a positive complement fixation test could not be demonstrated, employing the ringworm fungus as an antigen. If there are cases



Fig. 10 (Case 8).—Localized area of vesicles, desquamation, and scaling in palm.

which prove refractory to treatment, I would suggest that a vaccine made from the organism be employed, for the value of vaccine treatment in ringworm has, I think, been demonstrated. I have seen a few cases of eczematoid ringworm of the hands and have been able to confirm the diagnosis by microscopic examination.

DR. A. RAVOGLI, Cincinnati: I have found that chrysarobin and the white precipitate ointment often produce dermatitis, and I have obtained better results with the Wilkinson ointment and the following: flores sulphuris and sapo viridis, each 2 drams; oleum cadi, 1 dram; terra alba, half a dram, and petrolatum, 1 ounce. This has often produced most satisfactory results. No preparatory treatment is necessary for removing the crusts, etc., because the ointment softens the scales. After two or three days I can see good results from its use.

DR. WILLIAM ALLEN PUSEY, Chicago: I happened to be in Paris in the summer of 1892, and I remember that one of the chief topics of discussion among the students around the St. Louis Hospital was the fact that a Turkish assistant of Professor Fournier had demonstrated the occurrence of ringworm of the palms in the form of scaling lesions which Fournier said he could not distinguish from syphilis. Since that time I have had this question in mind, but in a considerable number of these cases I am sure their character has escaped me. I think we are under many obligations to Dr. Ormsby and Dr. Mitchell for emphasizing the importance of this type of ringworm of the palms and soles. It is undoubtedly very common and equally undoubtedly seldom recognized. Of especial interest is the ease of cure of the cases which they report from the use of chrysarobin, or benzoic and salicylic acid ointment, for even when the condition is recognized its cure has been by no means easy. I have in some cases gone as far as I dared with Roentgen rays without effecting a cure, and I have seen the cases resist repeated applications of iodine along with careful dissection of the loosened epidermis.

DR. J. M. KING, Nashville, Tenn.: Sabouraud first called attention to this condition in 1907, and since then I have used chrysarobin and iodine in liquid form, together with the ointment mentioned by Dr. Ravogli, making the applications three or four times weekly, and I have yet to see a case that has failed to respond to this treatment.

DR. GEORGE M. MACKEE, New York: These cases are seen as frequently in the East as in the Middle West. At the clinic of Dr. Fordyce we have had a large number of such cases, but we have had a great deal of difficulty in making the diagnosis. If you can identify the fungus, that settles it without question, but in some of our work we have found spores where they seemingly should not have been, and have failed to identify the organism in cases where we expected to find it. In short, our findings have not been entirely decisive or satisfactory. We have had cases where we obtained a pure growth in Sabouraud's medium, but the lesions were always squamous, never vesicular. In making our diagnosis, we depend not only on the regular cultural method, but also try the method of placing some of Sabouraud's medium on a slide and infecting it, and then allowing it to grow for a few days and examine it under the microscope.

DR. WALTER JAMES HEIMANN, New York: One difficulty in connection with this work in this country is that we do not make Sabouraud's medium properly. To get his results it is necessary to use the ingredients Sabouraud uses, and to compound them as he directs. If we do this the organisms will grow as Sabouraud describes, and the difficulty Dr. MacKee mentions will be eliminated. On given mediums the cultural characteristics of trichophyta are constant. Sabouraud has also worked out a very ingenious and valuable way of growing the organisms in a drop of medium on slides.

This facilitates the study of their cultural properties, for the entire colony can be dried, stained and studied under the microscope.

DR. ERNEST DWIGHT CHIPMAN, San Francisco: There is apparently a difference in the virility of strains of fungi according to their geographic distribution. This is especially true of ringworm. The small spored ringworm of the scalp as seen in California is evidently much more amenable to treatment than in many other places, so much so that simple remedies, as 1 per cent. basic fuchsin ointment, will often speedily effect a cure. This is in line with my experience with the epidermophyton in which 1 per cent. chrysarobin and 2 per cent. white precipitate, combined, have seemed sufficient, although Dr. Ormsby has apparently required stronger applications for his cases.

DR. FRANK W. CREGOR, Indianapolis: I have several of these cases under my care, and they give me a great deal of trouble. We have been accepting our clinical diagnosis of eczema, and have neglected the use of our microscopes. The usual therapeutic measures do not relieve these cases, and I have been at a loss to know why. I only got good results when I used strong applications of sulphur. This paper clears up the situation, and we may expect better results in the future.

DR. CLARENCE J. BROEMAN, Cincinnati: I would like to ask the authors whether they traced the etiology to any definite source?

DR. JAMES HERBERT MITCHELL, Chicago: We have had one case in which the eruption coexisted with syphilis. Both conditions were recognized, and the lesions of both disappeared under appropriate treatment. Vesicles may be absent in certain stages of the disease, but at one period or another vesicles will be found. The absence of any eczematoid changes preceding the vesicles is evidence that the fungus is the primary etiologic factor, and not a secondary invader. We have not been able to determine the sources of infection other than its association with eczema marginatum of the groin, and its

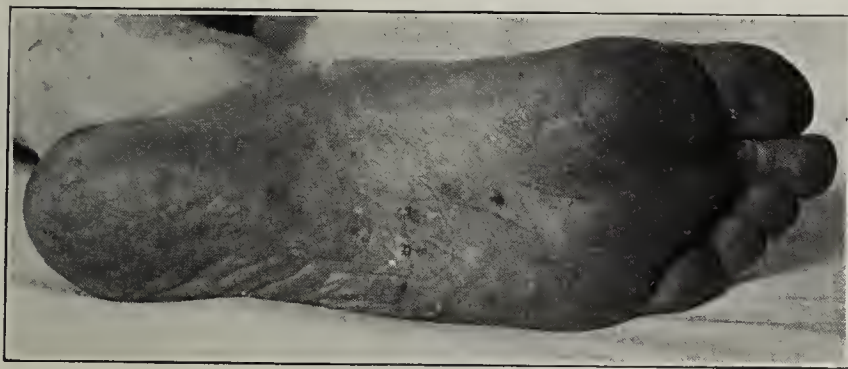


Fig. 11 (Case 9).—Discrete vesicles on feet.

occurrence in different members of a family.

DR. OLIVER S. ORMSBY, Chicago: We found that the ointment we described was better than chrysarobin. It seemed to kill the parasite and cause it to disappear, whereas after chrysarobin we found the dead stained parasite. There was no doubt as to the specificity of these cases. There was no evidence nor history of preceding trouble, no inflammatory process of the skin. All our cultures were obtained from cases where the superficial lesions had been removed. We hope to go further into the mycology of these cases and make a report at some subsequent time.

Rupture of Uterus Under Pituitary Extract.—Five cases of fatal rupture of the uterus are reported by V. Marcondes from the Maternity at São Paulo, Brazil. The women had all been attended by midwives who gave the pituitary extract, and they were practically moribund when brought to the hospital. Dr. Marcondes protests against the use of pituitary extract by the ignorant, urging that midwives should be prohibited from using such a powerful remedy. In Spain this has been done. The *Revista de Medicina y Cirugia* of Havana has also published a recent article warning against the use of pituitary extract in ignorant hands. The writer, Arteaga, reports a case in which the midwife had given large doses of pituitary extract without effect, and he found transverse presentation, but he was able to perform version and the woman escaped mishap. Rio physicians have also recently been discussing the dangers from abuse of pituitary extract. Marcondes exclaims in conclusion that in lay hands it is actually a social scourge. His article appeared in the *Annaes Paulistas de Medicina e Cirurgia*, 1916, lv, 84.

THE EFFECT OF POTASSIUM IODID ON THE LUETIN REACTION*

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About a year ago Sherrick¹ reported that "a positive pustular or nodular luetin reaction can be obtained in 99 per cent. of all persons irrespective of the presence of syphilis, by the administration of potassium iodid, either simultaneously, or shortly before or after the intradermal test. Other substances, such as agar and starch, when injected intradermally, will give a similar reaction when potassium iodid is administered," and other drugs containing iodine were found to have a similar effect.

These observations were considered of such importance, not only in connection with the luetin test, but also in relation to anaphylactic phenomena in general and skin reactions in particular, that we have been studying the effect of iodids, bromids, chlorids, ether, chloroform and other drugs on the luetin, tuberculin and other skin reactions. The results with the iodids have proved definite and confirmed Sherrick's observation in practically every particular; since this drug is widely used, particularly in the very class of cases in which the luetin test is most likely to be employed in diagnosis, we have considered it advisable briefly to report at this time our observations regarding the influence of the iodids on the luetin reaction.

All of the luetin tests were conducted with Noguchi's luetin so diluted with normal salt solution that 0.1 c.c. contained the proper dose.

The regular intracutaneous luetin test was conducted among a selected group of laboratory assistants and medical students, all of whom were known not to be syphilitic, in good health and yielding negative Wassermann reactions with all antigens. All tests were negative and showed at most but a faint area of erythema about the needle puncture which subsided entirely in forty-eight hours. One week later all of the men began taking a saturated solution of potassium iodid in doses of from 10 to 15 drops according to a regular schedule extending over from one to three days, followed by a second luetin test. In every man but one, well marked reactions followed, characterized by a wide inflammatory areola, edema and a firm, deeply seated central nodule of a deep red which in all instances underwent necrosis with the formation of a small pustule. In our experience the pustules healed rather slowly, especially if large doses of potassium iodid had been taken.

Clinically these reactions resemble the ordinary luetin reaction very closely; the deep seated lesion and the tendency to pustulation are, however, more distinctive of the reaction under the influence of iodids.

Marked reactions were also observed following the administration of varying amounts of a saturated solution of potassium iodid among a group of patients suffering with various chronic diseases, all of whom had yielded negative luetin tests a month previously and negative Wassermann reactions with all antigens.

In a few instances in which the luetin test was repeated in normal nonsyphilitic persons who were not taking potassium iodid, and to test the possibility of a previous injection sensitizing the person to luetin protein, the results were negative.

In a number of instances 0.1 c.c. of a sterile 0.5 per cent. solution of agar agar was injected intracutaneously at the same time as luetin; positive reactions usually of a severer character followed in all instances during or shortly after the administration of potassium iodid.

The amount of potassium iodid capable of producing these results among nonsyphilitic individuals varies considerably, and is apparently somewhat dependent on individual susceptibility. Persons whose skins are for some unknown reason unduly susceptible to the effects of any protein skin test react in a most marked manner to the smaller doses; it is of interest to note that several of these persons were believed to have latent tuberculous lesions in the lungs. We have observed well marked reactions following the intracutaneous injection of luetin, after the administration of 10 drops of a saturated solution of potassium iodid once a day over a period of three days.

As pointed out by Sherrick, the administration of potassium iodid may cause the site of a former luetin injection to develop inflammatory phenomena. Our experience corroborates his observation, although we found this to occur rather irregularly. For example, 10 drops of a saturated solution of potassium iodid three times a day over a period of three days caused in the majority of men a reaction at the site of an injection of luetin given from seven to ten days previously. In one instance this reaction was delayed for almost three weeks. Among a

group of patients no reactions were observed at the site of a former luetin injection given from four to six weeks previously, after the administration of 90 drops of a saturated solution of potassium iodid.

It is probable that the administration of iodids has been responsible for the production of a proportion of the "torpid" or "delayed" luetin reactions. At least we have observed reactions to luetin among normal persons when potassium iodid was administered from one to three weeks later.

Similar results have been observed experimentally among guinea-pigs and rabbits, although less marked and more difficult of interpretation, owing, in part at



Pustular reaction in a healthy nonsyphilitic person following the intracutaneous injection of 0.1 c.c. luetin immediately after the administration of 30 drops of a saturated solution of potassium iodid a day over a period of three days. A similar reaction at the site of a former preliminary luetin injection followed about seven days later.

* From the McManes Laboratory of Experimental Pathology of the University of Pennsylvania.

1. Sherrick, J. W.: The Effect of Potassium Iodid on the Luetin Reaction, THE JOURNAL A. M. A., July 31, 1915, p. 404.

least, to the difficulty experienced in injecting these animals intracutaneously.

In all these experiments, potassium iodid was administered by the stomach tube in doses corresponding to body weight; the luetin and agar skin tests were conducted with the same products and with the same amounts of each.

Guinea-pigs were found somewhat more susceptible than rabbits. Preliminary skin tests were negative, producing no apparent reaction after the lapse of forty-eight hours, or at most but a small nodule at the site of injection.

Among the guinea-pigs, positive reactions usually followed the administration of from 45 to 120 grains of potassium iodid per 132 pounds of body weight. Among the rabbits we found generally that it was necessary to administer 45 grains per 132 pounds of body weight each day for a period of from three to eight days before definite reactions to the intracutaneous injection of luetin and agar could be elicited. While a number of the reactions among these animals were of the pustular variety, they were generally milder than those observed among persons, and the "lighting up" of previous injections occurred but seldom.

It may also be stated here that a luetin prepared by cultivating *Spirochaeta pallida* in a fluid medium, centrifuging and washing the spirochetes once with normal salt solution, resuspending in normal salt solution, heating at 60 C. for an hour, and preserving with 0.25 per cent. tricresol yielded reactions among syphilitics, but proved less irritating and produced much milder reactions among normal persons taking potassium iodid, owing, in part at least, to the absence of ascites-agar present in the luetin as ordinarily prepared.

CONCLUSIONS

1. Well marked positive luetin reactions were observed among a group of healthy nonsyphilitic persons following the administration of potassium iodid.
2. Similar results were observed among nonsyphilitic persons suffering with various other diseases.
3. Somewhat severe reactions were observed following the intracutaneous injection of 0.1 c.c. of 0.5 per cent. agar-agar.
4. The strongest reactions were observed when the luetin was injected during or immediately after the ingestion of potassium iodid.
5. Positive luetin reactions were observed among normal nonsyphilitic persons as late as one month after the ingestion of large doses of potassium iodid.
6. In some instances the administration of potassium iodid caused the site of a former luetin injection to develop inflammatory phenomena progressive to pusulation.
7. Similar but less marked reactions to luetin and agar were observed among guinea-pigs and rabbits following the oral administration of potassium iodid.
8. Accordingly, a positive luetin skin test has little value in the diagnosis of syphilis among persons who are taking or have recently taken potassium iodid. The amount of iodid capable of producing these reactions varies considerably; also the length of time following the ingestion of iodid when this reaction to luetin may follow. For these reasons physicians should very carefully rule out the possible influence of iodids before conducting the luetin skin test.

SPLENECTOMY IN PERNICIOUS ANEMIA

STUDIES ON BONE MARROW STIMULATION *

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In the study of diseases of the blood and particularly of the effects of therapeutic procedures in such diseases it is necessary that one should be able to estimate by reliable criteria any alteration of the relative rate and degree of destruction and regeneration, at least of the formed constituents of the blood, the erythrocytes, leukocytes and platelets. Such information is particularly desirable in pernicious anemia, in which the spontaneous course of the disease is so bizarre. Marked improvement, usually called a remission, occurs frequently in the course of the disease and may easily be attributed to any incidental therapeutics.

The methods for studying the processes of blood destruction and regeneration are few. The enumeration of the formed elements may or may not be of value. It is evident that a given number of a blood element merely represents the balance of destruction and formation. The red cell destruction can be studied by the excretion of urobilin, and perhaps in certain instances by estimating the bile pigments in the blood.¹ Sellards and Minot² have pointed out that the study of the tolerance to injections of hemoglobin in man may perhaps furnish valuable information concerning erythrocytic destruction. The presence in the peripheral blood of the "bodies" described by Rous and Robertson³ may also throw light on this subject.

The white corpuscle destruction in certain instances may perhaps be studied by the estimation of certain nitrogenous products in the urine.

There are no known methods for studying the destruction of the blood platelets, since we do not know their ultimate fate. We merely know that their life is short, being from three to six days.

The rate and degree of formation of the formed blood elements can be studied clinically in a number of ways. The chief source of these elements is the bone marrow. Thus, in order to gage the power of regeneration and formation of the formed elements, one must study the activity of the marrow. One must scrutinize, not only the increases of bone marrow activity, but also the intensity and quality of that activity and its possible relation to the therapeutic procedure.

Evidence of increased activity on the part of the marrow in the production of red cells may be shown by an increase of young forms of red corpuscles. The presence of increased numbers of reticulated red cells, especially of a certain type, the presence of blasts, Howell-Jolly bodies, polychromatophilia and certain types of stippling should be considered in studying the activity of the bone marrow. Variations of size

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* This paper and those by Drs. Krumbhaar and Miller, which follow, are part of a symposium on the spleen. The remaining papers by Dr. C. H. Peck, D. C. Balfour, and R. D. McClure, and the discussion will be published in our next issue.

1. Blankenhorn: Tr. Assn. Am. Phys., 1916.

2. Sellards and Minot: Jour. Med. Research, 1916, xxxiv, 469.

3. Rous and Robertson: Tr. Assn. Am. Phys., 1916.

and shape of the red cells may be of significance in certain cases.

The decreased activity in the production of red cells may be evidenced by an absence of the factors indicating activity. A rising red count does not necessarily mean an increased activity of the marrow, for the count may rise as the result of a lessened destruction. Increased activity is entirely consistent with an anemia when formation does not compensate destruction. Likewise, an extreme grade of anemia may be associated with decreased destruction and caused by decreased formation.

Evidence of the activity of the marrow in the production of white cells may be seen in the polynuclear count and perhaps in certain changes in the Arneth formula. A diminished activity is associated with a low polynuclear count and a resulting relative lymphocytic increase. In some instances with diminished activity of the bone marrow the liver and finally other structures may revert to a fetal condition, and white cells resembling fetal cells may be found in the blood stream, especially in cases of tumors involving marrow.

Könnecke,⁴ by injections of nucleinate, and von Decastello and Krjukoff,⁵ by injections of gelatin, have suggested that the degree of polynuclear leukocytosis caused by these substances furnishes an indication of the functioning ability of the marrow. From our study of this procedure we feel we gain some information concerning the functioning ability of the marrow in regard to its ability to form and send into the circulating blood leukocytes, but not necessarily information concerning the functioning ability of the marrow as a whole.

Increase of the blood platelets in the peripheral blood is also indicative of an increased activity on the part of the marrow supplying the blood platelets. The size, shape and character of these elements is probably also important in determining the activity of the marrow.

When the marrow is functioning above or below normal the three main elements are not necessarily equally affected. The effect may be entirely or predominately on one or two of these elements. It is thus necessary in studying the degree of bone marrow activity to consider not only one but all the factors involved.

We have followed our cases of blood disease in their spontaneous course and after treatment especially from the point of view of the degree of bone marrow activity.

Our, as well as other, previous studies have shown that while the amount of destruction of red corpuscles in pernicious anemia is somewhat reduced as a rule after splenectomy, yet this reduction occasionally occurs without therapy. The spontaneous course of the disease is so irregular and variable that it cannot be denied that it is possible to parallel the reduction of the destruction of the red cells after splenectomy with similar reductions without any treatment. Yet it seems probable that the destructive agents are modified to some extent after splenectomy. It is certain, however, that the destructive processes involving the red cells are still present.

Our fifteen cases of pernicious anemia subjected to splenectomy, in accord with other reported cases, show that the important features of the disease, namely, the typical blood picture and relapses with marked

destruction, still persist. As von Decastello⁶ and others have pointed out, it is possible to attribute improvement to an increase in blood formation as well as to a decrease in blood destruction. We have, therefore, submitted our cases of pernicious anemia to a critical study of the effect of splenectomy on the blood-forming organs with a view of determining if possible the value of this procedure in altering the activity of the bone marrow.

Fifteen cases,⁷ which include all of the patients with pernicious anemia operated on by splenectomy at the Massachusetts General Hospital, were studied (from November, 1914, to May, 1916). Ten of these patients were operated on by one of us (Vincent). The other five were operated on by Dr. C. A. Porter, to whom we are indebted for the privilege of including the operative findings of his cases.

One patient with a red count below 1,000,000 died the day after operation, presumably of postoperative shock. There were no other immediate postoperative deaths, thus giving an immediate operative mortality of 6.6 per cent. The low immediate mortality indicates that with the proper selection of the time of operation in the course of the disease any considerable operative mortality is not to be expected.

Of the fourteen patients who survived, the operation in one case was too recent to afford any data. Of the remaining thirteen patients, one, operated on two and a half months ago, remains in the hospital on account of thrombosis. The other twelve left the hospital three to six weeks after operation, at which time the large majority presented no great change in their blood counts, and they all felt better, looked better and were less yellow. In all of them the blood picture was that of pernicious anemia. Four patients showed considerable immediate and progressive improvement in the red counts and hemoglobin. Two of the four were transfused, one two days before, the other two days after operation. None of the other patients were transfused within ten days of operation.

The condition of these thirteen patients was ascertained as far as possible two months after operation. Three could not be said to have changed materially, particularly in their blood counts. One case showed a slight increase and one a moderate increase in the red cells. Eight showed a marked increase in the count of red cells. The red counts of these eight cases averaged approximately 4,000,000, with a corresponding improvement in their clinical condition. Nevertheless the diagnosis of pernicious anemia could be made from the blood films.

Of the thirteen patients, there were ten in whom six months had elapsed since operation. At the end of six months five of these ten patients had a relapse. Four of these five at the two months' period had presented very marked improvement. The fifth patient never showed any great improvement.

At the end of a year after operation we had received no information concerning two patients. These two patients had no relapse within six months. Two patients still alive had not yet gone a year after splenectomy. The patient who presented no improvement at the end of the second month period and was relapsing at the sixth month period was dead within a year after operation. Of five remaining patients, only one has certainly gone a year without a relapse. This patient

4. Könnecke: *Deutsch. Arch. f. klin. Med.*, 1914, cxv, 177.

5. Von Decastello and Krjukoff: *Med. Klin.*, 1911, vii, 225, 267.

6. Von Decastello: *Deutsch. med. Wchnschr.*, 1914, xl, 639, 692.

7. Lee, Vincent and Robertson: *THE JOURNAL A. M. A.*, July 1 1915, p. 216, reported five of these cases.

however, suffered a typical relapse and died sixteen months after splenectomy. One of the remaining four died sixteen months after operation in his second relapse. Another after sixteen months is now having a very serious relapse after several minor relapses. Still another is having his second serious relapse at the end of the year period. The last patient to be accounted for at the end of the year period had a relapse at six months. He was markedly improved by transfusion, and now has 3,000,000 red corpuscles.

The end results of splenectomy certainly fail to show any permanent results from this procedure.

The eventual progress of the disease is not changed. Nevertheless, it is striking that there was in eight out of thirteen cases a considerable temporary improvement in two months, which persisted in some cases to six months. This improvement was marked though not necessarily more marked than the improvement often seen occurring spontaneously; but it seemed to occur rather uniformly after this procedure.

The formed blood elements derived from the bone marrow have been followed in these fifteen cases. Observations on these elements are presented below.

Leukocytes.—Immediately after splenectomy, as has been the usual experience of others, we observed a leukocytosis, varying from 10,000 to 35,000, with increased polymorphonuclear percentage. This occurred within twenty-four hours after splenectomy and subsided within a few days. As pointed out by Cabot,⁸ the white count varies with the progress of the disease, being higher when the number of red cells is higher. We found, as have others, that persistently after splenectomy there was a distinct tendency to a higher level of the white count than occurred in the usual course of pernicious anemia, in which there is usually a leukopenia with often an absolute diminution of polynuclear leukocytes. This increase was both lymphocytic and polymorphonuclear. Perhaps more often there is a relatively greater polymorphonuclear than lymphocytic increase. The polymorphonuclear cells, when increased, tended to give a normal Arneth picture, as contrasted to the abnormal right handed shift which is the usual picture in the spontaneous course of this disease, as pointed out by Briggs.⁹ Occasionally a slight eosinophilia occurred.

In general, the leukocytosis immediately after splenectomy and the level of leukocytosis for some weeks afterward contrasted with the average before operation gave a rough index of the future reaction in the red cell forming part of the bone marrow. The patients with the highest leukocytosis tended to show the greatest improvement after splenectomy. Per contra, the patients who showed only a slight increase after splenectomy eventually showed little improvement after this procedure. Such figures do not definitely prove this, but they strongly suggest that a persistently very low polymorphonuclear count in this disease is of value as one of the indicators of bone marrow exhaustion. Under such conditions little improvement is to be expected from any therapeutic measures directed at increasing the activity of the bone marrow.

Platelets.—The number of platelets in pernicious anemia is usually low. Like the leukocyte count, the number of platelets tends in general to follow the curve of the red cells in the usual course of the disease. The platelets show a definite increase three to seven

days after splenectomy. This increase usually takes the platelets not only above the average count in pernicious anemia, but often well above the normal, in one of our cases even to 900,000. This increase is usually persistent, though fluctuations occur. Besides the increase in platelets, there are changes in their morphology. A tendency to abnormally large platelets occurs in pernicious anemia. After splenectomy the presence of a considerable number of very large platelets is striking. There also seems to be an abnormal variation in shape. Like the increase in the white count, the platelet increase seems to be of some value as an indicator of the ultimate reaction of the bone marrow in forming red cells. Likewise, a persistently low platelet count in pernicious anemia seems to be one of the criteria of bone marrow exhaustion.

In this connection we have been impressed by the association of the increase of platelets and thrombosis. Thrombosis is not an uncommon complication of splenectomy. It has been reported as a postoperative cause of death. Of course the platelets are not the sole factor in thrombosis. The immediate and directly exciting cause may be infection or some unknown agent. We have noted thrombosis or phlebitis in three of our cases.

In one case it was noted on the fifth day after operation and involved many veins. In the second case it was noted after three weeks. In the third case it was first observed when the patient reported at nine months. In a case of splenectomy in pernicious anemia of Dr. W. S. Thayer, studied by one of us,¹⁰ thrombosis was noted on the ninth day. In this case extensive thrombosis was the cause of death. In our second case of thrombosis a severe gastro-intestinal disturbance was present on the tenth day, although the phlebitis was not evident until the twenty-first day. All of these cases had at the time of the phlebitis a very large increase of platelets. The majority of our other patients had some days after operation, at the time of marked increase of the blood platelets, vague gastro-intestinal symptoms of varying severity. These symptoms were unlike any that they had had before operation and furthermore were quite different from the gastro-intestinal symptoms, so common after any abdominal operation. The association of this condition with thrombosis or phlebitis of some of the mesenteric veins is possible. This association is of course not proved. It may not be amiss to point out that thrombosis in the usual course of pernicious anemia is extremely rare, but apparently is not uncommon after splenectomy. We are inclined to believe that the thrombosis is in some way related to the marked increase of platelets.

Howell-Jolly Bodies.—There occur in the red cells, particularly after splenectomy, and in other conditions often associated with grave anemia, certain round bodies known as Howell-Jolly bodies. The nature of these bodies is not clearly understood, although they are fairly generally assumed to be nuclear fragments. We were able to find a very few of these bodies in three of our cases before operation. It is probable that these Howell-Jolly bodies could have been found in the other cases if the blood had been subjected to a similar prolonged search. They occurred constantly in every case after operation. These bodies usually appeared in small numbers the day after splenectomy, and gradually increased. In some instances 25 per cent. of the red cells contained them. The usual per-

8. Cabot: *Modern Medicine*, Osler and McCrae, 1913.

9. Briggs: *Am. Jour. Med. Sc.*, 1914, cxlviii, 413.

10. Minot, Denny and Davis: *Arch. Int. Med.*, 1916, xvii, 101.

centage was from 2 to 10. Their percentage fluctuated, but they were always present in fair numbers as long as we made observations. Their morphology varied considerably; there occurred differences in regard to size, situation in the red cells, multiplicity, and their association to reticulated and polychromatophilic cells. We are unable at present to correlate positively variations in number or type with the clinical progress of the disease. We are inclined to agree with the general belief that in some way these bodies are related to an increase of bone marrow activity or irritation, or possibly to some change of threshold of output of red cells.

Blasts.—Ten of the eleven cases on which we have adequate data presented within a few days after operation, like other reported cases, a shower of blasts of varying degree. The maximum number of blasts seemed to occur approximately two to ten days after operation. The duration of the blast crisis varied widely and in a few cases persisted for some weeks. The intensity of the reaction in blasts could not be anticipated by the preoperative number of blasts in the blood. The blood of one patient who presented a large number of blasts after operation showed a very rare blast on repeated examinations over a long period of time before operation. It has been our experience that a shower of blasts often precedes a spontaneous remission. This remission may be quite transitory and slight. However, a shower may be seen just before death. After operation a shower of blasts, especially when persistent, seemed to be associated with an ultimate improvement. The findings were not constant and we do not feel that the presence of blasts even in considerable numbers at any stage of the disease including after splenectomy is of much significance as to the future course of the disease.

Reticulated Red Cells.—The percentage of reticulated red cells may perhaps be taken as a measure of the hemopoietic activity of the bone marrow. Normally, about 0.8 per cent. of the red cells are reticulated. In the spontaneous course of pernicious anemia one sees wide fluctuations in the percentage of these cells containing a "reticulum" vitally stained with brilliant cresyl blue. This percentage varied in our cases, from 0 to 20. A high percentage of reticulated cells probably indicates an increased activity of the part of the bone marrow that produces red cells. This increased activity of the bone marrow is not necessarily accompanied by either a rise in the count of the red corpuscles or in clinical improvement, since this may or may not be counterbalanced by an increased destruction. Likewise, in the event of decreased activity of the bone marrow, an associated decrease in the blood destruction may leave the number of the red cells and the clinical picture unchanged. In order to form any estimation of the bone marrow activity, as indicated by the reticulated cells, it is necessary to make continuous observations over periods of time. Occasional observations are of no value, as they may indicate only transitory tendencies. However, our data show that curves plotted from frequent observations are reliable indicators of bone marrow activity and are the forerunners of increased red cell counts and of clinical improvement in the absence of excessive blood destruction.

Some studies, as yet incomplete, of the character of the reticulated cells, not only in pernicious anemia, but also in other conditions, strongly suggest that the character of these cells is at least as important as the per-

centage in determining the intensity and permanency of the bone marrow activity. We consider of particular importance the presence of heavy, knotted reticulum, usually in the center of the cell. Such a reticulated cell is found in fairly large numbers under the recognized conditions of very active blood regeneration, as we have seen persistently in hemolytic jaundice and temporarily after direct hemorrhage in normal persons.

Other characteristics of these reticulated cells that seem to us of probable significance are the size of the reticulated cell, the hemoglobin content, the amount, quality, granulation, and distribution of the reticulum. Also of doubtful significance in regard to bone marrow activity is the presence, which we have noted in a few cases, of the hemoglobin-free reticulated cells or bodies, resembling those described by Rous and Robertson, which they consider as probably red cells in the stage of destruction. We are inclined to believe that when the red cells contain a few scattered, short strands of reticulum, particularly when arranged in the periphery of the cell, the actual percentage of reticulated cells is of slight significance.

In general, two to five days after splenectomy in pernicious anemia we found a slight temporary rise in the reticulated cells. These findings coincide with the blood findings at the time of discharge from the hospital about three weeks later: At that time the red count was usually not much increased, but in the event of a persistent increase of the reticulated cells we found marked clinical improvement associated with an increased red count. This was particularly marked in the two patients on whom blood transfusion was performed at the time of operation. In these patients this rise persisted and reached in eight to twelve days a level of about 15 per cent. of reticulated cells, chiefly of the knotted centrally-placed type. In the event of a short and slight temporary rise in the reticulated cells, if an increase in the red count developed later, there first appeared a second and this time a considerable rise in the reticulated red cells. This rise was usually evident about three weeks after splenectomy and was often associated with a shower of blasts. With the appearance of a definite remission, when the red cells approached normal, the reticulated red cells fell to normal figures or lower, with the removal of the necessity of abnormal bone marrow activity.

The degree of the response varied. Those cases in which increases of reticulated cells had been observed either in the spontaneous course of the disease or after transfusion usually showed greater increases after splenectomy. However, we were able to observe increases in reticulated red cells after splenectomy in two cases in which no essential increase in reticulated red cells had previously been noted, either in the spontaneous course or after transfusion. These increases tended to be relatively slight, since in such instances it is probably safe to assume that we are dealing with an exhausted bone marrow, apparently incapable of reacting to anything except the strongest stimulation, that is, the changes, whatever they may be, that take place after splenectomy. Two patients in severe relapse after splenectomy have shown a truly remarkable blood picture of bone marrow reaction following transfusion. This was not seen in three others.

The increased reacting power of the bone marrow under the influence of transfusion in the first two cases seems to be related in some way to the absence of the spleen.

The further study of the blood films stained by Wright's stain showed only the characteristics that have been noted previously by us and others. Our observations on polychromatophilia, anisocytosis and stippling have furnished little additional evidence as to the functioning ability of the bone marrow.

While the presence of blasts and of Howell-Jolly bodies is in some way related to the activity or change in threshold output of the bone marrow, we are unable to correlate definitely our data concerning them and those of the reticulated red cells. The reticulated cells furnish the most reliable data concerning the activity of the erythrocytic elements of the bone marrow. The increase in the platelets and the polynuclear leukocytes after splenectomy in pernicious anemia furnishes further evidence of the effect of this procedure in stimulating the bone marrow of these cases.

It is to be noted that splenectomy in pernicious anemia has in nowise a specific stimulating effect on any one portion or on any one function of the bone marrow. It apparently acts grossly on all portions, though the effects are seen at different periods of time in relation to the operation. We attribute the temporary improvement in pernicious anemia after splenectomy to two factors: first, an associated diminution in the blood destruction; and second, the associated increase in activity of the bone marrow. We do not attempt to explain the precise mechanism by which splenectomy brings about an increased activity of the marrow. Certain stimulating effects after splenectomy are seen almost immediately, as in the case of the increase in the polymorphonuclear leukocytes. The increase in the platelets tends to occur somewhat later, and the main increase of the reticulated cells, when it occurs, seems to be inaugurated still later. This effect on the part of the bone marrow which forms red cells is much more difficult to bring about and also is slower.

While in general one assumes that the changes in activity of the bone marrow is induced by some unknown irritating or stimulating process, it is possible to explain certain features on other grounds. It may be that, as Naegeli¹¹ has suggested, we have the threshold of output changed so that cells normally present in the bone marrow but not in the blood may appear in the peripheral circulation. Perhaps the spleen normally may have some inhibitory effect on the bone marrow. On the latter basis it is hard to explain the considerable leukocytosis, similar to that occurring in certain infections, the increase of platelets, and the occurrence at necropsy in pernicious anemia of a red bone marrow. In favor of this assumption one may point to the appearance of Howell-Jolly bodies and certain other characteristics of the red cells that cannot be positively related to such characteristics of the red cells as reticulation, which are generally assumed to indicate, not only the earlier appearance of these cells, but also an actual increase in the formation. It seems probable that both these considerations play a part in the changed picture. We use the term stimulation of the bone marrow in the general sense of indicating the inauguration of the changes.

By the use of these methods we conclude that one finds stimulation of the bone marrow in pernicious anemia frequently occurring spontaneously. One may find stimulation of the bone marrow usually associated with improvement after transfusion and after splenec-

tomy. Splenectomy seems to result in the greatest stimulation of the bone marrow of any known therapeutic measure. It acts on the whole bone marrow and not only on the portion that forms red cells. However, splenectomy does not alter the essential course of the disease. While more constant stimulating effects are seen after splenectomy, yet we can roughly parallel any individual case of bone marrow stimulation after splenectomy with a case of bone marrow stimulation that occurred either spontaneously or after transfusion.

It is evident that from splenectomy one can attain stimulation but once. Transfusion, while perhaps of less constant and of less active effect, has two great advantages. It is relatively simple and can be repeated a number of times. Transfusion does not modify the destructive agencies at work in pernicious anemia. These considerations must be carefully weighed in advising any therapeutic procedures in this disease.

LATE RESULTS OF SPLENECTOMY IN PERNICIOUS ANEMIA

A STATISTICAL AND CRITICAL REVIEW *

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The striking improvement that has been shown to follow removal of the spleen in such diseases as hemolytic jaundice and Banti's disease has naturally led to an extension of this clinical procedure to allied conditions. In 1913 three investigators, Eppinger,¹ Decastello² and Klemperer,³ working independently, applied splenectomy to the relatively common and grave disease, pernicious anemia. It is interesting that Eppinger was led to adopt this procedure by observing after splenectomy a diminished output of urobilin and other evidences of decreased hemolysis. Decastello, on the other hand, had noted the improvement that followed splenectomy in the related conditions, hemolytic jaundice and Banti's disease; whereas Klemperer was influenced by the clinical observation that splenectomy for such conditions as rupture of the spleen was in some instances eventually followed by polycythemia.

Such marked improvement was noted in these earlier cases that the procedure was quickly and widely repeated, chiefly in Germany and in this country, so that a fairly large group has already become available for study. More prolonged observation, however, has showed that besides a considerable mortality from the operation and postoperative complications, very few of the patients continue steadily to improve; in almost all the characteristic blood picture of pernicious anemia remained, and not a few died from relapses of the disease in the first year or two after operation. The object of this paper is to ascertain as far as possible by a correlation of the published reports, with later results obtained by personal communication, just how valuable splenectomy has thus far proved to be in pernicious anemia.

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* Read before the joint meeting of the Section on Practice of Medicine and the Section on Surgery, General and Abdominal, at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Eppinger, H.: Berl. klin. Wehnschr., 1913, xxix, 2409.

2. Decastello, A. von: Deutsch. med. Wehnschr., 1914, xl, 639; later reports by personal communication to the author.

3. Klemperer, G., and Hirschfeld, H.: Therap. d. Gegenw., 1913, liv, 385.

11. Naegeli: Blutkrankheiten und Blutdiagnostik, Leipzig, 1912.

Although it has been impossible to get additional reports from some of the German authors, and of some patients who have been lost sight of, nevertheless the results obtained in the last two and one half years are sufficiently concordant to give evidence of some value. In drawing conclusions from any such review, however, it must be remembered that certain difficulties are unavoidable. For instance, the dividing line between pernicious anemia and some of the other primary blood diseases is necessarily such a shadowy one that the possibility of an incorrect diagnosis must always be borne in mind. Then, too, the concept of pernicious anemia varies so much with different authorities that cases included as such by one author might easily be rejected by another. Thus one of the earlier cases of splenectomy that was followed by marked and long-continued improvement, when sub-

the term pernicious anemia may later be found to include more than one clinical entity. (Compare the great variations that occur in the size of the spleen, in the bone marrow reactions, in the evidences of hemolysis, and in the duration of the disease.) If this were found to be true, it might well be that some of the apparently discordant results that have been observed after splenectomy are due to the fact that the operation was of value in one or more types and contraindicated in the others. The results of these studies are included in Table 1.

ANALYSIS OF RESULTS

From Table 1 it will be seen that of the 153 individuals whose spleens were removed, thirty died within six weeks, presumably from the effects of the operation, a mortality of 19.6 per cent. Of the

TABLE 1.—RESULTS OF SPLENECTOMY IN PERNICIOUS ANEMIA

Observers	References	Number of Cases	Postoperative Results			Total Deaths
			Deaths	No Improvement	Improved	
Decastello, A. von...	Deutsch. med. Wchnschr., 1914, xl, 639.....	13	4	1	8	7
Eppinger, H.	Berl. klin. Wchnschr., 1913, xxix, 2409.....	7	0	0	7	?
Fahreus, M. B.	Svensk. Läk. Förländ., 1915, viii, 249.....	3	1	0	2	2
Fenekel.....	Verhandl. d. deutsch. Gesellsch. f. Chir., 1914, xliii, 233	2	0	2	0	1
Flörcken.....	Verhandl. d. deutsch. Gesellsch. f. Chir., 1914, xliii, 231	2	1	0	1	1
Frangenheim.....	Sitz. d. allg. Aerzt. Ver. z. Köln, München. med. Wchnschr., 1914, lxi, 1760.....	2	1	1	0	1
Giffin, H. Z.	Personal communication to the author.....	31	3	6	22	7
Guleke.....	Verhandl. d. deutsch. Gesellsch. f. Chir., 1914, xliii, 227	2	2	0	0	2
Hansing, W.	Med. Klin., 1914, x, 1544.....	2	2	0	0	2
Hosli, H.	Cor.-Bl. f. schweiz. Aerzte, 1914, xlii, 1171.....	2	1	0	1	1
Klemperer, G.	Therap. d. Gegenw., 1913, liv, 385.....	14	4	2	8	5
Lee, R.	THE JOURNAL A. M. A., July 17, 1915, p. 216; personal communication to the author.....	15	1	4	10	3
Longcope, W. T.	Personal communication to the author.....	2	1	1	0	1
Perey, N. W.	Surg., Gynec. and Obst., 1915, xxi, 360; personal communication to the author.....	19	2	2	15	4
Roblec, W. W.	THE JOURNAL A. M. A., March 6, 1915, p. 796; personal communication to the author.....	2	0	0	2	1
Roemer.....	Berl. klin. Wchnschr., 1914, li, 669.....	2	0	0	2	1
Thayer, W. S.	Tr. Assn. Am. Phys., 1914, xxix, 489; personal communication to the author.....	2	0	0	2	1
Vogel, C.	Personal communication to the author.....	7	3	1	3	4
Jagie, N. von.....	Wien. klin. Wchnschr., 1914, xxvii, 1536.....	3	0	0	3	0
Single cases ⁴		21	4	4	13	9
Total.....		153	30	24	99	53

4. The single cases were reported by various authors as follows:

- Anschutz: Verhandl. d. deutsch. Gesellsch. f. Chir., 1914, xliii, 232.
 Baldwin, J. F.: Med. Rec., New York, 1915, lxxxvii, 230.
 Brill, N. E.: Tr. Assn. Am. Phys., 1915, xxx, 547.
 Buerger, L., and Ottenberg, R.: Med. Rec., New York, 1914, lxxxvi, 860; later report by personal communication to the author.
 Coleman, W.: Tr. Assn. Am. Phys., 1914, xxix, 470.
 Dahl, R.: Hygiea, 1914, lxxvi, 471; later report by personal communication to the author.
 Harpole, W. S.: Surg., Gynec. and Obst., 1914, xviii, 243; later report by personal communication to the author.
 Huber, O.: Berl. klin. Wchnschr., 1913, L, 2179; later report by personal communication to the author.
 Judell: Personal communication from Dr. Moffitt to the author.

- Mann, A. T.: Journal-Lancet, 1915, xxxv, 294.
 Moffitt, H. C.: Am. Jour. Med. Sc., 1914, cxlviii, 817.
 Mosse, M.: Berl. klin. Wchnschr., 1913, L, 2088.
 Muhsam, R.: Deutsch. med. Wchnschr., 1914, xl, 380.
 Pappenheim, A.: Deutsch. med. Wchnschr., 1914, xl, 412.
 Penrose, C. A.: South. Med. Jour., 1915, viii, 879.
 Pepper, O. H. P., and Austin, J. H.: Arch. Int. Med., July, 1916, p. 131.
 Port, F.: Berl. klin. Wchnschr., 1914, li, 546.
 Rodman, J. S.: Personal communication to the author.
 Stewart, F. T.: Personal communication to author.
 Talley, J. E., and Jopson, J. H.: Personal communication to the author.
 Turk, W.: Deutsch. med. Wchnschr., 1914, xl, 371.

jected to critical analysis, seems to the writer rather a case of acquired hemolytic jaundice than of true pernicious anemia. In another case reported as pernicious anemia, the diagnosis was later changed to hemolytic jaundice on account of the subsequent appearance of acholuric jaundice with diminished resistance of the erythrocytes. As such variations in diagnosis are apt to include less serious diseases under the head of pernicious anemia, or diseases in which splenectomy is already known to be of benefit, the present statistics will be correspondingly favored by such inclusions. In applying the present figures to prognosis, however, it is fair to offset the inclusion of such cases with the results that must inevitably follow the better selection of cases and better preparation for operation. A third consideration is that

remaining 123 patients, all but twenty-four showed a distinct improvement, both in general condition and in blood picture. Of the twenty-four individuals that survived the operation but failed to improve, a few were obviously harmed by it. To this group belongs Pappenheim's case, splenectomized at a favorable time, when the patient was entering a remission. The condition, nevertheless, was aggravated by the operation, the blood showed signs of increased destruction and a serious relapse began. The improvement noted in the majority of cases lasted varying periods. Thus at the end of six months, of fifty-three patients who had survived operation for more than six weeks and were still under observation, forty-four had still continued to improve and none had died, but nine had already relapsed.

At the end of the first year after operation, there remained twenty-seven patients who were still under observation. Of these, Decastello's series is the most important, not only because he and Eppinger were the first to try this procedure and therefore the cases could be followed for a longer time, but because the early successful results have been greatly modified by time. Of six patients at the time of his publication several months after operation, four showed such great improvement that except for the microscopic appearance of the blood they might have almost been considered cured. Two years later, however, two were

TABLE 2.—LATE RESULTS AFTER SPLENECTOMY IN PERNICIOUS ANEMIA

	After One Year	After Two Years
Number cases known.....	27	6
Still improved	11	3
Relapsed.....	7	2
Died subsequently.....	9	1

dead and one was in as poor condition as before operation. Of the other two important early series, Eppinger's and Klemperer's, it has proved impossible to get additional information. The figures for the whole group of twenty-seven cases, however, show that the initial improvement has been maintained in less than half of the cases.

A small but interesting group is formed by six individuals that have been known to have lived two years or more after operation (Decastello 2, Giffin, Harpole, Huber, Thayer). Of these, Giffin's patient had had the disease for two and a half years; the anemia was not extreme at the time of the operation, and the spleen was much enlarged (1,640 gm.). Improved by the operation, he died three years later from pneumonia. In Decastello's two cases the disease had existed for less than a year, the anemia was severe, and the spleen but slightly increased in size. Both patients improved after operation both clinically and as to the blood picture; but whereas one in a subsequent report was in poor condition, the other was without symptoms, although the blood picture was still that of pernicious anemia. Harpole's patient was known to have had pernicious anemia for two years, and at the time of operation the anemia was moderately severe and the spleen twice the normal size. After splenectomy there occurred immediately an active bone marrow reaction with marked clinical improvement. The patient has continued in fair health, with only a slight anemia, but with persistence of spinal cord symptoms. Huber's patient, who was considered moribund at the time of operation, improved rapidly for seven weeks, relapsed, and later underwent a spontaneous remission. After two and a half years, she was still in good condition and able to do her housework, but still anemic. Thayer's patient, having had the disease one year, improved after splenectomy, although there was no bone marrow reaction. After eighteen months the patient relapsed to the same condition as before operation and was last reported in poor condition.

Estimation of the value of such a procedure as splenectomy in pernicious anemia must take into consideration not only the actual results obtained, but a comparison, as far as is possible, with the probable results if operation had not been undertaken. Thus, whereas we have seen that splenectomy caused a quick

and marked improvement in 64 per cent. of all patients, natural remissions occurred at one time or another in over 80 per cent. of the patients of Cabot's⁵ series treated by the older conservative methods. One cannot maintain from this that perhaps the improvement after splenectomy was only a coincidental remission, because the onset of improvement was too closely and constantly related to the postoperative period; but it does offer some basis for the contention that other methods of treatment may yield results as striking as those following splenectomy. However, from the aspect of duration of the disease the evidence is more in favor of the splenectomized series. In Cabot's series, almost half died in the first year of the disease, and of the remainder, one third died in the next year. As the duration of the disease in the splenectomized series had already averaged one and a half years before operation, they should be more properly compared with the remainder of Cabot's group. By the end of the first year conditions in the splenectomized group were as follows: Of thirty-three patients surviving the operation, twenty-four were still improved, three had failed to show improvement or had relapsed to their preoperative condition and six had died. If postoperative deaths, however, were to be included, only about half of those whose fate was known were still alive at the end of the first year. From both these points of view, therefore, there are no clear indications as to the value of splenectomy.

The changes in the blood picture after splenectomy are striking and fairly constant. Forty-seven cases are stated to have had a distinct postoperative blood crisis (appearance of normoblasts, megaloblasts, reticulated erythrocytes, Jolly bodies, etc., in larger quantities); and as statements that the blood crisis failed to appear are very rare, it is fair to assume that such a phenomenon is at least a frequent occurrence. In most of the patients who recovered the stimulation forms soon grew fewer in number and coincident with the signs of general improvement the hemoglobin and red cell count rose. The color index, however, usually remained high. As might be expected, also, the nucleated forms became fewer or disappeared; and

TABLE 3.—RESULTS ACCORDING TO AGE OF PATIENT, BASED ON ONE HUNDRED AND TWENTY-ONE CASES

Age, Decade	Number Cases	Postoperative Results			Subsequently Died
		Deaths	Not Improved	Improved	
3d	8	2	1	5	1
4th	23	4	2	17	2
5th	43	5	2	36	8
6th	28	4	5	19	6
7th	9	5	2	2	1

yet statements are almost unanimous that the microscopic features of the blood (tendency to macrocytosis, poikilocytosis, etc.), even in many cases that showed almost normal counts, remained suggestive of pernicious anemia. Those patients who died within the first six weeks after operation showed either very slight increase in the blood picture or an actual deterioration; whereas death occurring after that period was in many cases preceded by a distinct improvement in the blood picture with the usual signs of a remission.

Those few patients who up to the present time have continued well after operation must also be taken into

5. Cabot, R. C.: Modern Medicine, Ed. 2, iv, 639.

consideration. By the older methods of treatment, Cabot in the first edition of *Modern Medicine* stated that six out of 1,200 cases after six years of health might be said to have been cured. In the second edition this number was reduced to three. May it not develop that a larger percentage of such "cures" will follow splenectomy, even though the blood picture does not return absolutely to normal? Another point brought out by study of the blood picture at the time of operation is that if the operation is undertaken before the blood has reached an extreme degree of deterioration, not only is the operative risk lessened,

TABLE 4.—RESULTS ACCORDING TO DURATION OF DISEASE, BASED ON NINETY-FIVE CASES

Duration	Number of Cases	Postoperative Results			Subsequently Died
		Deaths	Not Improved	Improved	
Under 6 months.....	17	4	..	13	...
Six mos. to 1 year.....	26	4	3	19	3
One to 2 years.....	36	3	6	27	8
Over 2 years.....	16	6	1	9	4

but the improvement is greater and more lasting. In any case it is wise to precede it with one or more transfusions.

The average age of the patients at the time of operation was 45; the average duration of the disease at that time 1.6 years. Sex has not been found to exert any influence on the results. If the results are analyzed in groups subdivided according to age, it appears (as one would expect) that less favorable results are obtained in patients in the sixth and seventh decades. A similar arrangement on the basis of duration of the disease, shows that the best results are obtained (after the operation has been successfully passed) in those patients who have had the disease for less than one year.

When arranged according to the degree of anemia at the time of operation, one fact is patent, that the operative risk is much greater in those cases in which hemoglobin is below 20. This is, of course, for this disease, a lower level even than that of one million erythrocytes.

Except for this point, on account of the great fluctuations in blood counts incident to the disease and following transfusions, it is difficult to estimate whether or not the previous condition of the blood has any marked effects on the result obtained. The impression is gained, however, that the best results follow splenectomy in those cases that are not extremely anemic at the time of operation and that have shown considerable fluctuations in the blood picture.

Information as to the size of the spleen was secured in eighty-nine cases. In twenty-eight cases (31 per cent.) the spleen was either small or approximately normal in size. In forty-one cases (46 per cent.) the spleen was slightly enlarged (between 250 and 500 gm.); and in twenty cases (23 per cent.) it was considerably enlarged. In other words, although seldom palpable before operation, it was distinctly enlarged in over two thirds of the cases. If the results of splenectomy are subdivided according to the size of the spleen, it will be seen that better postoperative results were obtained in the cases with enlarged spleens. The third group in this arrangement, however, is the only one that could be said to have fared better than another as regards the ultimate outcome of the disease.

THE EFFECT PRODUCED BY SPLENECTOMY

Whatever the cause of the distinct improvement after splenectomy in those patients who survive the operation, it is obvious that it is not due to the removal of the sole cause of the disease. If Eppinger's theory of thickened arteriole walls in the spleen with consequent damming back and destruction of red cells in the splenic pulp were correct, removal of the spleen should indeed cure the disease; but our studies show that this is not the case. On Eppinger's theory, also, the characteristic remissions of pernicious anemia would be difficult to explain.

The postoperative blood crisis discussed above, and the subsequent improvement in the blood picture, decrease in urobilin, etc., indicate both that a stimulus has been applied to the bone marrow and that a source of blood destruction has been removed. Lee's findings of an increased number of platelets after splenectomy would also support the bone marrow stimulation theory. Hypotheses to explain these phenomena have been unsatisfactory and the relevant experimental evidence often contradictory. Klemperer believes that the bone marrow activity is induced by removal with the spleen of an inhibiting hormone, but from experiments in our laboratory we have found (in normal animals, to be sure) not only that this bone marrow activity does not occur until after several months have elapsed (Pearce and Pepper⁶) but also that fresh splenic extract stimulates instead of inhibiting the bone marrow (Krumbhaar and Musser⁷). The cause for the blood crisis, therefore, must probably be sought elsewhere; perhaps, as has been suggested, in bone marrow stimulation from metabolic products or from abnormal constituents of the erythrocytes that are allowed to remain in the blood by the removal of the spleen (Decastello). It is also difficult to prove that the lessened hemolysis after splenectomy, as shown by decrease output of urobilin, is actually due to the absence of the spleen. Neither normal spleens nor those removed at operation in cases of blood disease (Coleman, Stewart) can be shown to possess demonstrable hemolytic activity, and studies of the blood

TABLE 5.—RESULTS ACCORDING TO PREOPERATIVE DEGREE OF ANEMIA, BASED ON ONE HUNDRED AND FOURTEEN CASES

Hemoglobin	Number of Cases	Postoperative Results			Subsequently Died
		Deaths	Not Improved	Improved	
Below 20.....	9	7	1	1	...
Below 30.....	29	6	2	21	3
Below 40.....	33	2	2	29	7
Above 40.....	43	7	7	29	5

entering and leaving the spleen have also failed to throw light on this supposed function of the spleen (Krumbhaar and Musser⁷).

Another factor to be considered is changes in the red blood cells themselves. In one case that I had an opportunity to study (Stewart's), the resistance of the erythrocytes was distinctly increased after splenectomy, so that this might constitute one of the factors of improvement after operation. A similar increase in the resistance of the erythrocytes has been found after the removal of the spleen in normal animals (Pearce and

6. Pearce, R. M., and Pepper, O. H. P.: Jour. Exper. Med., 1914 xx, 19.
7. Krumbhaar, E. B., and Musser, J. H.: Jour. Exper. Med., 1914 xx, 108.

Karsner⁸) and in other blood diseases, but has been denied in some cases of pernicious anemia (Moffitt).

Whatever the cause of the improvement, it is highly probable that the subsequent deterioration is due to other related structures taking over the functions of the spleen (hemolymph nodes, accessory spleens, Kupfer cells in the liver, and perhaps ordinary lymph nodes), although here also no positive evidence has as yet been produced. Assuming that the cause of the disease has not been removed, the logical sequence would be that when these auxiliary organs have sufficiently developed, the interrupted course of the disease would be resumed.

As to the few patients who up to the present time have continued well after operation, if the curative action of splenectomy is denied, one must assume either that the causative factor has for reasons unknown ceased to operate, or that the auxiliary organs have failed to develop into pernicious activity.

INDICATIONS FOR SPLENECTOMY

In what cases of pernicious anemia, then, should splenectomy be undertaken? One of two lines may be followed, and it is as yet too early to say which, if either, is correct. If splenectomy merely induces a remission, and this is at present the opinion of the majority of observers, it should be logical to undertake

TABLE 6.—RESULTS ACCORDING TO SIZE OF SPLEEN, BASED ON EIGHTY-NINE CASES

Size of Spleen	Number of Cases	Postoperative Results			Subsequently Died
		Deaths	Not Improved	Improved	
Normal or diminished	28	9	5	14	2
Slightly enlarged.....	41	5	4	32	9
Considerable enlarged	20	1	1	18	3

only as a last resort, when all other measures have proved unavailing, and only with the hope of prolonging life. Even under such limitations, however, the procedure has already proved its value, and in several cases moribund patients have been brought back to life of comparative well-being for many months. Assuming, on the other hand, that an occasional patient may be, for practical purposes, cured of the disease, and giving due weight to the view that greater and longer continued improvement is obtained if the operation is performed before the disease has reached its final stage, it would then be advisable to undertake it as soon as possible. Another factor that may prove to be decisive is whether or not increased hemolysis can be proved. In those cases with clinically enlarged spleens, icteroid appearance and increased urobilin output, without increased resistance of the erythrocytes, the prognosis is distinctly more favorable than in the opposite types. The condition of the bone marrow is also important, splenectomy being contraindicated if the bone marrow is persistently aplastic. It has also been a matter of clinical observation that those individuals in whom spinal cord symptoms have already developed are less apt to be helped by the operation.

CONCLUSIONS

1. Of the 153 patients studied, 19.6 per cent. died within six weeks; a distinct improvement in the clinical condition and in the blood picture occurred in 64.7 per cent., and no improvement in 15.7 per cent.

8. Pearce, R. M., and Karsner, H.: Jour. Exper. Med., 1912, xvi, 769.

2. The rather high postoperative mortality (practically 20 per cent.) may be due to poor choice of cases in the early series. As a much greater proportion of the more recent cases has survived the operation, the true postoperative mortality is probably much less than 20 per cent.

3. Of the individuals who showed improvement shortly after operation, nearly two thirds of the total number, a large number have failed to maintain this improvement, or have since died in a relapse or from intercurrent disease.

4. Although a few have continued in good condition during the period of observation (over two years), in no case can it be said that a cure has been effected, and the blood of these individuals continues to show many of the characteristic signs of pernicious anemia.

5. On account of the improvement that follows splenectomy, it would appear to be not only a justifiable, but in many cases an advisable, procedure; but in no case should a cure be promised or the operation undertaken except under the most favorable conditions.

6. The best results are obtained if the operation is preceded by one or more transfusions, and those patients who relapse after operation may still be greatly helped by transfusion. Whether or not transfusions would have produced equally good results in the absence of splenectomy is a question that cannot at present be decided.

7. The most favorable results may be expected in individuals who have not passed the fifth decade, in whom the disease has not progressed for more than a year, and who have a relatively good blood picture, (that is, an anemia that is not of too extreme a degree or of the steady, progressive type). Individuals with enlarged spleens have done better than those in whom the spleen was small or of normal size, as have also those suffering from an anemia characterized by excessive hemolysis.

8. The opposite of these conditions should be considered as unfavorable factors, as should also the existence of spinal cord symptoms or the presence of an aplastic bone marrow.

SPLENECTOMY IN SPLENIC ANEMIA, HEMOLYTIC ICTERUS AND HANOT'S CIRRHOSIS *

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The value of splenectomy in splenic anemia remains unquestioned, and since the first report by Banti in 1894 sufficient time has now elapsed to enable us to draw definite conclusions regarding not only the immediate success, but also the permanency, of the results. Within recent years two other conditions resembling in many clinical aspects splenic anemia have been relieved and probably permanently cured by splenectomy, namely, hemolytic icterus, both of the acquired and congenital type, and the hepatic cirrhosis of Hanot. These three conditions, splenic anemia, hemolytic icterus and the cirrhosis of Hanot, have many things in common and no doubt in the past have been frequently confused.

In all there is marked enlargement of the spleen, although the literature contains a few reports of

* Read before the joint meeting of the Section on Practice of Medicine and the Section on Surgery, General and Abdominal, at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

apparently true hemolytic icterus without palpable splenic tumor. In all three conditions there is chronic anemia or chronic icterus, or both. Evidence of obstructive icterus is always lacking, and when jaundice is present the patients do not show certain toxic manifestations, as bradycardia and pruritus, so common in other forms of jaundice. While typical hemolytic crises occur in only hemolytic icterus, sudden, unaccountable increase in the anemia is not infrequent in Banti's disease. Hemolytic icterus often occurs in several members of a family and may be definitely hereditary. While familial cases are much less frequent in splenic anemia, they nevertheless occur; in fact, the Gaucher's type of splenomegaly, which must be classed with splenic anemia, quite frequently takes this form; and Brill, Bovaird Collier and others have reported two or more cases of splenic anemia in the same family, and White reports 104 cases of splenomegaly with anemia from South China, where he states the condition is common and is often a family disease. To show the close relation between these two conditions, Chauffard and Troisier report a case in which the mother of the patient had hemolytic icterus, the son had an enlarged spleen with anemia and no icterus, but with urobilin in the urine and lessened resistance of the red corpuscles. The writer recently saw an apparently typical case of hemolytic icterus, but without enlarged spleen, the patient reporting that his sister had a large spleen, which had been removed, but she had never suffered from icterus.

Chronic jaundice is constantly present in hemolytic icterus and Hanot's cirrhosis, but it is infrequent in splenic anemia. Osler reports its presence in only four of his twenty-six cases, and Griffin in two out of eighteen cases. Great enlargement of the liver is constantly present in Hanot's cirrhosis, and a very decided enlargement of the liver is not infrequent in hemolytic icterus. Osler, in sixteen cases of splenic anemia, reports moderate enlargement of the liver in six, and in one the liver was very decidedly enlarged.

The chief point of difference in these three conditions is the lowered resistance of the red corpuscles in hemolytic icterus. This finding, however, is not constant and its absence should not interfere with the diagnosis of hemolytic icterus in the presence of other evidence. Normal resistance of the erythrocytes has been reported in two cases by Hopkins, two by Lommel, one by Claus and Kalberlak, all of these being of the familial type. Morse reports two and Banti one of the acquired form. Türk states that in splenic anemia the resistance of the red corpuscles may be increased or diminished, and Eppinger reports three cases, all with increased resistance. In Hanot's cirrhosis, as in other forms of chronic icterus, the resistance of the red corpuscle is increased.

In hemolytic icterus bile is usually present in the blood, but there is no urobilin; while in the urine bile is absent except during hemolytic crises, but urobilin is present. This peculiar condition is not present in either of the other two diseases.

Secondary anemia of greater or less degree is characteristic of splenic anemia and hemolytic icterus, but is not present in Hanot's cirrhosis.

Urobilin in the stool, usually considered as an index of blood destruction, is greatly increased in hemolytic icterus. Eppinger believes that the amount present in the normal stool is from 0.12 to 0.15 gm., while in three patients with hemolytic icterus the amount varied from 2.25 to 3.8. Eppinger and Robertson

have each determined the urobilin in the stool in Hanot's cirrhosis and they find it varies little from the normal. Eppinger has reported on two cases of Banti's disease, the amount of urobilin being 0.32 and 0.33 gm., respectively, a rather moderate increase above the normal and often reached in various conditions, as, for instance, in cardiac incompenation. That blood hemolysis is not especially important in splenic anemia is further supported by the relatively small amounts of iron found in the liver, spleen and kidneys in this condition. There is also no evidence that blood hemolysis is active in Hanot's cirrhosis, while in hemolytic icterus excessive blood destruction is very evident.

In these three conditions, which are in many ways so closely related, it is at present impossible to explain why in Hanot's cirrhosis there is icterus without anemia, in splenic anemia there is anemia without icterus, and in hemolytic icterus there are both icterus and anemia, although in many instances icterus is the dominant condition.

Splenic Anemia.—The majority of modern writers question whether we have in splenic anemia a disease entity. It is quite probable that in the past some patients with hemolytic icterus were diagnosed as having splenic anemia. It is also quite likely that at present splenomegaly of varied etiologic origin is included in this group. Banti's original definition included only those cases of anemia with enlarged spleen in which known etiologic causes could be excluded. It is not improbable that a chronic splenic tumor from any cause, especially if this enlargement is associated with great increase in the endothelial cells, which have been shown to have a marked erythrolytic activity, might give rise to chronic anemia. That in such cases splenectomy might be curative is also probable. Gaucher's splenomegaly may be given as a type of splenic anemia. Clinically, it conforms satisfactorily with our conception of splenic anemia. The histologic condition of the spleen, however, places it in a distinct class. Especially in children splenomegaly from syphilis with anemia may also be included, at least clinically, as splenic anemia. Chiari and Marchand report evidence of syphilis in some patients with clinically diagnosed splenic anemia coming to necropsy. Caronia applied the Wassermann test to the parents of thirty children with splenic anemia and reported it positive in nineteen. Curshmann reports the case of a patient with a history of hereditary syphilis who clinically had splenic anemia, recovery occurring after salvarsan. Mayo refers to three patients in whom syphilis may have been the cause.

In somewhat the same manner the enlarged spleen in a case of cured malaria might take on an increased erythrocytic function and thus give clinically a splenic anemia. Bey reports three cases, two corresponding to the first stage of Banti's and one to the third stage that cleared up completely under quinin. In all of these there was a definite history of malaria. Thrombosis of the splenic or portal vein, with stenosis, may also give rise to clinical splenic anemia, as in the case reported by Warthin and Dock.

The classification of all splenic tumors with chronic anemia under the general head of splenic anemia may not be logical, but from a therapeutic point of view such a grouping may be desirable, as there is indisputable evidence that cure has been effected in the vast majority of patients clinically diagnosed as hav-

ing splenic anemia, on whom splenectomy was performed. Even when the disease had advanced to the point of marked hepatic cirrhosis and ascites, more or less complete return to normal has been reported. The results of operative measures in the early stage of the disease are excellent. Griffin, from the Mayo Clinic, reports the cases of five patients, three with cirrhosis and ascites, and two in the preascitic stage of cirrhosis, on whom splenectomy was performed, and four of the five returned to normal health. One of these patients with ascites has been well seven years. In the Mayo series of eighteen patients, two died, or 11 per cent. Twelve of the sixteen recovering from the operation are now in excellent health (1915); two are definitely improved; one at first improved, later developed ascites and died, and one died two years after the operation, the cause of death not being determined. Some have advised against splenectomy during the ascitic stage, but the literature contains several reports, in addition to those already referred to, of the disappearance of ascites after splenectomy and the permanent cure of the patient. As operation is the only means that offers hopes of cure in this disease, it could be undertaken, provided the condition of the patient is not such as to make recovery from the operation improbable.

Regarding the mortality from splenectomy, the figures of Mayo have already been given, 11 per cent. in eighteen cases. This represents the lowest reported operative mortality in a relatively large series of cases. In the thirty-six cases reported by Banti, in which splenectomy was performed, the mortality was 44.4 per cent. Fifty-seven cases from various sources between 1900 and 1909 gave a mortality of 19 per cent., and in sixty-one cases reported since then the mortality was the same. This may probably be taken as the average mortality. In addition to the reported cures of splenic anemia by mercury and quinin, distinct benefit has been observed in a number of cases through the use of the Roentgen ray. There is no definite evidence, however, that any of these have been permanently cured.

Hemolytic Icterus.—Minkowski in 1900 was the first to describe this condition as a distinct disease, appearing either as an acquired or familial condition, the first symptoms may develop either at birth or during early adult life. The characteristic symptoms, aside of its familial nature, are the chronic icterus fluctuating intensity, combined as a rule with varying degrees of anemia; greatly enlarged spleen, often moderately enlarged liver, urobilin in the urine, but bile except in some instances after a hemolytic crisis; the stools well colored, with no evidence of any intoxication, as pruritus and bradycardia, and the presence usually of a lowered resistance of the red corpuscles. The disturbed resistance of the erythrocyte, which has been considered so characteristic of this condition, is not always present. Banti, Claus, Lommel and Hopkins have reported cases of both the hereditary and acquired types with normal corpuscular resistance. Even absence of a splenic tumor has been observed by Benjamin and Sluker, Archiafas and Nazarios, and the writer has recently seen a case of this character.

As a rule the patient is little inconvenienced by his condition, so that Türk has referred to it as a cosmetic disturbance, rather than a disease. Probably too much stress has been placed on the benign character of the condition, as the majority of these patients suffer from

anemia and consequent lowering of their efficiency. Especially following a hemolytic crisis, the occurrence of which is so common in these cases, the degree of anemia may be so great as to temporarily incapacitate the individual. In a case recently observed the hemoglobin fell during a crisis from 85 to 40 per cent., the patient developed a temperature of 105 and for two days was delirious. It is true that the degree of inconvenience observed varies greatly; some are apparently not the least disturbed by their condition, others are always under par. Symptoms, when present, are due to the anemia, and not to the icterus. When considering the advisability of splenectomy, the degree of inconvenience caused by this trouble should be seriously considered, as the operation is attended with a certain amount of danger and should not be undertaken without definite indications.

The usual presence of lowered resistance of the erythrocytes and the relation of the spleen to this phenomenon stamp hemolytic icterus as having a probable etiologic relation to the spleen. The hemolytic function of the normal spleen was first described by Kolliker in 1847, and Balbi in 1893 reported that splenectomy increased the resistance of the red corpuscles. In 1895 Banti demonstrated that in dogs after splenectomy pyradin did not cause icterus. This work has been confirmed by a large number of observers — Pel, Paton and Goodall, Pearce, Heinz and others. It might be considered that as the normal spleen tends to lower the resistance of the erythrocyte to hemolytic agents, an enlarged or hyperfunctioning spleen might increase this tendency to such a degree that hemolysis would occur from a variety of mildly hemolytic agents normally present. It is possible in these cases, however, that the enlarged spleen may not be the cause of the disturbed resistance of the erythrocyte, as it is well established that this disturbed resistance is not always present. Furthermore, while as a rule the resistance of the corpuscles soon returns to normal after splenectomy, there are several cases on record in which this failed to take place. A notable case of this kind is seen in the patient operated on in 1887 by Sir Spencer Wells, in whom, as reported by Dawson, the red corpuscles still showed lessened resistance in 1914. Roth also reports a case in which three and one-half years after splenectomy the corpuscles hemolyzed in 0.6 per cent. salt solution. It is possible these patients may have developed accessory spleens. Küttner reports a case in which necropsy, made eleven years after splenectomy for gunshot wound, revealed the presence in the peritoneal cavity of eighty to one hundred spleens. Significant, however, is the fact that in spite of the disturbed resistance of the erythrocyte these patients after the splenectomy have remained well, showing that the spleen is responsible in some way for the hemolysis, even if not concerned in the lowered resistance of the red corpuscles.

Splenectomy is undoubtedly curative. Although Micheli in 1911 was the first to perform splenectomy in recognized hemolytic icterus, several patients wrongly diagnosed as having splenic anemia had been previously splenectomized with permanent cure. In this list might be mentioned Banti's case in 1904, Umber's in 1904, Burghard and Sutherland's in 1906, and Roth's in 1908. Since Micheli's case the number of reported splenectomies has grown rapidly. Elliott and Kanavel in 1915 collected in the literature forty-eight cases. The operative mortality in these forty-eight cases was only 4.1 per cent., surprisingly low.

The forty-six patients who recovered from the operation were cured. The jaundice rapidly disappeared, beginning within a few days, and as a rule being complete within two weeks. The recovery from the anemia was somewhat slower, but relatively rapid. The hemolytic crises ceased, although Elliott and Kanavel report a crisis in their patient fifteen days after splenectomy. As only five years have elapsed since Micheli's case, it might be said that time has been too short to insure permanency. In the list of permanent cures, however, may be included those cases already referred to in which splenectomy was performed under a different diagnosis. As none of these patients have relapsed, we are justified in saying the results are permanent.

Parisot and Huelly in 1913 report two cases of hemolytic icterus cured by the Roentgen ray; the permanency of these results cannot be confirmed. With our knowledge of this condition it is reasonable to believe that the Roentgen ray may be beneficial.

Hanot's Cirrhosis.—True Hanot's cirrhosis is a rare disease. Like splenic anemia, mistaken diagnoses are probably frequent. That it bears some resemblance to splenic anemia and hemolytic icterus must be admitted. For this reason it is not surprising that a cure should follow splenectomy. Eppinger in 1913 reported two patients cured and Mayo recently reported one. As far as I have been able to determine, these are the only reported cases. It would appear probable, however, that in Hanot's cirrhosis, a condition which has heretofore been considered incurable, splenectomy was indicated.¹

THE RESULTS OF TREATMENT IN ARTERIAL HYPERTENSION DUE TO OR ASSOCIATED WITH SYPHILIS *

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The exact status of syphilis as a factor in the production of arterial hypertension is not yet settled, despite the general acceptance in medical literature of the view that syphilitic infections are not important in an etiologic sense. The prevailing view that this disease, so prone to attack the arterial wall, should be without effect on the blood pressure, is a teaching which cannot be considered as a closed chapter. Comparatively little has been written on this particular phase of hypertension, although it is mentioned as a possible cause by most writers on the subject. As early in 1901, Cautley² emphasized the absence of high blood pressure, as well as cardiac hypertrophy in syphilitic disease. Allbutt is equally emphatic in his belief that there is no important relation between syphilis and arterial hypertension. He says that he has seen high pressures in no case of syphilitic disease of the arteries unless there were renal or other complications. This assertion cannot be construed to mean that the hypertension might not be due to syphilis, because the

renal or other complication may itself have been due to that disease. The mechanism which underlies the production of arterial hypertension is as yet so obscure that syphilis cannot be excluded until all the factors are known.

In order to determine the results of treatment in cases of hypertension due to or associated with syphilis, the writer has collected a group of eighteen patients who have been under observation sufficiently long to draw certain conclusions. The small group of patients which have been selected for this study are cases in which syphilis and hypertension are associated. It has not been assumed that because a patient with increased blood pressure has had an antecedent history of syphilis, that the latter infection stands in the relation of a causal factor to the former condition. In fact, it was not always possible to say that the syphilis preceded in point of time the increase in arterial pressure. In no case, however, has the syphilitic infection been definitely known to have followed the arterial hypertension. That is, no case is included in which a hypertensive patient is known to have been later infected with syphilis. Inasmuch as syphilis is a disease of early adult life, and hypertension a disease of a later period, it is probable that where the two are associated, the syphilis usually preceded the increase in pressure.

If syphilis cannot be said to be the causal factor in any of these eighteen patients, it cannot be said that any other infection, toxemia or condition can be so considered. The present state of our knowledge of the etiology of hypertension does not admit of an etiologic diagnosis in the great majority of cases. All the patients in this group had either a definite history of syphilis, a positive Wassermann, or sufficient evidence to be certain that syphilis existed. No attempt was made to select particular types of hypertensive disease. Some were cases of pure hypertension without demonstrable changes in the heart, kidneys or arteries. Others were associated with kidney or cerebral manifestations in various combinations. The essential requirements of case selection were, then, a definite history or proof of syphilis, and a condition of arterial hypertension.

The systolic pressure in each case selected was 170 mm. or higher. While it is doubtless true that a diastolic pressure of 100 mm. or higher means hypertension, regardless of the height of the systolic reading, in this group of patients the systolic pressure was taken as the measure of selection. Any group of patients so selected will show many types. In some of the patients there was demonstrable nephritis. This was evidenced by the urinary findings, retinal lesions, cardiac hypertrophy, and accentuation of the second aortic sound. In six of the patients, there was evident sclerosis of the radials and temporals. Four patients out of the eighteen showed involvement of the aortic ring, aortitis, aortic insufficiency, or aortic dilatation. In some of the patients there was a combination of kidney and arterial lesions. Four of the patients had no organic trouble which could be demonstrated by urinary findings, heart findings or arterial changes. This latter group would come under the heading of essential hypertension, or hyperpiesis. The one thing which all these patients had in common was a definite history of syphilis or a positive Wassermann with or without a definite history. All of the patients were under observation for varying periods of time in no case less than four months.

1. Those interested in consulting the literature on this subject will find a very complete bibliography on both splenic anemia and hemolytic icterus in the following articles:

Krumhaar: Analysis of Clinical Types of Splenomegaly Accompanied by Anemia, *Am. Jour. Med. Sc.*, 1915, cl, 227.

Elliott and Kanavel: Splenectomy for Hemolytic Icterus, *Surg., Gynec. and Obst.*, 1915, xxi, 21.

* Read before the Section on Pharmacology and Therapeutics at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

2. Cautley: *Lancet*, London, April 6, 1901.

Each of the patients was subjected to antisyphilitic treatment, although not invariably to intensive treatment. Many of the patients had other conditions in a clinical way in addition to the hypertension, so that the latter alone was not always the direct cause or incentive to treatment.

The mercury injections used consisted of a mixture of equal parts by weight of lanolin and metallic mercury, of which mixture an amount was used to equal 1 grain of metallic mercury. As far as could be determined, the careful administration of mercury in these cases, in some for long periods, did not appear to damage the kidneys. In several of the patients albumin was first noted after the mercury had been started, but it does not at all follow from this that the mercury was the causal factor.

The association of arterial hypertension and syphilitic infections is of course a frequent one. It is at once evident that the association does not imply any essential relationship. An individual infected with syphilis may develop hypertension from the same causes and conditions which exist in nonsyphilitics. The great incidence of hypertension and also the great incidence of syphilis would lead, from the laws of chance alone, to the frequent association of the two conditions in the same individual.

It is not possible to give more than approximate figures concerning the frequency of syphilis in the community. It has been shown that about 20 per cent. of the patients admitted to the general hospitals in widely different parts of the country are infected with syphilis, as shown by a positive Wassermann. Figures so obtained are too low because many syphilitics (approximately one fourth) do not give a positive Wassermann. With such a large proportion of syphilitics in the community, it remains to consider what changes syphilis produces in the body which may be considered possible factors in the production of hypertension. Until the exact mechanism of arterial hypertension is disclosed, it is not possible to analyze with accuracy the pathologic changes due to syphilis in their relation to increased blood pressure. The conditions which have to be so analyzed are the question of arterial sclerosis, the irritability of the vasoconstrictor mechanism, toxic substances in the blood acting directly on the arterial wall, the all important renal element, and the cardiac factor.

Allbutt seems to have excluded syphilis as a possible factor in the production of hypertension, because cases of syphilitic arteritis were not associated with increased blood pressure. The anatomic changes produced by syphilis on the arterial wall have been well worked out. The period of time which intervenes between a syphilitic infection and definite changes in the walls of the blood vessels is difficult to determine, but certainly very variable. It may be well defined in a few years, or delayed twenty or more years. There seems to be no fixed relationship between the actual presence of the spirochete in the arterial wall and the production of arteriosclerosis.

The condition of the smaller arteries plays an important part in the production of increased tension. About one third of all cases of well marked peripheral arteriosclerosis have normal or subnormal pressures. In the remaining two thirds the pressure is invariably increased, the exact degree depending on such other conditions as the kidney involvement, and the other factors mentioned above. The view that peripheral

arteriosclerosis and cardiac hypertrophy are secondary to the hypertension has its supporters.

The relationship between syphilis and hypertension is bound up intimately with the question of the effect or changes produced in the kidney by syphilitic infections. The relationship between the kidney and hypertension is apparently a very close one, but by no means constant. Syphilis is not now considered as a common factor in the production of chronic nephritis, with or without hypertension. However, increasing numbers of cases are being reported where nephritis is definitely due to syphilis as shown by prompt improvement in all the manifestations after antisyphilitic treatment.

There is no definite way of saying whether abnormal urinary findings in a syphilitic are to be interpreted as evidences of kidney syphilis, or simply as an associated kidney lesion which happens to be present. The fact that such urinary findings in a syphilitic do not again become normal on syphilitic treatment is no reason why the lesion may not be due to syphilis. A kidney cell damaged by syphilis may be damaged as permanently as a spinal cord cell in tabes. The fact that such a spinal cord cell in tabes does not again functionate after treatment is not considered reason enough to doubt the nature of the disease process. A kidney cell damaged by syphilis may remain so in spite of all treatment.

In this series of cases, the urine was examined in all cases. Albumin or casts, or both, were found eleven times out of the eighteen. Detailed and systematic examinations of the urine will show casts or albumin in most cases of hypertension. The usual interpretation of such findings in hypertension is that it means the presence of nephritis. Necropsy might show an arteriosclerotic kidney or the so-called primary contracted kidney. On the other hand, there are cases of high blood pressure recorded where the necropsy showed normal anatomic findings, or only secondary congestion due to a failing heart.

The heart is the most important factor in the maintenance of normal blood pressure, because it is the chief source of energy necessary to keep up the circulation. For this reason, any abnormality of the heart may have some bearing on the question of hypertension. The heart is involved very often in syphilis, much more so in a pathologic sense than in a clinical sense. The cardiac involvement may be either congenital or acquired. The congenital type may be latent for an indefinite number of years and become active without apparent cause at any time. The spirochete may remain in the heart muscle and tissues for years or decades without the appearance of clinical manifestations. Such manifestations may, in fact, never appear. The spirochete has a special predilection for the heart muscle and aorta, and its presence in those tissues has been repeatedly demonstrated by Warthin, Benda, Reuta, Schmorl, Wright and Richardson, Longcope and others. Grassmann³ found that two thirds of a series of 228 syphilitics had cardiac disturbances, such as arrhythmias, bradycardias, tachycardias, murmurs and dilatation.

The cardiovascular conditions produced by syphilis are very varied and include such conditions as myocarditis, aortic insufficiency, angina pectoris, aortitis and aneurysm. Such lesions are, of course, to be recognized by the clinical signs peculiar to each, but there is no typical cardiac symptom-complex due to syphilis.

3. Grassman: *Deutsch. Arch. f. klin. Med.*, 1901, lxxix, 281.

It is said that a cardiac first heart sound "without tone" has some value in suggesting a cardiac syphilis in a patient otherwise suspicious. This is too vague to be of value. Certainly the error in diagnosis must be very great if reliance is placed on the clinical history alone. Cardiac pain is suggestive of cardiac syphilis. Stoll⁴ ascribes these substernal pains to the almost invariable presence of syphilitic aortitis and periaortitis, to the fact that the aorta at its root is surrounded by rich ganglionic and nerve plexuses, and to the varying degree of aortic dilatability and pressure. The Wassermann may show whether the patient has syphilis, but not whether the particular lesion under consideration is syphilitic.

The possibility that there may be some chemical change in the blood in syphilis which has to do with vascular tone and hypertension is an interesting speculative question, but the writer knows of no work on this subject. In the same way, it has not been shown that the viscosity of the blood is increased in syphilis, thus increasing the resistance to its flow through the vessels, and consequently elevating the blood pressure.

Stoll believes that syphilis is a greater factor in the production of hypertensive arterial disease than is usually thought. Syphilis, in his estimation, is not to be considered to mean acquired cases only, but also those living in intimate relations with syphilitics, the congenital types, which are often unrecognized, and also those whose children exhibit the manifestations of hereditary syphilis. Stoll goes so far as to call hypertensive disease one of the most common of the so-called late manifestations of syphilis.

The effect of antisyphilitic treatment in cases of arterial hypertension is not easy to judge. In this series antisyphilitic treatment was associated in practically all cases with whatever else that was possible in the way of regulation of the diet, living habits, and the administration of vasodilators. Stoll says that "specific treatment has given very satisfactory results in a few cases of hypertension, for the most part individuals whose systolic pressures were over 200." There were three cases only in which a definite result may be said to have taken place following syphilitic treatment. Certainly these cases were striking, and do not appear to have been in the nature of coincidental results. All three of these cases had their positive Wassermanns turned negative. In all there were thirteen out of the eighteen patients who had positive Wassermanns at the start, and all but three of these changed to negative as a result of treatment. It is difficult to analyze the factors which go to make up a clinical improvement or change. All these patients had been advised to rest, the intestinal elimination was cared for, diet and living controlled, but these factors cannot be absolutely excluded in the analysis of the final result. It is not maintained that the drop in the blood pressures of these three cases was due to the syphilitic treatment alone, but that is the impression of the writer.

Salvarsan was administered in fourteen out of the eighteen patients one or more times. It is entirely unlikely that the fleeting effect of salvarsan on blood pressure could have entered in the question, because only more or less permanent ranges of blood pressure have been considered. Rolleston⁵ has studied the effect of salvarsan on the blood pressure. It is very doubtful if syphilis is a factor in the results recorded

by him. Rolleston says that the average of both systolic and diastolic pressures on the days after injection is generally lower than before. The fall of systolic pressure is slightly more marked than that of the diastolic pressure. The blood pressure seven hours after the injection of salvarsan is usually lower than it was before. During the actual intravenous injection of salvarsan, both the systolic and diastolic pressures are nearly always higher than on other occasions. This appears to be due to excitement. The general effect of intravenous injections of salvarsan is rather to lower, certainly not to increase arterial blood pressure. Rolleston kept his patients in bed after the injection, and this may have had some slight effect on his findings.

The clinical effects following the administration of vasodilators in this group of patients did not appear to be unusual.

REPORT OF CASES

A brief summary of the case histories of this group are here given. The first three histories are those in which a definite result seemed to follow treatment.

CASE 1.—Lumber dealer, aged 57, weight 240 pounds. Syphilis at about 25 years of age. Treated two years at that time. No treatment since. For five years has had attacks of dizziness, headaches, and sometimes vomiting. Would become almost unconscious during severe attacks. Blood pressure ranged around 180 systolic and 100 diastolic. These attacks resisted all kinds of treatment from many hands. A Wassermann was made and found positive. Patient then admitted his old syphilis. Urine contains albumin and casts at almost every visit. Has had six injections of salvarsan and deep injections of mercury. After two months of such treatment, blood pressure fell to 135-140 systolic, and 95 diastolic. Has stayed at this lower point for five months now. Dizzy attacks disappeared, but still has some headaches, although much less severe. Considers himself remarkably improved. Wassermann negative five months after beginning of treatment. Albumin still present.

CASE 2.—Railroad worker, aged 39. Distinct history of syphilis twelve years ago. Mercury by mouth and rubs at that time. Has a well defined systolic blow at the aortic area, and also a weaker diastolic murmur at the same place. Left heart border pushed to the left. Pulse approaches Corrigan type. Initial blood pressure, systolic 200, diastolic 105. Negative urine. Was given mercury injections for over one year. Wassermann originally positive and has remained so. Blood pressure has fallen to 155 systolic and 80 diastolic. Physical heart findings are the same. The peripheral arteries have been moderately sclerosed throughout.

CASE 3.—Man, aged 47. Treated for syphilis twenty years ago. Wassermann positive. Blood pressure 220-126. Has signs of an old syphilis. Was given three injections of salvarsan and has rubbed mercury for six months. Albumin and casts are present. Pressure has fallen to range around 170-106. Urine still shows albumin and casts. Wassermann changed to negative. His original complaint of difficult breathing is better.

CASE 4.—Man, cigar maker, aged 51. Admits an old syphilis. Blood pressure at beginning of observation 184-92. Seven months later 190-90. Wassermann at beginning four plus, but changed to two plus in seven months. Came for headaches. No definite lesions found. Urine normal. Was treated with mercury by mouth before coming under observation. Has had three injections of salvarsan and mercury injections since.

CASE 5.—Foreman, structural steel worker, man, aged 40. Had a venereal lesion at 22, but no manifestations since. Wassermann positive when first seen. First blood pressure reading 224-125. Condition was found in the course of routine examination for an acute bronchitis. No symptoms due to his hypertension. Was treated at the time of his first trouble, but not well. Was given salvarsan and mercury after coming under observation. Urine negative. After

4. Stoll: *Am. Jour. Med. Sc.*, August, 1915.

5. Rolleston: *British Med. Jour.* Aug. 21, 1915.

nearly one year's treatment, blood pressure is still high, 210-122. Wassermann has become negative.

CASE 6.—Man, aged 55. Denied syphilis, but Wassermann was strongly positive. Came on account of pain in back, for which no definite cause was found. Blood pressure, 210-130. Urine negative. Examination did not reveal any demonstrable organic disease. Was given mercury injections and Wassermann became negative. Blood pressure did not fall and remained around 206-130.

CASE 7.—Man, aged 52, railway conductor. Indefinite history of venereal lesions. Treated with tablets sporadically or several years. Wassermann positive. Initial blood pressure, systolic 174, diastolic 90. No evidence of organic disease. Urine negative. Treated with salvarsan and mercury or eight months. Wassermann became negative but blood pressure range did not materially change.

CASE 8.—Man, aged 56, merchant. Admits gonorrheal discharge in the twenties, but denied chancre. Took medicine by mouth for venereal disease but does not know that it was for syphilis. Wassermann negative. Has distinct evidences of aortitis and disease at the aortic ring. Blood pressure, 96-90. Suffers from pains in left front chest. Has sugar in urine at times. Has had one injection of salvarsan and rubbed mercury for over one year. The range of the blood pressure has never been below 190 systolic and 85 diastolic. The chest pains are relieved entirely by theobromin sodium salicylate, and recur when it is stopped. Albumin and casts are present at times.

CASE 9.—Man, aged 36, distinct history of syphilis. Treated various times during the last ten years. Temporal arteries tortuous. Aortitis. Blood pressure, 210-114. Has pains over the heart. No pains down left arm, but probably a true aortitis. Wassermann negative. Began mercury again and so was given three injections of salvarsan. Blood pressure has not dropped at any time below 200 systolic. Has casts in the urine.

CASE 10.—Man, aged 45. Well treated for syphilis about seven years ago. Wassermann positive. Has albumin and casts at times. Some dyspnea on exertion. Systolic murmur at aortic area. Radial arteries hard. Dizzy attacks sometimes. Has had four injections of neosalvarsan but no mercury. Has been on a careful regimen and restricted diet. Blood pressure, 218-120. No improvement in the pressure, but the condition has not become appreciably worse in five months.

CASE 11.—Man, aged 48. Syphilis at 26, supposedly cured. Wassermann positive and remained so. Blood pressure very high. Systolic 240, diastolic 170. Large amount of albumin and casts. Retinitis. Vision poor. Mercury guardedly on account of condition. No improvement in condition or blood pressure. Death from coma.

CASE 12.—Woman, aged 36. Obese, 185, albumin and casts. Shortness of breath, feeling of suffocation, headaches, and slight swelling of ankles. Wassermann positive. Husband known to have syphilis. Blood pressure, 210-105. Had three salvarsan injections and mercury by mouth account family reasons. Blood pressure after about one year's treatment, systolic 200, diastolic 110, Wassermann still positive. Albumin variable. Casts always to be found on careful search.

CASE 13.—Woman, wife of Patient 1. Intense headaches. Wassermann positive. Arteries hard at wrist and tortuous temples. Blood pressure 194-108. Patient very nervous. Treated intensively with four injections of salvarsan and mercury for five months. Blood pressure then 185-105. Headaches better but not gone. Wassermann now weakly positive. Has had albumin found after being under treatment, which was not noted before.

CASE 14.—Man, farmer, aged 52. Had syphilis about thirty years ago. Treated intermittently during the two or three years following his infection. Arteries hard and visible. Large numbers of casts in the urine, and albumin at times. Second aortic sound accentuated. Left heart hypertrophied. Wassermann was not made when first seen. Has taken potassium iodid and mercuric chlorid to tolerance for nine months. Pupils are fixed, but no ataxia. Blood pressure first 200-110. Lowest point reached was 190-110. Wassermann later found to be negative.

CASE 15.—Salesman, aged 50. Treated locally for venereal lesions at age of 31. Thinks that he had some medicine by mouth at that time, but is uncertain. Has digestive trouble and a strongly positive Wassermann. Blood pressure 206-116. Albumin and casts at times. Was put on mercury injections, but these were discontinued in four months when the patient left the city. Last pressure observation was systolic 210. Diastolic not recorded.

CASE 16.—Woman, aged 36. No history of syphilis, but father died in insane asylum, supposedly of paresis. Patient had attacks of vomiting without pain, suggestive of tabetic crises. Pupils reacted, but patellar reflex was absent. Blood Wassermann negative, spinal fluid Wassermann positive. Blood pressure 180-96. Treated with mercury injections. One injection of salvarsan. The attacks of vomiting stopped. Spinal fluid not again examined. Blood pressure after one year 192-100.

CASE 17.—Man, merchant, aged 41. Had syphilis at 22. Treated at that time. Later developed a low grade of fever and pain over the liver region. Wassermann positive. Blood pressure 196-90. Was treated with salvarsan and mercury injections for a period of over one year, and has been under observation for a longer period. Urine has had an occasional trace of albumin. Blood pressure has not appreciably changed under treatment. Abdominal pain and fever cleared up promptly under treatment.

CASE 18.—Man, aged 57. Had a thorough course of rubs for syphilis twenty-five years ago. Later developed skin lesions leaving scars on forearm. Has gastric disturbance, probably not directly related to his syphilis. Blood pressure 224-118. Wassermann positive. Treated with salvarsan and mercury injections. After four months, the pressure was 220-120. The Wassermann became negative.

COMMENT

It is seen from this small group of cases that a reduction in the blood pressure is not to be expected in syphilitics from antisyphilitic treatment. The writer feels, however, that when syphilis can be demonstrated in a patient with hypertensive cardiovascular disease, it should be treated. Such a procedure may in exceptional cases give very striking results. It may be emphasized again that there is nothing in such absence of therapeutic result to militate against the belief that syphilis is a more common cause of arterial hypertension than is usually recognized.

CONCLUSIONS

1. Antisyphilitic treatment is not to be expected to reduce high blood pressure in syphilitics who have also arterial hypertension.
2. Occasional reductions in the blood pressure in such cases do, however, take place.
3. The association of arterial hypertension with syphilis does not contraindicate the treatment of the latter.
4. The careful use of mercury and salvarsan has not had bad results on kidneys damaged by arterial disease.

421 Michigan Street.

Human Progress.—Our limited minds are confined in a limited world, with immeasurable space on all sides of us. Our brief days are as nothing compared with the inconceivable aeons of the past, and the prospect of illimitable ages to come. Both infinity and eternity are beyond our mental grasp. We know that we cannot hope to understand all the wonders of the universe; but, nevertheless, we may be full of hope for the future. Step by step we gain in knowledge, and with each step we acquire better opportunity for improving the lot of mankind, and for illuminating the dark places in our philosophy of nature.—T. W. Richards, *Ideals of Chemical Investigation*.

THE INTENSIVE TREATMENT OF SYPHILIS *

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The day of pills and drops in the treatment of syphilis has passed. The needle has taken their place, and injections, intramuscular and intravenous, are the order of the day.

Since the discovery of the *Spirochaeta pallida*, the goal in the treatment of syphilis has been the abolition of these organisms from the body as quickly as possible, and we now believe that whether or not this has been accomplished is best determined by a constantly negative Wassermann.

Two potent remedies in the treatment of this disease exist, mercury and the newer arsenicals, salvarsan and its allies. To these may be added iodine in some form.

The *modus operandi* of these drugs is, however, a moot point.

By the administration literally of millions of doses of salvarsan, all doubt as to its immediate effect on the lesions of syphilis, as well as on the Wassermann reaction, has vanished. Ehrlich¹ stated that while it was thought by some that the action of salvarsan is that of a stimulant to the formation of antibodies which in turn attack the spirochetes, such is not the case, but that salvarsan acts directly on the organisms through the agency of the so-called chemoreceptors.

This is probably true in the cases of mercury also. This drug in some form or other has been used in the treatment of syphilis, at least since the days of Fracastorius, and according to Buret,² by the Chinese 2,000 years ago. And long before the discovery of the *Spirochaeta pallida* it was thought that the beneficial effects of mercury were due to the parasitocidal effects of the drug on the hypothetical causative organism. Since Schaudinn's discovery, it has been shown³ that the spirochetes of experimental syphilis in rabbits are killed by intravenous injections of mercuric chlorid, although the rabbits subsequently die of nephritis.

There is, however, abundant clinical evidence which shows that the lesions of syphilis are healed by the use of mercury, although considerable doubt concerning its efficacy, especially the salicylate, has recently developed following the publication of Nelson and Anderson's⁴ paper on the effect on the Wassermann reaction of intramuscular injections of this preparation. These investigators showed in a series of fifty cases that the Wassermann was apparently uninfluenced by the intramuscular injection of the salicylate in sufficient quantity to keep the patient completely saturated with the drug.

The writer has been able to show that this does not apply, at least in all cases, to some of the soluble preparations of mercury, especially mercuric chlorid intravenously and mercuric benzoate intramuscularly. As I shall point out later, all my private patients are

treated with both mercury and salvarsan, but as most of my clinic patients are unable to pay for the more expensive arsenical, they have received mercury alone. However, owing to the fact that the majority of such patients are not permanent residents in Hot Springs, but are here today and gone tomorrow, it is difficult to follow the cases for a sufficient length of time to draw definite conclusions. However, I have been able to follow a few cases long enough to reduce a four plus Wassermann to a negative which remained negative for periods ranging from one to six weeks with intramuscular injections of mercuric benzoate or intravenous injections of mercuric chlorid. When my series becomes sufficiently large it will be the subject of a future report.

In regard to iodine it is probably not a true spirocheticide, as Nichols³ has shown that potassium iodid has little or no effect on the organisms of experimental syphilis in rabbits. There is, however, abundant clinical evidence to show that this drug does have a most beneficial effect on gummas, causing their absorption, as well as on syphilitic arteritis. It has been suggested that this action is due to the formation of a proteolytic ferment which has a selective action for the round cells of the gummas and the cellular exudate of the arteritis.

With the above cited evidence as to the efficacy of the three syphilitic remedies, the logical method of treating this disease is to administer mercury and salvarsan as intensively as the patient can tolerate in all cases, and iodine in some form where indicated. This treatment should be started as quickly as possible after a diagnosis of syphilis has been made.

The diagnosis of syphilitic chancre when other lesions are absent should never be made on clinical evidence alone. The finding of spirochetes in a suspicious lesion will of course clear up the diagnosis. If these organisms are not found, a Wassermann test should be made which, if positive, will be proof that the individual is syphilitic, although not necessarily proving the lesion a chancre. If the Wassermann is negative at this time a further search for spirochetes should be made and Wassermann tests performed at intervals of two or three days until positive evidence is obtained or until a sufficient length of time has elapsed to warrant a negative diagnosis to be made.

It is not within the scope of this paper to discuss the diagnosis of syphilis at other stages of the disease, but I do want to emphasize the importance of frequent Wassermann tests as a guide to treatment in all cases. As soon as a diagnosis of syphilis has been made, salvarsan should be administered by intravenous injection.

The urine of all patients should first be examined carefully for the presence of albumin and casts, and a phenolsulphonaphthalein test performed to determine the functional capacity of the kidneys. When evidence of renal abnormalities is found, salvarsan should be administered with extreme caution. In cases with normal kidneys the average dose is 0.4 gm. although in small individuals the dose is less. It is given in fairly concentrated solution, that is, 10 cc. for each 0.1 gm. of the drug. By this method two three or four doses may be prepared at one time and administered in quick succession.

The water used is freshly distilled into sterile flask and autoclaved with the apparatus. The patient is instructed to eat a light meal on the evening previous to administration, to take a mild purgative and to eat

* Read before the Section on Pharmacology and Therapeutics at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Ehrlich, Paul: *Lancet*, London, 1913, clxxxv, 445.

2. Buret: *Syphilis in Ancient and Prehistoric Times*, American Edition, Philadelphia, 1891, p. 61.

3. Nichols, H. J.: *Further Observations on Certain Features of Experimental Syphilis and Yaws in the Rabbit*, *Jour. Exper. Med.*, 1911, xiv, 196.

4. Nelson, Kent, and Anderson, E. A.: *The Use of Mercury Salicylate in Syphilis*, *THE JOURNAL A. M. A.*, Nov. 27, 1915, p. 1905.

no breakfast. The injections are made in the office, as a rule, and the patient cautioned to remain quietly in his room until the following morning and to eat only very sparingly.

Some writers have advocated a short course of mercurial treatment before the injection of salvarsan in cases of florid syphilis. This I think is a mistake, as I have found that even in these cases when the dosage is small very little reaction follows its administration.

The day following the first dose of salvarsan, mercurial injections are begun. For intramuscular injection I have found mercuric benzoate the best preparation. This salt is insoluble in water, but is soluble in sodium chlorid solution. The preparation I use is made as follows: Two and five-tenths gm. of chemically pure sodium chlorid are weighed out and placed in a 100 c.c. graduate flask. About 50 c.c. of distilled water are added and the salt dissolved. Two gm. of mercuric benzoate are now carefully weighed out and placed in the flask where it readily dissolves on vigorous shaking. The flask is now filled to the 100 c.c. mark with distilled water, and the solution filtered through paper. It will be seen that each cubic centimeter contains 0.02 gm. ($\frac{1}{3}$ grain) of the benzoate. The initial dose is 0.5 c.c., containing 0.01 gm. ($\frac{1}{6}$ grain), which is rapidly increased to 1 c.c. if no untoward symptoms result. The injections are made deep into the muscles of the gluteal region, and as a rule cause little or no pain.

There are certain patients, however, in which the pain is so great that it seems desirable to discontinue the intramuscular injections. In these cases intravenous injections are used. Formerly I employed the mercurialized serum which I have described,⁵ later used a mercurialized serum prepared in a similar manner from ascitic or hydrocele fluid, but recently have employed the method described by Nixon.⁶ However, instead of injecting the mercury simply dissolved in water as advocated by Nixon, the following method is employed: A 2 per cent. solution of mercuric chlorid is prepared. When an injection is to be made, 20 c.c. L  er syringe is filled to the 10 c.c. mark with sterile normal salt solution and the plunger removed. The dose of mercury is then measured with a graduated pipet and dropped into the barrel of the syringe. The plunger is replaced, the solution thoroughly mixed, and the air expelled. The needle is then inserted into a prominent vein at the elbow, and traction made on the plunger until 10 c.c. of blood have been withdrawn and mixed with the mercury solution, when the entire quantity of blood and mercury is reinjected. This method has proved very satisfactory in my hands, and over fifty injections no phlebitis has resulted.

In those cases in which gummas or arteritis are present, potassium iodid is administered by mouth in rapidly increasing doses.

It is the opinion of the writer that all cases of syphilis of the central nervous system should have intraspinal medication. While it is true that in some cases of involvement of the central nervous system the patients do get well by other methods of treatment, there is no doubt that the improvement is greater and quicker when the intraspinal route is employed.

For intraspinal injection of salvarsan I employ a method which is a combination of the one described by

Ogilvie⁷ and the one described by Wile,⁸ which is as follows: Ten c.c. of blood are withdrawn by venipuncture and centrifugalized at once. One c.c. of the clear serum is removed and placed in a sterile test tube.

The salvarsan is then prepared by dissolving in water, neutralizing and diluting so that each 0.1 gm. is diluted to 40 c.c. The dose required, usually 0.1 c.c. (0.25 mg.) is added to the serum and placed in a hemostat at 37.5 C. for forty-five minutes. It is then removed and placed in a water bath at 55 C. for thirty minutes.

The intraspinal injection should be made as soon as possible after the serum is prepared. With the patient lying on his right side near the edge of the bed or on an operating table, lumbar puncture is performed. The site of the puncture is painted with iodine and the skin infiltrated with a small quantity of sterile 5 per cent. novocain. When it is determined that the point of the needle is well within the subarachnoid space, the barrel of a 20 c.c. L  er syringe is attached to the needle by means of about 25 cm. of rubber tubing. The syringe is now lowered below the level of the needle and the spinal fluid allowed to run into it. When about 15 c.c. have been collected, 1 to 2 c.c. of a 5 per cent. solution of novocain are added and thoroughly mixed with the fluid, which is then allowed to run back into the spinal canal by raising the syringe above the level of the needle.

After three minutes the fluid is again allowed to flow into the syringe, and the salvarsanized serum added, and injected in the same manner as described above.

Mercurialized serum for intraspinal injection is prepared by adding 1 c.c. of the 2 per cent. benzoate solution used for intramuscular injection to 2 c.c. of serum and placing in the water bath for thirty minutes at 55 C. It will be seen that the 3 c.c. of mercurialized serum contains 0.02 gm. ($\frac{1}{3}$ grain of mercury) and that 0.03 c.c. contains 2 mg. ($\frac{1}{30}$ grain). The latter is the usual dose and is injected in the same manner as the salvarsanized serum.

By using the novocain as described for both the salvarsanized serum and the mercurialized serum, the pains in the legs and back which so frequently follow these injections are eliminated to a great extent.

Aside from the specific medication it is of the utmost importance in the treatment of all cases of syphilis to look after the hygiene of the patient. The writer is of the opinion that hospitalization is very desirable for all cases of syphilis and almost essential for some cases, such as syphilis of the heart and syphilis of the central nervous system. At least the life of the syphilitic should be very regular; regular sleep, regular meals, a certain amount of regular exercise, depending on the case, should be insisted on. The use of alcohol should be totally interdicted, and tobacco should be reduced to a minimum. The syphilitic should be warned against sexual excesses, and of course while he is infective should not be allowed to indulge his sexual appetite under any circumstances.

A great deal has been written and said concerning the wonderful cures of syphilis which have been effected at the great watering places of the world, Aix-la-Chapelle in Europe and the Hot Springs of

5. Thompson, Loyd: The Intravenous Injection of Mercurialized Serum in Syphilis, *THE JOURNAL A. M. A.*, May 1, 1915, p. 1471.
6. Nixon, P. I.: The Intravenous Use of Mercuric Chlorid, *THE JOURNAL A. M. A.*, May 20, 1916, p. 1622.

7. Ogilvie, Hanson S.: The Intraspinal Treatment of Syphilis of the Central Nervous System with Salvarsanized Serum of Standard Strength, *THE JOURNAL A. M. A.*, Nov. 28, 1914, p. 1936.

8. Wile, Udo J.: *Jour. Lab. and Clin. Med.*, 1915, i, 119.

Arkansas in this country. That the waters of these springs possess any specific value in the treatment of syphilis I do not believe. The benefits to be derived from a sojourn at these resorts are to be found in the pleasant surroundings, the outdoor exercise, the regularity of the treatment and the fact that the patient "makes a business of getting well." It is, however, a fact that most patients bathing daily in the waters of these springs can tolerate more mercury without untoward effects than those not bathing.

THE CURE OF SYPHILIS

When shall we discharge the syphilitic as cured? Certainly not as I saw one physician do with a patient whose body was almost entirely covered with a lenticular papular eruption, which, however, had faded somewhat during the course of six or eight injections of salvarsan. This patient was told that the organisms were all killed and that his eruption would soon entirely disappear—this also in the face of a constantly positive Wassermann.

The length of time over which treatment should be given naturally varies with the case. The first requisite, is, of course, a clinical cure. If a patient is seen when the chancre is the only evidence of the disease and the Wassermann is negative, the length of time for treatment must be more or less empiric. Probably, however, six to eight doses of salvarsan at weekly intervals with daily administrations of mercury either by intramuscular or intravenous injection pushed to the physiologic limit will in the vast majority of cases result in a cure.

In later cases in which the Wassermann is positive when treatment is begun, a constantly negative Wassermann must be obtained as well as a clinical cure. The Wassermann test is made at the time of each salvarsan injection, but in spite of a negative test occurring soon after beginning treatment, it is best to give most patients a "course" of eight or ten weekly injections of salvarsan with the mercury treatment, and of course potassium iodid if indicated. If the Wassermann remains positive, a rest of from four to six weeks should be taken, when the course should be repeated.

In syphilis of the central nervous system, intraspinal injections should be made at intervals of seven to ten days, and it is my custom to alternate salvarsanized serum with mercurialized serum. At the same time intravenous injections of salvarsan and either intravenous or intramuscular injections of mercury are given as in any other case of syphilis. If gummas exist or are suspected, potassium iodid in rapidly increasing doses is of value.

This treatment is continued until eight or ten intraspinal injections have been made. If the spinal fluid is still positive, the course should be repeated after six to eight weeks' rest.

In the so-called Wassermann-fast cases, that is, those cases in which the Wassermann remains positive in spite of three or four such courses as outlined above and in which there are no clinical evidences of the disease, it is well to give a course of three or four injections of salvarsan and the amount of mercury that can be administered during the period at least once a year.

SUMMARY

The writer is of the opinion that a patient should not be discharged as cured until the following conditions have been fulfilled:

1. A clinical cure.
2. A constantly negative Wassermann on the blood at frequent intervals for a period of two years following the last treatment.
3. A negative spinal fluid at periods of one and two years following the last treatment.

In cases which have shown involvement of the central nervous system and have been treated for such involvement, the spinal fluid should be examined and found negative at more frequent intervals. The Wassermann on the spinal fluid should be performed with large quantities, up to 2 c.c. Of course in tabes and in certain other cases of syphilis of the central nervous system where there has been destruction of tissue, it is impossible to restore that which has been destroyed, and certain symptoms such as ataxia, etc., may persist, even though the process be checked. In such cases we must rely on laboratory evidence for a standard of cure.

Dugan-Stuart Building.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. LEVISON AND THOMPSON

DR. W. W. TOMPKINS, Charleston, W. Va.: I would like to ask Dr. Thompson one question and that is in regard to life insurance. A man presents himself having had an incubative period and being in the stage of the sore or chancre. A Wassermann proves negative; another taken in a short time proves negative, and still another after several weeks proves negative. The man goes on with his hygienic treatment and cleanliness. In answering to the life insurance examiner—had he syphilis or not? what shall he say? If a man has a chancre and there was an incubation period do you act on the incubative period and the character of the sore or do you act on the Wassermann result? In the treatment of syphilis either with your way or the iodids and mercury do you call these cases cured altogether or have they gone out only to return again?

DR. NOBLE P. BARNES, Washington, D. C.: We all realize we can get over the first stage and skip the second and reach the third. Wassermanns are not easily made and should be made carefully. When a patient comes to me and asks how long it will take for treatment I usually tell him the remainder of his life. After you have had treatment for three, six or nine months, depending on the individual and the case, you have a Wassermann made, and after another six months and then one about every two years for the remainder of your life to be safe. It is very important to tell these patients that they should be under observation for a long time. We used to think we cured syphilis but after blood tests were made we soon found out that very few cases, if any, were cured. I would like to have Dr. Thompson give us his opinion as to the value of salvarsan, neosalvarsan and sodium cacodylate. In the absence of some of these preparations I have been compelled to use the latter though I understand that experimentally it does not seem to have the properties of destroying the organisms; nevertheless I have seen secondary lesions clear up in ten days' time, clinically and symptomatically. I begin with three grains, the second day five, and so on every other day up to twenty and twenty-four grains of sodium cacodylate a day.

MR. F. I. LACHENBACH, San Francisco: The treatment of syphilis is coming to be an exact science. There appears little divergence of opinion in the use of the arsenicals. It is quite well established that salvarsan is probably the best therapeutic agent; neosalvarsan comes next, and then the cacodylates. In the use of the mercurials there is more variation of opinion. The benzoate has been little used in our locality. Bichlorid of mercury has been used quite extensively but the preparation of choice is probably gray oil which is a very fine suspension of mercury in oil. This preparation occurs in a concentration of 40 per cent. in which six grains of mercury are represented in one cubic

centimeter of suspension; 0.25 c.c. would contain about $1\frac{1}{2}$ grains of mercury as metal. The dosage is from one to three grains, given intramuscularly about once a week. This is perhaps the most intensive mercurial treatment. The salicylate seems to have been discarded since some adverse reports have been made but is this not still a valuable preparation?

DR. A. G. SHORTLE, Albuquerque, N. M.: I have noted how many obscure cases diagnosed as tuberculosis, and which fail to respond to the ordinary methods of treatment, show a positive Wassermann reaction. We finally took fifty cases that did not give a history of syphilis and made Wassermans. We got seven positives, so that it has become a routine procedure. We make Wassermans of all the cases admitted and are finding 10 to 15 per cent. of positive cases of those not giving a history of syphilis.

DR. G. R. SATTERLEE, New York: In regard to Dr. Levison's remarks on blood pressure, it seems to me that the good effects he got in the lowering of the blood pressure in the cases of syphilis were due largely to the hygienic regimen that goes along with the treatment of syphilis. In connection with this I wish to cite a most interesting case—one of double aneurysm of the transverse arch and descending branch of the thoracic aorta. The patient had no knowledge of syphilis or even what he had. He was treated for pulmonary tuberculosis by seventeen different men and was sent away to different health resorts. The question of treatment came in when we made a diagnosis of aneurysm and considered giving mercury first, with the idea of fixing the pirochete before administering salvarsan. I started with salvarsan—and that was the time when they said that aneurysm was a contraindication to this treatment. The most remarkable occurrence happened in thirty-six hours—the man woke, having previously lost the voice, and the blood rushed back into the left radial artery, the pulse of which had been obliterated before treatment. The principal treatment was mercury and iodid, and he has been able to go back to work in spite of this aneurysm. At first he had a blood pressure of 170; it is now 150. He has had 110 injections of mercury, and ninety grains of potassium iodid a day, for a period of four to five years with intermissions. I would like to ask Dr. Thompson the value of potassium iodid in the treatment of these cases, and the value of luetin in diagnosis. He spoke about giving salvarsan in cardiac and aortic cases. Our experience has been that with a very bad heart and aorta and syphilitic aortitis and myocarditis, in which we have given salvarsan, the patients improve for three or four weeks and then suddenly die with a dilated heart, etc.

DR. LOUIS A. LEVISON, Toledo, Ohio: In spite of the fact that the treatment of cases in which arterial hypertension and syphilis are associated has been followed by poor results, I believe that if syphilis can be demonstrated it should be treated. It does not at all follow that because the results of treatment are poor, syphilis may not be the cause of the trouble. It is true also in tabes and paresis that treatment may not be followed by good results, which fact does not add to any question in regard to the nature of the trouble. DR. LOYD THOMPSON, Hot Springs, Ark.: In regard to the question of diagnosis in life insurance and the chancre do not believe we are justified in making a diagnosis of syphilis when the chancre is the only lesion present and without laboratory evidence, because so many lesions that are not syphilitic resemble the syphilitic chancre. In the vast majority of cases of chancre the organism can be found without difficulty, especially if the lesion has not been treated. I think that after you fail to find the organism, the Wassermann should be performed at frequent intervals, say two or three times a week for two or three weeks, and then once a week for two or three months to be certain the lesion is not syphilitic, because I believe that every case of syphilis which is not treated specifically will show a positive Wassermann. In regard to those cases treated by the old methods at Hot Springs, I cannot say positively because they have not been worked out scientifically. I believe that the cases treated by injections and potassium iodid would show positive Wassermann reactions. This treatment will

not cure syphilis but only hold it in check. If the Wassermann is negative we may find positive evidence of it in the spinal fluid. Dr. Barnes mentioned the length of time for treatment and I think that in the majority of cases he is right when he says that the patient should be treated for the remainder of his life, especially in late cases, in the so-called tertiary period. In regard to the relative efficacy of salvarsan and neosalvarsan: Neosalvarsan I have used little because I believe it is not as efficacious as salvarsan. I think the consensus of opinion of the workers along this line is that the relative efficacy is about as two is to three, or in other words, about three times as much in quantity of the neosalvarsan to about two of the salvarsan. However, some of the army men—Nichols, I think—record neosalvarsan as considerably less efficacious—probably about seven to one. In regard to sodium cacodylate, I have had no experience with it. Heidingsfeld reported some work on sodium cacodylate in relation to the Wassermann test, but his work was not conclusive. In regard to the use of insoluble preparations of mercury I do not consider them as advisable and the only possible reason for their use is that they necessitate less frequent visits to the physician and that, of course, is an advantage in certain cases. The insoluble preparations are only given once or twice a week while the soluble preparations are given more frequently. There is danger, however, of the cumulative effect of the insoluble preparations, and sometimes we have deleterious effects due to this accumulation. Potassium iodid has a place in the therapy of syphilis in the treatment of cases in which we have gummas and also in cases of arthritis. We get clinical results with potassium iodid. It should be given in doses of 10 grains three times a day and increased 10 grains every ten days until the limit of tolerance is reached—sometimes as high as 900 grains a day. Luetin has its place rather in congenital syphilis than in the acquired form of the disease. We do know that it has been reported that potassium iodid has a distinct effect on the luetin—changing a negative into a positive reaction.

COMPLETE VOCATIONAL DISABILITY FROM MUSCULAR IMBALANCE OF THE EYES

LLOYD MILLS, M.D.

LOS ANGELES

The term "eye strain" is commonly used to imply merely the effect on the globe itself of an uncorrected error of refraction; but it is not generally recognized that eye strain is never functional, in the sense of a neurosis, and that the lack of correction of such an error, or its imperfect or inaccurate correction, often produces its most distressing effect through its action on the extrinsic muscles of the eyes. The amount of deviation which one eye may make from its fellow and still permit fusion of the images which reach the two eyes is so slight as not to be noted except by special tests. This, in fact, has been one of the great drawbacks to the early recognition and acceptance of the exact factors of the eye strain, for it seemed incredible that perfectly normal appearing eyes could be the source of symptoms ranging from vague discomfort while reading to disability of so severe a type as actually to force people to give up their vocations or to become semi-invalids for life.

The endeavor to focus irregular and distorted images clearly and simultaneously on similar parts of the two retinas, an act essential for that good fusion which controls the appreciation of our spatial relations, if long continued, invariably leads to uneven pulls of the external muscles of the eyes, which disturbs the nor-

mal balance and produces a vicious circle of excessive and vain waste of nervous impulses, further irregularities of muscle action and increasingly imperfect fusion and difficulty in seeing. Sight is the only special sense which we use constantly while awake, and the continued drain of nervous energy in these cases leads eventually to general nervousness, more or less constant headaches, especially of the "sick headache" type, to chronic spasm and tenderness of the muscles of the back of the neck and, after a variable time, to total inability to use the eyes for any manner of near work, save at the certain cost of intolerable headache, nausea, vomiting and finally of complete nervous breakdown.

It may appear singular that this disorder is almost limited to far-sighted eyes, until it is realized that only about 7 per cent. of eyes are normal, that most persons are farsighted by heredity and that the congenitally short eyeballs of the farsighted, very often further burdened by astigmatism, are never at rest during waking hours from their endeavor to bring images to a focus on the retinas, unless relieved by suitable correcting lenses. A mass of clinical evidence which is almost scientifically conclusive, further shows that this particular type of eye is peculiarly subject to cataract and to glaucoma, the lack of early and constant correction of the refractive error which causes the uninterrupted overwork of the ocular muscles leading to early sclerosis of the lens and to early fibrosis of the filtering or pressure-equalizing apparatus of the eyes, and thus to cataract or glaucoma, respectively. The overwhelming clinical evidence forces and justifies the conviction, therefore, that our efforts in preventing simple glaucoma and senile cataract must lie along the lines of the early diagnosis and complete correction of the refractive errors and accessory conditions which cause overwork and premature aging of the eyes. The field of service thus opened to ophthalmology is secondary in importance only to the admirable work being done in this specialty for the prevention of gonorrheal ophthalmia and its paragonorrheal relative, trachoma, and in the prevention of industrial injuries.

Few physicians realize the importance of the accurate fitting and adjustment of glasses, and usually the fact that the patient is wearing glasses is accepted as evidence that the eyes may be eliminated from the differential diagnosis, regardless of when or by whom the glasses were prescribed, or of the training or skill of the prescriber. It is no exaggeration to say that not more than one fourth of the glasses worn today are accurately fitted and adjusted, and it is a matter of daily experience to see instances in which the glasses not only do not correct, but actually add burden to the vision, excite faulty action of the muscles and not infrequently change cases of latent or incipient disorder of muscle action into conditions of almost intolerable suffering.

The modern scientific examination of the eyes is a matter of mathematical precision, combined with a distinct tinge of art. Carelessness, impatience and hurry have no place in this examination, and lead to disaster as certainly as does inadequate training. It includes an inquiry into the visual power of the eyes, singly and together, when at rest and when actively functioning. The effects of facial asymmetry and the relation of the eyes to the static posture of the rest of the body have to be considered, the near and distant limits of focusing power and the vertical and horizontal relations of the eyes when focusing near and

distant objects must be determined. The combined adductive and abductive power of the eyes must be measured and the strength of pull of the separate muscles of each eye compared. A careful intra-ocular study concludes this routine examination, and no modern ophthalmologist would presume to prescribe a glass without the illumination given by the results of this intricate and painstaking investigation. Of his nonoperative work, the accurate fitting of glasses makes the most severe demands on the skill and patience of the ophthalmologist.

I have stated that the common predisposing cause of eyestrain is uncorrected farsightedness, usually combined with astigmatism. Not all patients with this form of refractive error have symptoms, however, and many persons with small errors go through life without discomfort.

An inquiry into the exciting causes of active trouble in the more than 600 cases which form the basis of this paper shows that the chief exciting cause has been excessive near work, either as a part of a vocation such as stenography, sewing, bookkeeping and study at school, or simple excessive reading for pleasure. In numerous cases the onset has been coincident with the climacteric, many of the headaches and other related symptoms of which are the direct result of the loss of elasticity of the lens and an ensuing change of muscular balance. Because of the more obvious psychologic and physiologic changes, the eyes have been ignored until intolerable symptoms have led to the belated call for relief. Numbers of patients blame the sharp, white California sunshine for their trouble, though these patients are nearly all blue-eyed, the blue iris protecting the depths of the eye insufficiently because of its congenital lack of pigment. In these cases frequently great relief follows the use of an appropriate tinted glass in combination with the necessary corrective treatment of the muscular condition. Intranasal disease, the general weakness of chronic disease, and the ocular stress of learning new and close vocations, where no close work has previously been done, have been exciting causes in many cases. It is of interest that the intense emotional and physical strain of active military duty has been responsible for thousands of cases of unsuspected errors of refraction and muscular disorder becoming manifest and troublesome during the present war.

To be specific, there are three common forms of muscle imbalance of the eyes. In the first, the tendency is to deviate up or down, in the second, the tendency to inward deviation is excessive, and the third group shows a corresponding tendency to outward deviation.

The cases of tendency to vertical deviation, unlike the lateral forms, are usually anatomic in origin, owing to one orbit or to one eye being placed higher than the other and are further unlike the lateral forms in being associated with no particular type of refractive error, though an error of some degree is practically always coincident. This form is usually congenital, though it may be the result of faulty postural conditions of the spine. The ability of the eyes to fuse images which tend to separate either up or down is very slight, and small muscular errors in these directions often lead to distressing nausea and vertigo and to double vision, or to vision which falls just short of being double, but which is so confusing that the patient cannot estimate vertical distance correctly and cannot be trusted to walk stairs, to step from curbs or to cross a crowded street with any hope of safety. In one

of our recent cases of this kind the patient had passed through the hands of several internists from whom she received unsuccessful treatment for various nervous symptoms, without relief. She finally submitted to an abdominal operation in the hope that by some obscure route this might relieve the headache and blurred vision, the almost choreic nervousness and groping mental state, which the belief of her relatives magnified into the initial stage of an insanity, a belief in which she privately concurred. Her physicians, disregarding the axiom that he who treats a case of recurrent headache without having the patient's refractive error and muscle balance investigated is as culpable as he who neglects the blood pressure in a case of nephritis, had passed over the question of the eyes because the patient was wearing glasses fitted by an optician some months previously. These were found to be grossly incorrect and relief of symptoms was obtained and has been maintained to the present time by correcting her considerable farsightedness and astigmatism and by incorporating into the glass a prism which displaced the image of the high left eye to the level of that of the right eye, thus permitting a normal fusion which had been denied her for years.

Any condition which disturbs the lateral balance of the eye muscles creates a tendency for the images of the two eyes to separate sideways or to cross one another. The strain produced in maintaining fusion under these conditions leads very quickly to eye tire, and to so-called "sick headaches" or "bilious attacks" and, if uncorrected, to various forms of physical incapacity.

The class of patients who develop headache while motoring, shopping and at moving pictures, those who become trainsick and to a certain extent those who are most susceptible to seasickness practically always show relative overaction of the adducting muscles, whereby any and every attempt to turn the eyes sideways to view the scenery or the attractions of the shop windows, or to follow the action of a moving picture, demands a strong neuromuscular effort which rapidly leads to ineffectual nystagmic movements, dizziness and nausea. These cases, if neglected, are often stubborn and demand patient and skilled care. At times they can be cured by fusion and other muscle-building exercises; in rare cases the use of a prism is justified, and in extreme cases the more or less complete division of one or both of the overacting muscles is necessary. The prevention lies in the early correction of the underlying refractive error.

I have seen this form of trouble so frequently associated with intranasal disease and have found the restoration to a normal balance so much simpler after relief of the nasal condition, that I am inclined to class the imbalance in such cases as irritative, in contrast to that form of imbalance, also so frequently associated with chronic nasal disease, but characterized by relatively feeble adductive power, in connection with nasal disease, which I hold to be a toxic, pseudoparalytic stage of the same disorder. This relationship, I believe, has never before been suggested.

The final class of cases having a real or relative weakness of the adducting muscles is that in which the vocational ability is most frequently and seriously interfered with. The lack of sufficient adducting power prevents close work being done with comfort for any continued length of time, and, if not recognized early enough, the condition drifts with more or less rapidity to a state in which all vocations demanding concen-

tration on work close at hand must be given up. A study of over 200 cases in all stages of this type shows that this real vocational disability occurs among stenographers, students, teachers, bookkeepers, seamstresses and milliners especially, types of workers who can least well afford the disability from the economic standpoint. Many of these cases have passed through the care of one or more physicians, without reflecting much, if any, credit on the profession as a whole, and the remark of one man "I have been doctored for everything under the heavens and have at last thought of my eyes," is an illuminating and not uncommon tale.

The principles and details of treatment of these muscle faults are matters of dry technical knowledge not appropriate for discussion here. It is enough to know that these cases, when recognized sufficiently early, are capable of cure without operative procedure.

The main object of this paper is to impress the necessity for early recognition of these conditions, whereby an enormous amount of late surgery, of needless suffering and of economic waste shall be prevented.

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PAINLESS LABOR *

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NEW YORK

The recent general agitation over the question of painless labor has accomplished much good in: (1) stimulating research into newer and even older methods of painless labor; (2) demonstrating that the use of some preparation of opium, intelligently administered, is not as dangerous to the unborn child as we have in the past supposed, and (3) emphasizing the baneful results of fear, pain and shock of labor on the present and subsequent mental and physical condition of the highly civilized neuropathic woman of the day.

Many, possibly the majority, of the upper, highly civilized class of women are physically and mentally unfit to suffer an approach to spontaneous labor, by reason of their low resistance to the shock of labor. Hence these women have pathologic labors—are themselves neuropathic.

Unless guarded from too much suffering by analgesia and anesthesia, or perhaps surgical means, women of this class experience a profound physical and psychic shock in their first confinements from which some never fully recover, or they readily succumb to some intercurrent condition, as proved by the numerous mental and physical wrecks dating from the birth of the first child.

Shock from pain of labor in the highly civilized neurotic woman must, moreover, be reckoned with in general childbed mortality. Painless labor in these cases is a life-saving measure. Shock produced by the first stage of labor in these patients is a fact, not a theory.

In the majority of primiparous labors, reflex spasm of the soft parts and spastic or functional rigidity are a cause of unnecessary suffering and delay in this stage. The problem before us, therefore, is the control of pain in the first and longest stage, which often lasts a day or more. Here lies the foundation for the solution of the whole problem of painless labor, the

* Read before the American Gynecological Society, Washington, D. C., May 11, 1916.

need for which has never been more urgent, and for which there is no ideal single method at present.

After the barrier of the cervix is removed and the case passes on into the expulsive stage, a much simpler condition presents itself. In skilful hands, surgical intervention with surgical anesthesia, if indicated, are always in order at this stage. Conditions will always arise, for example, in early rupture of the membranes, in which the necessity for painless labor will demand such surgical termination.

The only absolutely painless labor is one terminated by surgical means with complete anesthesia. The ideal narcotic, analgesic or anesthetic for painless labor should produce the anociassociation of surgical practice, namely, (1) the blocking of pain, fear, shock and reflex sympathetic factors, and (2) the removal of reflex spasm and its resulting spastic or functional rigidity of the birth canal.

The most satisfactory painless labor method of the moment combines opium and antispasmodics for the first stage, with possibly vapor narcosis toward the end of this stage and vapor analgesia and anesthesia for the first and terminal parts of the second stage, respectively. The narcosis aimed at should, until the perineal stage, be analgesic and not anesthetic in character. The narcosis may be obtained either by drugs or vapor. This is a difficult or impossible task unless one has had considerable experience.

A good physical and mental condition during pregnancy will bring about a more stable condition of the nerves and more vigorous and persistent expulsive forces in labor. The influence of Prochownick's diet on the size of the fetus must not be neglected in this connection.

Sleep contributes to the success of the early hours of the first stage.

Posture in the first or second stage does not materially affect the course of labor.

Suggestion and hypnotism could go no farther than the very early hours of the first stage. The same can be said of mild sedatives, including the bromids.

Alcohol, either combined with opium or not, is commonly self-administered for painless labor among certain classes. Amnesia and the elimination of spastic rigidity is produced by this drug.

Rectal gas and drug anesthesia are sometimes resorted to. Savitsky's method for the first stage consists of enemas of antipyrin and laudanum. The use of chloral hydrate in the same manner for spastic rigidity of the cervix is well known. I do not know of any advantage in the colonic absorption of ether, but there are possibilities in the oil-ether colonic anesthesia, if directed by a first-class anesthetist. We are experimenting in this field at present and I regret that I cannot report on the method.

The blocking of afferent impulses to the brain by spinal lumbar, nerve and nerve root anesthesia, and perineal infiltration secured by such drugs as cocain and novocain once promised a solution of the problem of painless labor. This promise, however, has not been fulfilled. We have had some experience with intraspinal injections, but have abandoned them because of the danger of headaches, vomiting and interference with uterine contractions. Some obstetricians have, however, developed a high degree of technic in this direction. The New York State Board of Health recently investigated a maternal death due to this method.

Nerve and nerve-root anesthesia and perineal infiltration call for an elaborate technic, and have not been generally taken up. The recent literature on these subjects is small and unconvincing.

Opium alone, or combined with scopolamin, chloral, atropin, the bromids, strychnin, caffein, and possibly gas analgesia is our mainstay for the first stage. It is narcotic and antispasmodic.

Our hesitation to employ opium in labor in the past has been uncalled for, the experience of the last few years demonstrating that opium in its action on the mother, and particularly the fetus, is harmless, when its administration is limited to the first stage and its action does not lap over to the expulsive stage.

With the two actions, narcotic and antispasmodic in view (even before the recent reintroduction of morphin and scopolamin) I have made it almost a routine practice in primiparous women, to give one or more doses of morphin, $\frac{1}{4}$ grain, with atropin, $\frac{1}{120}$ grain by needle, and 20 grains of chloral by mouth. Indeed, on one of our hospital services, this procedure is practically a routine in primiparous labors. The pain and distress is self-evident and we take for granted the spastic rigidity, whether or not found by palpation. This means that we employ the method in both the so-called higher and lower classes.

The results have been excellent, as we follow this treatment with vapor narcosis in the second stage and with surgical anesthesia, by chloroform, ether or nitrous oxid-oxygen for the perineal stage. Even huge doses of the bromids will not take the place of chloral hydrate for the foregoing purpose.

In prolonged first stages, the combination can be repeated to advantage, and, so far as we have observed, with safety to both mother and child, always excepting toxemia cases in which chloral as well as chloroform is prohibitory.

We usually obtain by these methods rest from pain for three hours or more, rest from fright and mental excitement, rest from shock-producing influences, and renewal of labor subsequently with increased resistance and a patient in improved physical and psychical condition to face the expulsive stage.

Whether the combination of morphin, atropin and chloral has a local action on the rigid muscle fibers, whether a functional motor paralysis or an anesthesia, does not always appear.

Numerous attempts have been made to combine sedatives and narcotics or give them in sequence. De Aragon of Havana has recently reported his experience in obstetric analgesia with a mixture of heroin, scopolamin, atropin and spartein. Some obstetricians do not use atropin or scopolamin without digitalis or strychnin.

The use of "obstetric" ether and chloroform is too well known to need comment. Both, in time, lessen the force of the contractions and thereby delay labor. Unlike nitrous oxid vapor, they possess no oxytotoxic action. They are the pain controllers of the second stage, especially the perineal stage. To the old saying of "morphin for the first stage and chloroform for the second," we must today add nitrous oxid and oxygen for the second.

As an intermittent analgesic or anesthetic, the nitrous oxid-oxygen mixture is well adapted to the second stage. Webster and his associates have done much to make this method of painless labor popular. In the second stage, it does not interfere with uterine contractions as does ether and chloroform, but by

arresting pain prevents shock and exhaustion, and resistance not being lowered, the patient is the better able to withstand subsequent infection or complication. My experience has been limited entirely to its use in the second stage, and in all the mass of recent literature on the subject, I gather that it is of no value in the first stage, or else the authors avoid mention of its status in this stage.

In the hands of inexperienced hospital interns, our results with this method have been deplorable, if not dangerous to the patient. Under the management or supervision of a first-class anesthetist, the method works out most satisfactorily. We have experimented with three gas machines and have finally settled on a simple single bag instrument.

I dissent from the statement that the administration of nitrous oxid-oxygen is safe in unskilled hands. It is difficult to reconcile the statement of the recent advocates of nitrous oxid-oxygen analgesia and anesthesia, and the teachings of some of our most expert users of this gas combination. On the one hand, we are repeatedly told that the use of nitrous oxid and oxygen for analgesia and anesthesia is a simple matter for one to become proficient in after a few trials. On the other hand, we have the statement of perhaps the greatest authority on the use of nitrous oxid-oxygen in dental surgery:¹

I am not prepared to commend its use as an analgesic and simple, my own experience—comprising rather a long series of cases—being that whenever any part of the operation would really produce actual pain, the only method of eliminating shock is the induction of anesthesia. . . . Analgesia may be excellent in selected cases; we are perfectly willing to accept the statements of those who report this, but I should like to know whether or not, at critical moments during their operations, anesthesia is not induced. . . . A trained and experienced assistant should always be present. . . . *Nitrous oxid and oxygen in unskilled hands is more dangerous than either ether or chloroform.*

In other words, in analgesic work, there is danger that the patient coming out from under the influence of the gas may suffer from the effects of shock due to the acuteness of the suffering, or, on the other hand, the danger of anesthesia in the hands of the novice. Some of the best obstetricians are confessedly poor anesthetists.

SUMMARY

Nitrous oxid-oxygen analgesia or "obstetric" ether and chloroform for the second stage of labor pushed to anesthesia for the perineal stage and, possibly, forceps delivery with vapor anesthesia to eliminate part of the second stage is a satisfactory procedure.

Moreover, nitrous oxid-oxygen analgesia or anesthesia is superior to any other during labor, because of its oxytoxic action.

Eventually an established method of painless labor may be considered among public health questions.

Lessening or abolishing the pain of labor may in the future limit birth control and criminal abortion.

Drug addiction after a prolonged drug narcosis in the neuropathic is a possible contingency.

The dangers to the unborn or newly born child are negligible when drug narcosis is limited to the first stage of labor.

28 West Fifty-Sixth Street.

A CASE OF TESTICLE GRAFTING WITH UNEXPECTED RESULTS *

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NEW YORK

At the age of 13 years the patient in the following case lost both testicles as a result of a complication of mumps. He retained almost no sexual characteristics, there being only slight, occasional evidence of activity of ganglia connected with the penis.

Last year it seemed desirable to try the effect of grafting testicle from another individual, with the object of obtaining the internal secretion with its accompanying cenesthesia of masculinity, but without any idea of securing any development of spermatozoa.

CASE REPORT

Mr. H., aged 27, entered the Post-Graduate Hospital a year ago. He was a man of mature and alert mentality for his age, and intellectually in every way quite normal. Physically he was somewhat undersized, with a face suggestive of youthfulness rather than of femininity. The voice was youthful.

At the time of the patient's entrance to the hospital the prostate gland was not observed to be present. The scrotum was shriveled and apparently quite empty of sex organs; the penis was small, the skin wrinkled, and the pubic hair sparse.

It was my intention to secure a testicle graft from a hernia patient of about the same age and color. This patient, however, made such a strong reaction to the von Pirquet test for tuberculosis that I decided not to make use of him, but secured a graft from another hernia patient 54 years of age who made negative response to the Wassermann and von Pirquet tests.

The graft as secured consisted of a wedge-shaped segment of testicle, which was sliced into three parts, each approximately 3 mm. in thickness. One of these slices was placed beneath the sheath of the left rectus abdominis muscle, another slice was placed beneath the right rectus abdominis sheath and the third slice was introduced into the right side of the scrotum, an incision having been made down to the remains of the testicle. There was barely a trace of the original testicle, epididymis and spermatic cord. Whatever remains of testicle were present would not exceed a number one shot in size. In the left scrotum was placed a Weir's celluloid testicle for the purpose of producing an effect of mass upon that side.

The patient did not observe any immediate effect from the testicle graft, and that portion which had been inserted in the right scrotum gradually began to undergo absorption. Curiously enough, as the graft began to disappear the vestige of the patient's testicle began to enlarge, and the testicle has now grown to become about one third normal size and is apparently still growing. It is softer than a normal testicle, but we may distinguish not only a growing testicle proper, but a growing epididymis and an enlarging spermatic cord upon that side.

In March of the present year it was decided to insert another graft for the purpose of hurrying matters along, and on this occasion opportunity was given for observing that the newly developed testicle appeared to be quite normal in contour, with normal appearing tunic and blood vessels. Coincidental with the development of the testicle, evidence of its presence became gradually more and more marked, to such a degree that the patient has recently asked if he might marry. The morning erections in particular are full and apparently normal and of frequent occurrence. The wrinkled appearance of the skin of the penis has changed to a normal smoothness, with increase in size of the organ. There is

1. Hasbrouck, James F.: Transactions of the Dental Society of the City of New York, 1914, p. 164.

* Read before the Surgical Section of the New York Academy of Medicine, May 15, 1916.

apparently a little line of prostatic tissue to be made out at the site of the prostate gland. As yet there has been no change in the voice.

The unique feature of this case, and the one which introduces perhaps an entirely new principle, is the fact of stimulation of the vestigial testicle into development. It is possible that this resource may be employed upon other patients who have lost testicles from mumps, and perhaps upon patients who have undescended testicles, after the latter have been placed in the scrotum by some operative procedure.

We are confronted with another question. Is it possible that in some cases of ovarian grafting the ova have been furnished, not by the graft, but by latent cell rests in the broad ligaments, which embryonic remains have been stimulated into activity through the influence of an ovarian graft in the vicinity. We know that such cell rests do occur, and Lucas-Championnière suggested this explanation for one of my cases of ovarian grafting in which the patient has borne two children. Opposed to this idea and confirming the theory that in some cases of ovarian grafting the graft may retain its full functioning identity, is the testimony from Harvard University Laboratory in connection with the ovarian crossing of guinea-pigs. Although both white and black colors appeared in the progeny after ovarian crossing in guinea-pigs, there still remains a question belonging to recessive and dominant characters.

For the most part we may assume that heteroplastic grafting of any sort will be followed by disappearance of engrafted tissue unless the physiologists of tomorrow are enabled to prepare individuals for accepting the tissue of other individuals. The very favorable reports of heteroplastic grafting made by Lydston and others leave us still with knowledge that heteroplastic grafting of tissues and of organs has not as yet been placed upon a satisfactory physiologic basis.

Two years ago I reported a case of testicle grafting¹ in a patient who had lost both testicles ten years previously as the result of an accident. For nearly ten years there had been no erection, and the patient had become corpulent and excessively nervous. The immediate effect of testicle grafting in this case was to restore him to a feeling of sexual manhood, which persisted for some months. A letter received from this patient on March 27 of the present year states that "the operation has entirely relieved the nervous symptoms, but the masculine effect was only temporary, as at present there is no indication that anything could be accomplished."

The new point introduced by the case of Mr. H., that of stimulation of latent cell rests into activity by a graft which itself disappears, would seem to open a vista which has not been anticipated.

In my own experimental work, both with ovarian and testicle grafting, patients have been given to understand that the procedures were wholly experimental in their nature. It is on this basis only that I have cared to assume the responsibilities of sex organ grafting.

616 Madison Avenue.

1. Morris, Robert T.: New York Med. Jour., Oct. 17, 1914.

Procrastination.—The world has ample knowledge of its perils, natural and created, but it remedies only on the heels of disaster and safeguards only after sacrifice.—D. C. Seitz.

LUMBAR PUNCTURE FOR THE RELIEF OF CONVULSIONS IN PUERPERAL ECLAMPSIA

REPORT OF TWO CASES

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CASE 1.—A mulatto, aged 35, multipara, mother of five children, five and one-half months pregnant, had nineteen convulsions in twenty-one hours before I saw her, May 17, 1915. Her blood pressure, fifty minutes after convulsions, was 255. I bled her, drawing off 36 ounces of blood. The pressure was reduced to 190. She had passed urine just before the first convulsion, but none after. I catheterized her, obtaining 1 ounce of very dark urine, which solidified about one half on boiling. When I saw her a short time afterward, she had had the twenty-third convulsion, was in a state of coma, and showed no improvement.

On account of high blood pressure, I inserted the needle in the third lumbar interspace, and drew off 40 c.c. of slightly bloody fluid; no anesthetic was used. There was no evidence of pain, as the patient was in profound coma. The fluid flowed as if under pressure. On removal of needle, consciousness immediately returned. The patient at once drank freely of water. She had no more convulsions, and remained rational. Two hours later she voided 10 ounces of urine; three days later the urine was free from albumin, and the patient's condition was apparently normal. Magnesium sulphate was used as a purgative following the lumbar puncture.

June 17 following, she had a miscarriage; the child was dead. I did not see the patient at this time, but arrived after the delivery was completed. She had had no convulsions, nor any unusual symptoms of nervousness during the miscarriage; her health has remained good to the present time.

CASE 2.—Sept. 1, 1915, I was called in consultation with Dr. W. L. F. Knolle to see Mrs. B., white, primipara, aged about 21, of German descent. Her family history was good. The patient gave a history of headache and diarrhea. Dr. Knolle had been called on account of the severe and frequent diarrhea at full term. The patient had had convulsions before he arrived, and had seven or eight before 11:30 a. m., the time of delivery with forceps. The child was alive.

The patient had a convulsion fifteen minutes after labor, one every one or two hours until 3 p. m. and then one every three hours until 3 a. m., September 2; between 3 and 4 a. m. she had four convulsions; between 4 and 5:30 she had four convulsions; at 5:30 she had two convulsions in the space of ten minutes; after that she had one every thirty minutes until 7:30 a. m., the time of operation. This made a total of more than twenty convulsions.

The cerebral excitement had been so severe all night that it required three or four attendants to control her. During the previous twenty-four hours she had been given saline purgatives, bromid, chloral hydrate, apomorphin, morphin and veratrum viride with no results. At 7 a. m. she was catheterized and 2 or 3 ounces of urine with considerable albumin were drawn off.

At 7:30 a. m. I made a lumbar puncture in the third lumbar interspace, and drew off 6 drams of clear fluid. The patient at once became quiet, and not another convulsion followed. At 9:30 a. m. she drank some water, at 11 a. m. voided urine in bed, showed evidence of return of consciousness, and took water freely. At 12 m. she was semiconscious. At 2 p. m. she voided 12 ounces of urine voluntarily. At 8 p. m. she was rational. She made an uneventful recovery.

I used lumbar puncture in both cases, because I had seen convulsions controlled in my cases of cerebrospinal meningitis only a few years before, by drawing the fluid from the spinal canal before injecting serum.

COMMENT

The high mortality, 35 per cent., is no argument against the usefulness of the treatment in proper cases. No treatment, undertaken as a last resort to save life, can have a brilliant record. A study of the various articles shows that not all cases have been reported; thus, a writer may say he has treated several cases, but may report only one. If these

unrecorded cases ended in recovery, the mortality would be somewhat lower.

Lumbar puncture is a treatment only for the convulsions of eclampsia, not of the toxemia of pregnancy. However, with the convulsions controlled, we are in a better position to treat the toxemia. Puncture seems to be indicated in those cases in which convulsions are severe and frequent. It does not, however, interfere with other forms of treatment for the disease.

A CASE OF PROGRESSIVE NEURAL MUSCULAR ATROPHY

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The following case is presented in order to add it to the number reported:

History.—C. J. H., a man, aged 24, was admitted to the United States Naval Hospital, Washington, D. C., Jan. 13, 1916. The family history was negative, except that one brother had had a "nervous" attack some years previously, but had been well since. The father, mother and one sister were living and well. No brothers or sisters were dead. There was no history of any nervous or muscular disease other than that noted of brother.

The patient's birth and development were normal. He learned to walk and talk at the usual age. He stated that he had had the ordinary diseases of childhood, from which he made good recoveries. His adolescence was uneventful. He enlisted in the United States Navy, Oct. 13, 1909, and served less than one year. Then while breaking up a box, a piece of tin struck him in the right eye, lacerating the cornea. This resulted in a cataract, which was needled, and he has about $\frac{1}{20}$ vision. There were no complications or sequelae. This injury caused his discharge from the naval service, June 24, 1910. He returned to his home in New York state, and worked on the farm. The patient stated that he had always been strong and had done hard labor. He had always abstained from alcohol and denied all venereal disease.

Present Illness.—This began in the fall of 1911. At that time the patient noticed that both of his shoulders were suddenly affected with a peculiar sensation of weakness, and that he was scarcely able to raise his arms. He remembered having had much difficulty in placing the bedclothes over his shoulders; but he had perfect use of his hands. This condition gradually altered to a decided discomfort, but he felt no acute pain and did not notice any swelling. It was considered that his condition was "rheumatism," and also that he had sprained his shoulders. However, he had no recollection of injuring these or even of using them to excess. This attack lasted for about three months. He gradually regained his strength and felt as strong as ever. During a part of this time he was confined to bed, but was not seriously ill. He did not recall ever having had any fever or chills. During this attack no other muscles than those above the shoulders were involved.

The next attack came on gradually in August, 1913. This time both knees were involved. At first the patient noticed that they were weak and later that they were swollen. The muscles of his legs were sore, and the "cords" underneath the knees were tender. If he bent his knees he would sink to the floor and scarcely had strength enough to hold himself up. He noticed that while in bed and usually about 1 or 2 clock in the morning his legs would sweat rather freely. During this attack he was forced to use crutches for about three months. He was not confined to bed, but was able to lounge about the house. This attack lasted approximately six months. He apparently regained his former strength and was able to go on with his work. No other joints than the knees were involved during this attack.

The next attack began in May, 1914. The patient first noticed slight weakness in the legs. In about a month he was unable to walk at all, and in another month he noticed that the arms were becoming involved. At first they were weak

and later on he was unable to use them at all. The wrists and elbow joints were affected and showed considerable swelling. The patient was unable to move his legs back of him, and when sitting down he could not raise his feet off of the floor. The calves of the legs became swollen and the hands showed a good deal of contraction. During the spring and early summer he was confined to bed. He was unable to care for himself and it was necessary for him to be fed. His condition gradually became worse until about the middle of July. After this he showed slight improvement, and gradually became better until he was able to go about on crutches. He states that his hands and wrists became "awfully hot." Between attacks and during them his general health has been good. He believes that he is worse before a storm, and that he is especially susceptible to cold. His only complaint at present is "occasional sharp pains running through his heart."

Examination.—The patient exhibited atrophy of the muscles of the legs, forearms and shoulder girdles, especially the deltoids, of the latter, more on the left than the right. The rest of the body seemed well nourished. The patient used crutches, and with their help was able to get about. He could stand alone, provided he flexed the knees somewhat. There was integrity of the muscles of the thighs, trunk and face. There was marked foot drop on both sides. The involvement of the muscles of the hands was very prominent and the appearance was characteristic, with wasting of the interossei and contractures. The patient was able to perform various coarse movements, such as feeding himself, but it required considerable effort and ingenuity to accomplish this. Ability for finer movements was lost.

Reflexes and Patellars: There was no movement of the legs, but there was some response of quadriceps tendons.

The Achilles tendon was absent on both sides. Plantars were absent, both toe and defense. The cremasteric reflexes were normal. The upper, middle and lower abdominal reflexes were normal. The triceps, biceps, ulnar and radial reflexes were slight, if present at all. Jaw response was absent. Masseteric response was absent. The muscles of the legs, arms and chest responded slightly and slowly to mechanical stimulation. When the muscles of the arms were struck repeatedly there was a persistent tremorlike movement.

Coordination Exercises: The knee-heel exercise was done on both sides, but slowly. The leg movements, anterior, in, up and down were good and equal. The arm movements, forward, backward, anterior, in and rotation were good and equal on both sides. The left foot was more difficult to move than the right.

Sensation: Light touch was apparently normal. Localization of light touch was good. On the right forearm the patient did not always distinguish sharp from blunt. In other segments the response was normal. On the feet he did not distinguish readily between heat and cold. On the hands he did not always distinguish heat from cold but was usually correct. The stereognostic sense was quite good.

The atrophied muscles showed a varying degree of reaction of degeneration, while the arm muscles, apparently not involved, showed a diminution of faradic response. The ophthalmologic examination was negative except for the residual of the injury mentioned.

There was no sphincter involvement. No mental symptoms were apparent. The patient, in spite of his difficulty, was quite cheerful and optimistic.

Laboratory Findings: Urine and blood were normal. Wassermann reaction was negative. The cerebrospinal fluid was clear in appearance. The pressure was 90 mm. of water. The Wassermann and Noguchi reactions were negative. The Nonne reaction was negative. One cell per cubic millimeter. Colloidal gold curve, 1, 1, 1, 1, 1, 0, 0, 0, 0, 0.

The patient remained in the hospital under observation until Feb. 4, 1916. During this time his condition did not change, except that he expressed himself as being more comfortable, which was no doubt due to his living under more favorable conditions than he did outside of the hospital. He returned to his home in New York state and reported by letter, April 1, 1916, that he seemed somewhat better.

Therapeutics

HYPERTENSION

(Continued from page 586)

SYMPTOMS

In hypertension, as long as the heart, which is probably hypertrophied, remains perfectly competent, there are few symptoms, and the person does not seek advice until he notices one or more of several possible conditions. He may be dizzy, his head may feel full and tight, he may have headaches, or he may have some cardiac pain or distress. Other persons do not seek advice until there is a slight weakening of the heart, showing the strain under which it is laboring. In most of these high tension cases, the patients have rather a slow heart, provided the heart is sufficient. Eyster and Hooker⁵² found that the slowing of the heart in high blood pressure is due to action through the vagus nerves either from the inhibitory center in the medulla or reflexly by stimulation of the peripheral nerves of the vessels.

Another symptom for which the patient frequently seeks advice is that he is unable to relax from his business cares, when off duty. He also finds that he works at a higher tension, and that coffee and tea, alcohol and tobacco stimulate him more than usual. He sleeps restlessly, and dreams at night. He has an increased frequency of urination in the morning, especially after taking coffee, and sometimes gets up once or twice at night to urinate. He is irritable at times; short breathered on exertion, and sometimes has indigestion. He may have pains or aches in his heart. He may find that he dislikes to lie on his left side.

However much it may upset the patient and render him more nervous to inform him that his blood pressure is too high, it is necessary to give him this information. People now suspect the condition, and they frequently seek their physicians to determine if the blood pressure is too high and, from reading health journals, more or less realize some of the things, at least, that must be done to decrease the pressure. Consequently, the very things that are advised or ordered give the patient the diagnosis, whether he is told directly or not. Hence, we must talk freely with the patient, much as we do in heart defects, and get his cooperation, stating how frequent the condition is, how often it is readily improved, and how little it may interfere with long life.

Wiener and Wolfner⁵³ state that they have found with blood pressure that the pupils of the eyes are larger than normal, and that they readily contract to the stimulus of light, but immediately return to their previous size.

PROGNOSIS

Janeway⁵⁴ presented statistics of 458 patients with high blood pressure, 67 per cent. of whom were men. Of these 458 patients 212 had died, and he found that the women with high blood pressure lived longer than men with high blood pressure. They did not seem as likely to have apoplexy or cardiac failure. About 85 per cent. of high tension cases occur between the ages of 40 and 70.

While he believes that a systolic pressure of over 160 mm. is pathologic, he does not find that any defi-

nite prognostic conclusions can be drawn from the height of the pressure. Of course the most important concomitant symptoms of high pressure are cardiac, renal, and cerebral, and the typical headache, as he terms it, is a symptom of serious import. In considering headache in persons over 40, we must eliminate the eye headaches produced by the need of presbyopic glasses or by the need of stronger lenses, as this need is a frequent cause of headache. Dizziness and vertigo may occur without headache, and drowsiness, though not so frequent a symptom as insomnia, often occurs.

Janeway finds that all kinds of apoplectic attacks may occur from simple transient aphasia to complete hemiplegia, and thirteen of his patients who had died and thirteen of those living at the time of this report showed failure of eyesight as an initial symptom of arterial disease.

Janeway deplors the too frequent diagnosis of neurasthenia in these patients. This diagnosis probably accounts for the frequency with which neurasthenics have been said to have high blood pressure. Patients with high blood pressure may show all kinds of symptoms simulating neurasthenia, but hypertension is a much better diagnosis than neurasthenia for such patients, and will lead to more rational treatment.

Ninety-seven of these patients had hemorrhages somewhere, most frequently epistaxes, sometimes hemoptysis. Janeway did not find that purpuric spots on the skin occurred early in the disease in any of his patients.

Gastro-intestinal disturbances were not much in evidence unless the kidneys were insufficient. Intermittent claudication in the legs occasionally occurred. While angina pectoris and edema of the lungs were not infrequent causes of death in men, it was a rare cause of death in women. Dyspnea is a frequent symptom, and one for which many patients seek medical advice.

A constant systolic blood pressure of over 200 shows a probability that the patient will ultimately die either of uremia or of apoplexy. Janeway found that those patients who are to die from cardiac weakness show cardiac symptoms early in their disease. He found that rapid continuous loss of weight pointed to an early fatal termination.

Of the 212 patients who had died, seventy-one had shown cardiac insufficiency at the time of the first examination; twenty-one showed albumin or casts at that time. Of course it should be repeatedly emphasized that chronic interstitial nephritis may be in evidence with either albumin or casts alone, or without either being present.

Janeway sums up his conclusions by stating that "from the time of the development of symptoms indicative of cardiovascular or renal disease, four years will witness the death of half the men and five years of half the women. By the tenth year half the remainder will have died, leaving one fourth both of the men and the women who have lived beyond ten years." The causes of death he would place in the following order: gradual cardiac failure; uremia; apoplexy; some complicating acute infection; angina pectoris; accidental causes; acute edema of the lungs and cachexia. An early occurrence of myocardial weakness shows a 50 per cent. probability that death will be caused by cardiac insufficiency. Heart pains comprise another important indicator of future cardiac death, perhaps not an angina. Nocturnal polyuria would indicate a uremic death in about 50 per cent.

52. Eyster and Hooker: *Am. Jour. Physiol.*, May, 1908.

53. Wiener, Meyer, and Wolfner, H. L.: A Reaction of the Pupil, Strongly Suggestive of Arteriosclerosis with Increased Blood Pressure, *THE JOURNAL A. M. A.*, July 17, 1915, p. 214.

54. Janeway, T. C.: A Clinical Study of Hypertensive Cardiovascular Disease, *Arch. Int. Med.*, December, 1913, p. 755.

of the patients, and typical headache or cerebral symptoms show the probability of uremic death in more than 50 per cent., and death from apoplexy in a large number of the other 50 per cent. As just stated, rapid loss of weight is a bad symptom.

Janeway⁵⁵ has previously reported seven patients with hypertension who had diabetes. Diabetes generally, on the other hand, causes a low blood pressure. Patients with this trouble and with hypertension, and without nephritis, probably have an increased secretion from the suprarenals.

We may sum up the prognosis in hypertension as follows: Hypertension alone is not of unfavorable men; if it is not readily reduced by ordinary means, it is more serious. If associated with kidney, heart or liver defect, it is most serious. If there are such serious conditions as edema, ascites, lung congestion, cyanosis and great dyspnea, the prognosis is dire.

Obesity being a cause of high blood pressure, it should be treated more or less energetically, even if the individual does not continue to add weight.

Stone⁵⁶ believes that the higher the diastolic pressure the greater danger there is of cerebral death, while a patient with a very high systolic, but a diastolic pressure of 100 or lower, is in more danger of cardiac death. He urges a greater consideration of the pressure pulse in determining the load of the heart and the great danger from a sustained diastolic pressure of over 105 as sooner or later bound to cause myocardial symptoms. This load of the heart is also shown by an increased pulse rate and increased respiratory efforts. In cardiac failure, as the systolic pressure falls the diastolic is likely to be increased, and the pressure pulse thus diminishing, allows insufficient blood to go to the medullary centers, and death soon ensues. Therefore, in acute illnesses a sustained pressure pulse gives a better prognosis than a diminishing pressure pulse. The strenuous measures that should be used to lower a high diastolic pressure are contraindicated when the diastolic pressure is already low, even if the systolic pressure is high. If a high systolic pressure begins to fall more or less rapidly the heart shows fatigue, and should be stimulated by digitalis or strophanthin.

Rowan⁵⁷ finds that a diastolic reading of 100 mm. or more usually means that there is a narrowing of the lumen of the vessels, owing to stimulation of the vasoconstrictors, although it may mean the existence of a true arterial fibrosis. While a real atheroma generally causes a reduction in diastolic blood pressure, or at least but slight increase, he has found in syphilitic cases with arteriosclerosis a high diastolic pressure. If blood pressure cannot be reduced by ordinary measures, arteriosclerosis is probably present. Several blood pressure examinations must be made, while the patient is being treated, to establish the diagnosis.

Rowan finds the reading of the pulse pressure to be of great importance, as this will indicate, sometimes before any other symptom is present, that the patient is either improving or doing badly, and it also aids in indicating the proper medicinal treatment.

In arteriosclerosis the systolic pressure may be high while the diastolic is low; hence there is a large pres-

sure pulse. If the heart becomes weak the systolic pressure will drop, and any improvement caused, especially in aortic regurgitation, is by an increase of the systolic pressure.

Rowan finds, as has long been recognized, that a conclusion as to whether or not cerebral hemorrhage will occur cannot be made from the condition of the radial arteries, as patients with soft radials may suffer from cerebral hemorrhage, while those "with hard, sclerosed, pipestem-like arteries may live to a great age and die of anything rather than apoplexy."

Swan⁵⁸ has studied the blood pressure in fifty cases of disturbed thyroid, and finds that functional myocardial tests show that the myocardium is nearly always disturbed in these patients.

Before taking up the subject of treatment of high blood pressure, it may be suggested that a high diastolic pressure with a falling systolic pressure may require vasodilators on the one hand or cardiac tonics on the other, and sometimes the decision can be made only by proper tests. In other words, if the diastolic pressure is lowered the heart will be relieved. On the other hand, if the diastolic is being raised by an increased venous pressure from a failing heart, digitalis, strychnin and caffeine may be of benefit in lowering the diastolic as well as raising the systolic. However, if there is a high systolic and a low diastolic pressure, vasodilators are often contraindicated.

(To be continued)

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Janeway, T. C.: A Study of the Causes of Death in One Hundred Patients with High Blood Pressure, THE JOURNAL A. M. A., 14, 1912, p. 2106.

Stone, W. J.: The Differentiation of Cerebral and Cardiac Types of Hyperarterial Tension in Vascular Disease, Arch. Int. Med., November 15, p. 775.

Rowan, J. J.: The Practical Applications of Blood Pressure Measurements, THE JOURNAL A. M. A., March 18, 1916, p. 873.

58. Swan: Interstate Med. Jour., March, 1916, p. 186.

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SATURDAY, SEPTEMBER 2, 1916

THE RELATION OF STABLE AIR TO SANITARY MILK

The summer season, with its incidence of gastrointestinal disorders in milk-fed infants, and of milk-borne infectious disease, always serves to direct attention to the problems of the milk supply. Only a few years ago it was the chemical composition of the milk—its resemblance to or departure from the make-up of human milk—that formed a lively subject for debate. The ease with which cow's milk can be "modified" in percentage composition has eliminated some of the occasion for discussion of this theme. Later, the question of the existence of tuberculosis or other communicable disease in the dairy herds attracted notice. This is at length thoroughly understood, even if it is not yet fully controlled. More and more the center of interest is being narrowed to the bacterial contamination of milk.

The cow and the persons who handle milk have been taken into consideration as agencies in the transfer of bacteria to milk. But milk is inevitably exposed at some time to the air. In the belief that stable air in particular is a significant source of contamination, the regulators of modern dairy practice have formulated many rules designed to prevent the germs in this air from coming into contact with the milk. In view of the assumption that air pollution is one of the important sources of difficulty in the production of clean milk, it is essential to obtain reliable statistics on this topic. This does not imply that the subject is new or unexplored, but rather that, in the judgment of competent dairy bacteriologists, it has not been adequately attacked in the past.

For purposes of comparison it may be recalled that Winslow and Browne¹ found that the average number of bacteria per cubic foot (about 28 quarts) of country air was 56, for city street air 72, for offices 94, for factories 113, and for schools 96. Ruehle and Kulp² have ascertained that the number of bacteria

found in the air of representative stables during such barn operations as milking, feeding hay, grain and the like, usually varies between 50 and 200 per liter (quart) of air. Occasionally much lower results were secured and also a few much higher, the high record being 82 per liter of air. When sterile water was "milked" in a representative stable from an apparatus designed to imitate the exposure of milk in this process in the dairy barn, the germ content of the liquid was found to average 12 per cubic centimeter, with a maximum of 73 and a usual range of from 5 to 15. When the same process was repeated under extreme dusty conditions it was possible to stir up several thousand bacteria per liter of air, so that the water acquired from 30 to 100 organisms per cubic centimeter. Milking under the worst of these conditions, the experimental observers tell us would, as shown by the results where an artificial dust was raised, have added from 100 to 1,000 or more bacteria per cubic centimeter to the milk. On the other hand, under the conditions usually found in representative stables, the number of bacteria added to milk drawn would have been so few as to be undetectable by known methods of analysis.

In interpreting the importance of the air as a source of milk contamination, other possible sources, such as the interior of the udder, the cow's body, the milker's hands and clothes, and the condition of the utensils must be kept in mind. According to Harding and Wilson,³ an average of 500 bacteria per cubic centimeter may be expected in all milk as drawn from the udder. Under normal barn conditions the air contamination thus is even less than that from the udder, and both are small in comparison with that from unsterilized milk pails.

Our readers are aware that in drawing up rules for the production of sanitary milk, much emphasis has been placed on practices designed to control the amount of dust. The bacteriologic experts of the New York Experiment Station,² reviewing the quantitative facts now available on the subject, state that in no case have preconceived ideas regarding the effect of certain factors on the production of clean milk so overruled the results of actual observation as in this case. They add that dairymen and sanitarians who have been interested in the production of clean milk have been as badly misled as have surgeons and physicians. This was only natural because of the way in which our knowledge of air bacteria was developed. Bacteria do occur in the air of cow stables in relatively larger numbers than they do in the air of many other places. Occasionally, under exceptionally dusty conditions, the number of bacteria getting into the milk from the air may be approximately as high as the number derived from the udder; but the number so derived under ordinary conditions does not increase the germ content of the milk.

1. Winslow, C.-E. A., and Browne, W. W.: The Microbic Content of Indoor and Outdoor Air, Monthly Weather Review, 1914, xlii, 452.

2. Ruehle, G. L. A., and Kulp, W. A.: The Germ Content of Stable Air and Its Effect on the Germ Content of Milk, Bull. 409, New York Agric. Exp. Sta., 1915.

3. Harding, H. A., and Wilson, J. K.: A Study of the Udder Flora of Cows, Tech. Bull. 27, New York Agric. Exp. Sta., 1913.

to any important extent. Lest there be any misunderstanding, however, we must emphasize again the other highly significant sources of bacterial contamination of milk. The unsterilized milk pail,⁴ frequently contributing many thousands of micro-organisms per cubic centimeter, affords an illustration of one remediable factor among several others beside stable dust.

RENAL GLYCOSURIA

The validity of the designation "renal diabetes" has repeatedly been called into question. The term was intended to be applied to a condition resulting in mild glycosuria but not accompanied by other characteristic symptoms of true diabetes mellitus, such as the presence of hyperglycemia and the impaired ability of the organism to utilize glucose. The relegation of the glycosuria to an increased permeability of the kidney for sugar, a condition experimentally attainable by the use of certain substances, notably phlorizin, must always be established beyond question by a demonstration that the blood sugar content is either somewhat low or, at any rate, never in any degree in excess of that might be expected under the dietary regimen prevailing, that is, between 0.07 and 0.11 per cent. So few of the alleged instances of renal diabetes have withstood the test of critical examination to demonstrate their right to be included in this category that some experts in the pathology of metabolism have seriously questioned whether the classification is justifiable. Less than ten years ago von Noorden pointed out that the entire clinical symptomatology of so-called renal diabetes was still to be ascertained; and in expressing doubt as to the individuality or identity of such a disease he designated the previous teachings about it as a *luftiges Kartenhaus*, an airy card castle.

Theoretically there is no serious reason for denying the possibility of a "renal glycosuria," inasmuch as increased renal permeability has been shown to exist temporarily at times during pregnancy and after poisoning with certain drugs. Within the past decade, owing to the technic of sugar estimation in the blood has reached a higher degree of perfection and comparative ease of application, a few cases have been reported which bear the evidence of meeting the standard set for justifying the designation of renal diabetes, or better, renal glycosuria. The instances are still rare enough to justify reference to fresh examples when these have been carefully studied by competent investigators. The newest case showing glycosuria, without the other abnormalities characteristic of impaired carbohydrate metabolism, is recorded by Lewis and Mosenthal⁵ of the Medical Clinic at the Johns Hopkins Hospital. Here is their characterization of the anomaly: The slightly diminished phenol-

sulphonephthalein excretion, the slight elevation of Ambard's constant above the normal, as well as the glycosuria, point to a depressed kidney function. The absence of any further subjective or objective signs, past or present, leads to the conclusion that a renal glycosuria is an interesting anomaly, but of no importance as a whole.

An additional reason for calling widespread attention to such cases of glycosuria without hyperglycemia lies in the fact that almost none of them have been followed for any length of time, and consequently the prognosis remains to be ascertained. One naturally asks whether the defect is inherent or acquired, whether the impairment is permanent and unchanged, or progressively modified. Obviously at the present time the typical antidiabetic treatment is not indicated. It is not difficult to construct hypotheses as to the glycosuric manifestations which might be expected in suitable cases of varying renal involvement. At present the primary desideratum is a firmer structure of new facts referable to this category of disease.

THE HEART'S ACTION AT HIGH ALTITUDES

It is only a few years ago that it was customary to discuss the physiologic and pathologic phenomena associated with life and activity at high altitudes under the general designation of alpinism.¹ Although the Alps were the locality in which the earlier classic studies on the physiology of altitude were conducted, leading to the establishment of an international laboratory on Monte Rosa, the investigation of the numerous important problems which were suggested has been continued in other parts of the world in which the conduct of scientific researches at levels of low barometric pressure has become possible. In the United States, Pike's Peak in Colorado, with an altitude of more than 14,000 feet, has in recent years afforded splendid opportunities for the study of man at high altitudes. The summit is readily accessible without effort, the opportunities for residence and observation on the peak are acceptable, and at Colorado Springs, with an altitude of 6,000 feet, a base for the preparation and conduct of scientific operations is readily available. In addition to numerous less pretentious excursions to this locality, the Anglo-American Expedition of Douglas, Haldane, Henderson and Schneider² in 1912 deserves special mention. Since then, Schneider of Colorado College has added many facts to our knowledge of the circulation of the blood in man at high altitudes.³

1. See, for example, Cohnheim, O.: *Physiologie des Alpinismus*, *Ergebn. d. Physiol.*, 1903, ii, i, 612.

2. Douglas, C. G.; Haldane, J.; Henderson, Y., and Schneider, E. C.: *Phil. Tr. Roy. Soc. London*, 1913, B, clii, 262. Anglo-American Expedition to Pike's Peak, editorial, *THE JOURNAL A. M. A.*, Aug. 10, 1912, p. 449.

3. Schneider, E. C., and Sisco, D. L.: *The Circulation of the Blood in Man at High Altitudes*, I, *Am. Jour. Physiol.*, 1914, xxxiv, 1; II, *ibid.*, 1914, xxxiv, 29. *The Influence of Altitude on the Blood*, editorial, *THE JOURNAL A. M. A.*, Nov. 1, 1913, p. 1634.

Prucha, M. J.; Harding, H. A., and Weeter, H. M.: *Utensils as Source of Bacterial Contamination of Milk*, *Science*, 1915, xlii, 353.
Lewis, D. S., and Mosenthal, H. O.: *Renal Diabetes*, *Bull. Johns Hopkins Hosp.*, 1916, xxvii, 133.

In addition to its intense scientific interest, the study of the effects of altitude on man can also claim certain immediate practical value. Residence in mountainous districts is a necessity for certain persons; transit through them is essential to others, while the unquestionable influence of altitude on the human organism, though it is still largely unanalyzed, has long been called on to exert therapeutic effects. It belongs within the domain of the uncertainties of so-called climatology.

Much is now definitely appreciated with respect to certain responses of the body to low barometric pressures, notably the change in the number of red corpuscles and other reactions of the hemopoietic system; more remains to be learned. The etiology of mountain sickness is not entirely cleared up, and the unlike responses of different persons to the same environment at high altitudes raises important questions. Recently Schneider⁴ has compiled the results of new observations in a series of expeditions to Pike's Peak which show clearly that physical exertion makes greater demands on the heart and blood vessels at very high than at low altitudes. They also indicate that during the first days of residence at the high altitude, physical work should be reduced to a minimum. Schneider finds that the normal circulatory conditions for the majority of men at an altitude of 14,109 feet are an increased rate of the heart beat, an unchanged or slightly lowered arterial pressure, and a lowered venous pressure. Physical exertion, as at a low altitude, affects all three; the pulse rate is further accelerated, and the arterial and venous pressures are both raised; the change in each, however, is substantially greater at the high altitude. Furthermore, the stimulating influence of lowered barometric pressure is the more pronounced the more vigorous the exertion; that is to say, the curves representing the acceleration of the heart rate and the increase in pressures rise more rapidly than the curve which expresses the addition in rapidity or vigor of exertion. These facts clearly show that the heart and blood vessels, the arteries but not the veins, undergo a greater strain during exertion at the high altitude than they experience for the same form of exercise at the low altitude, in that the venous pressure rarely goes above the low altitude average. Furthermore, the heart undergoes greater strain during exercise at the high altitude, which is indicated in the longer after-period of high rate of beat and high pressures and also in the prolonged subnormal period of systolic pressure.

One may conclude from the observations made on Pike's Peak that a certain degree of acclimatization is possible; but the physical condition or previous training of the individual is of primary importance.

Schneider points out that it would be an easy matter to injure the heart seriously during the early days of residence at high altitudes. The risk to the heart is less for men who are physically strong because of athletic training.

For those persons who are in excellent physical condition who have reacted well to the altitude, the changes of acclimatization will permit of moderate exertion without the lowered barometric pressure manifesting itself by the more pronounced acceleration of heart rate and an increased pressure. It seems probable that in vigorous work even those who are best adapted to the high altitude will continue to give a more pronounced reaction than would occur at a low altitude.

THE NORMAL TOLERANCE FOR SUGAR

In recent years, functional tests by which it is intended to ascertain the capacity of the body as a whole, or of specific tissues and organs, to perform the physiologic tasks for which they are supposed to be equipped, have become more and more familiar in the routine of clinical diagnosis. Some of them, such as the phenolsulphonephthalein test for kidney function, have achieved a deserved popularity and widespread application, owing to the faithfulness with which they disclose the information which is sought. Not a few of the functional tests, particularly those applied to digestive or metabolic performances in the organism, have failed to meet the expectations of their sponsors. Some of the shortcomings in this direction have already been pointed out in *THE JOURNAL*.

In certain individuals the capacity of utilizing glucose is supposed to be lowered. It may become sufficiently deficient in some instances to lead to so-called alimentary glycosuria following an overindulgence in carbohydrate food. In a healthy person it is scarcely possible to produce glycosuria by the lavish administration of starchy food, since the liver can apparently store up the excess of sugar as fast as it is produced by the digestion of starch in the alimentary canal and absorbed into the portal circulation. There is a widespread belief that when preformed glucose is fed, however, the assimilation limit may be more readily reached through rapid and unduly large absorption of soluble carbohydrate. It may become very important to ascertain an incipient functional defect of this sort, since it may be the indication of some impending diabetic defect. Accordingly it has been customary in some clinical laboratories to ascertain the "assimilation limit" for glucose by feeding a measured quantity of this carbohydrate or some other sugar, such as lactose (milk sugar) or levulose (fruit sugar), at one time, and watching for a transient glycosuria as a result. To the examination of the urine for sugar before and after the administration of the carbohy-

4. Schneider, E. C.: The Circulation of the Blood in Man at High Altitudes, III, The Effects of Physical Exertion on the Pulse Rate, Arterial and Venous Pressures, *Am. Jour. Physiol.*, 1916, xl, 380.

drate, the analysis of the sugar content of the blood may now easily be added.

Success in ascertaining an abnormal tolerance in a procedure of the sort described evidently hinges on the ability to postulate what a normal functional capacity of a healthy individual in such circumstances should be. Lately it has been asserted that whereas the "assimilation limit" is low in diabetes, it is abnormally high in certain conditions involving a malfunction of some of the endocrine glands, notably the pituitary. Taylor and Hulton,¹ of the Department of Physiological Chemistry at the University of Pennsylvania, recently remarked that by common consent, rather than by accurate experimentation, the limit of assimilation of glucose on alimentary administration has been set at from 200 to 250 gm. on the empty stomach. From this figure downward the student of diabetes applies the test; from this figure upward the student of the diseases of the ductless glands applies the test. The Philadelphia investigators have made a number of observations on healthy medical students, to whom glucose was administered in strong solution and in whom the blood sugar content was ascertained immediately before and three hours after the sugar was given. As a result it is clear that nearly all the subjects tolerated the ingestion of 200 gm. without exhibition of glycosuria. Of nine subjects who ingested 300 gm., only three displayed glycosuria. Of the six who ingested 400 gm., only two had glycosuria. In the instances 500 gm. were given, with the production of glycosuria in but one. Taylor and Hulton regard 300 gm. as the physical limit of ingestion, except in the one who has trained to the test; it is very large in the athlete, inclines to nauseate, and apparently the excess is not rapidly absorbed, so that the test probably means more than does the administration of 400 gm., which is usually tolerated. Polyuria occurred rarely, and there was no relationship between the polyuria and glycosuria. Intestinal disturbances were not observed. It appears, by way of contrast, that healthy persons cannot ingest 300 gm. of levulose without intestinal disturbances. Whether this result is inherent in such amounts of levulose, or is due to some impurity in the supposedly pure preparation used, could not be determined. The further general conclusion was drawn that even the larger quantities of sugar do not markedly influence the sugar content of the blood. In the majority of healthy adult males, according to Taylor and Hulton, there is, apparently, no limit to the assimilation of glucose; a glycosuria does not necessarily follow the largest possible ingestions of pure glucose.

Woodyatt, Sansum and Wilder² have very properly pointed out that the common clinical practice of esti-

imating sugar tolerance as the number of grams of glucose which can be given by mouth all at once and just fail to cause glycosuria will not justify any tenable conclusion respecting the power to utilize glucose. They say:

When sugars are administered by the stomach, the length of time during which they are actually brought to the cells must depend on the motor power of the stomach and of the bowel and on the rates at which the sugars can be absorbed; and even when they are given subcutaneously or by any other route which involves absorption as a prelude to their entering the blood, the rates at which they enter the blood will depend on the rates at which they are absorbed. By any of these, but especially by the oral method, the actual rate of entry of sugar into the blood and tissues at large must vary with a wide range of physical, physiologic and pathologic conditions over which we have no control; nor will it ever be possible by such methods to force sugar to enter the blood any faster than it can be absorbed. The rate of sugar absorption is a self-limited thing, for when a certain concentration of sugar is once present in the blood, no quantity given by mouth or subcutaneously or intraperitoneally can raise it higher.

The fact that prolonged hyperglycemia did not arise in Taylor and Hulton's trials on normal persons is in itself an indication that one could scarcely expect marked glycosuria to manifest itself. It has been found that a man weighing 70 kg., when resting quietly in bed, may receive and utilize 63 gm. of glucose by vein per hour without glycosuria. The normal tolerance limit for glucose, expressed as a velocity, is established at close to 0.85 gm. of glucose per kilogram of body weight hourly, which agrees approximately with what Blumenthal has established by repeated small intravenous injections in animals.² It can easily be computed from such statistics that if a man's resting requirement were 3,000 calories per day, he could thus receive double what he needed, or enough to cover the caloric expenditure of the same man during heavy physical exertion. In view of these facts perhaps the supposed increased "tolerance" for glucose in some of the ductless gland disorders relates to a gastrointestinal rather than a metabolic function.

Current Comment

CAUSES OF POLIOMYELITIS

"It's not the heat that makes you hot; it's the humidity," says Mr. Common Citizen as he stands before the weather department kiosk. The subject is one that baffles physiographers, physicians and physiologists. But what does he care? Mr. Common Citizen is a philosopher: he has a mind to think with; therefore he thinks. And lest these evanescent gems of thought should evolve fruitlessly, he utters them aloud and writes them for publication. An epidemic of disease such as infantile paralysis gives him a wonderful opportunity. Scientific investigators—those who have studied the subject—say that the cause is not

¹Taylor, A. E., and Hulton, Florence: The Limit of Assimilation of Glucose, *Jour. Biol. Chem.*, 1916, xxv, 173.
²Woodyatt, R. T.; Sansum, W. D., and Wilder, R. M.: Prolonged Accurately Timed Intravenous Injections of Sugar, *THE JOURNAL OF BIOLOGICAL CHEMISTRY*, A., Dec. 11, 1915, p. 2067.

definitely known; that the method of transmission is not absolutely proved. With Mr. Common Citizen it is different; he knows all about it, and sends his views to the newspapers. If he has had a fragment of medical training, he may send his opinion to a medical journal. Usually his reasoning is easy to follow. For example, a Philadelphia author has observed that infantile paralysis occurs in hot weather; abates after a storm; is frequent among Italians; breaks out in New York; follows railroad traffic; ergo, it is due to constructing subways. The Italians dig the subways; the dust flies on their clothing; the dry weather makes things dusty; the Italians carry the dust home to their children.

Another comes from Newark. Says this contributor to the newspapers:

From my long experience as a member of one of the branches of medicine for the past thirty-one years, I have never heard or found any cure for a person who is suffering from hydro-cynic [sic] acid poisoning (prussic acid). In my opinion, the present cases of so-called infantile paralysis really are suffering from the poisonous hydro-cynic acid. You immediately will say, "How do young children become so saturated with this terrible poison?" Simply from the decomposed vegetable refuse, which is left lying in an uncovered condition in our streets. When this garbage lies in the sun and heat, uncovered, for three days before it is removed by the street cleaning department, as is the condition now existing in the city of Newark and in many of the surrounding towns, it naturally decays rapidly. With this decay comes a chemical action, and the portion of this refuse which is decaying takes the form of a poison gas—hydro-cynic acid. Our children and some of our adults breathe in this gas and if they are not of a healthy condition this acid begins its deadening work and the person is stricken with a sickness, infantile paralysis.

According to another newspaper item, an unorthodox theory has been advanced. It states that:

Dr. B. H. J., who is not a doctor of the orthodox school of medicine, is in this city to study the epidemic of infantile paralysis and advances the theory that poliomyelitis is not a germ disease at all and that it is neither contagious nor infectious.

Dr. J. who claims that he has been successful in treating a number of cases of infantile paralysis in Pittsburgh without the use of drugs, explained yesterday that he believed the cause of the disease lay in the intestinal tract of the child and that the fermentation of proteids and albumin there caused auto-intoxication and eventually paralysis of various muscles.

The following, by a physician, also deserves a place in this symposium:

While scientists are studying to isolate the specific germ and prepare a culter to treat the malady, there are thousands of victims dying, so it would appear the most important thing in the fight is to discover, if possible, a cure for the malady and let the discovery of the cause for less strenuous time. It has been suggested to me by many prominent physicians that I have two or three journals print my views at once so that my suggested treatment may be at once supplied. . . . My theory is that infantile paralysis is caused by a specific germ which germ up to the present day has not been successfully isolated. Now I contend that in every infection by this germ there is an inefficient amount of adrenalin in the blood current.

And the following also comes from a physician:

It is neither contagious or the work of the scape-goat germ, but is a destructive process resulting in extinct vitality.

. . . If the organism is devitalized through a long line of indiscretions, its vitality will eventually become extinct as the consequence. Infantile paralysis is therefore caused by disorders of development or the falling short of maturity by arrest of development. . . . The Book of God—The Bible—has sounded the warning down the ages that in the last days of the dispensation of evil when the Lord God comes forth to harvest the earth of the crop grown, that He will march through the land in indignation and before Him will go the pestilence.

Certainly the following suggestion is scientific! It is from a New England physician:

Your attention must have been called to the prevalence of infantile paralysis and how the laboratory experts are at a loss because no monkeys are to be had. Let me say that my wife a few years ago fed her mother's house cat on oatmeal. Two litters of (6) kittens had kitten paralysis 50 per cent. The same cat fed on whole wheat had healthy litters. Now could not the American Medical Association . . . take this up and study the cases for poliomyelitis. It seems to me it ought.

The above quotations are offered as samples. There are many others: One suggests that the milk supply may be at fault (strange no one thought of that) another suggests that lake swimming has something to do with it; a "drugless physician" says that 85 per cent. of the cases are cholera infantum or "summer complaint." One physician writes to a Philadelphia newspaper that "foreign rats have the germ and that the flea is its vehicle of contamination." Dogs and cats, he says, are carriers and breeders of fleas, and if people will wash their dogs and cats with a mixture which he suggests, the epidemic will end. In the meantime, while theorists ponder and philosophers cogitate health officers continue to do their best to prevent by rational methods the propagation of the disease, physicians at the bedside relieve suffering, and research workers spend days and nights in laboratories and post mortem rooms attempting to discover the etiology and mode of transmission of the disease.

THE U. S. PHARMACOPEIA IX

The ninth revision of the United States Pharmacopeia became official this week, Sept. 1, 1916. It is more fully reviewed on another page;¹ here we desire merely to call attention to two points: what the book is and what it is not. It is a book of standards for drugs; it is not a book of standard remedies. The Committee of Revision of the Pharmacopeia included physicians and pharmacists (retail, wholesale and manufacturing), but the pharmacists were in the majority and in control. The majority of the representatives of the medical profession on this committee would have preferred to see the bulk of the Pharmacopeia reduced and its value as a work of reference enhanced by the rejection of therapeutically worthless drugs. The representatives of commercial interests, on the other hand, argued that it was necessary for the Pharmacopeia to provide standards for drugs in more or less general use, whether worthless or otherwise. The force of this argument is somewhat impaired by the fact that the National Formulary

1. See page 764, this issue.

which has also been made a book of legal standards, now includes individual drugs as well as combinations; the new edition of the Formulary, in fact, contains a large number of drugs which had been dropped from the U. S. Pharmacopeia VIII. The principle of making use the sole criterion for admission to the Pharmacopeia, however, on the whole carried the day. It has not been strictly observed; good results from the efforts of the medical contingent are to be observed here and there, as in the deletion of elixir of the phosphates of iron, quinin and strychnin and of emulsion of cod liver oil with hypophosphites. That these instances were not expressions of policy on the part of the Committee on Revision, but merely deviations from policy, may be seen by a glance at the contents of the new Pharmacopeia. These include substances which have been shown to be inert, like the hypophosphites² (calcium, potassium and sodium hypophosphites), complex and obsolete mixtures, like the compound syrup of sarsaparilla, and drugs which have been tried and found wanting, like saw palmetto berries. Even substances seldom used by the medical profession, but chiefly or altogether by the public, like saffron, hops and peppermint (the herb), are standardized and made official. It seems difficult to discover any principle by which the sphere of the Pharmacopeia may be definitely marked off from that of the National Formulary. There is one great advantage in specifying U. S. P. drugs and preparations: Physicians who do so invoke legal standards of purity and identity. The only way to be sure of obtaining substances of therapeutic efficiency, however, is to exercise discrimination. The Pharmacopeia is no guide. Being prepared mainly by pharmacists to meet the needs of pharmacists, the Pharmacopeia of course contains much matter of little interest to physicians and entirely foreign to scientific medicine.

THE CAUSE OF SEX

There is perhaps no process in life which excites more general interest than the causation of sex. It is generally believed that the sex is not established until after fertilization, and popular superstition in many communities abounds in methods of securing the desired sex. That sex is controlled by diet, as advocated by Schenk in 1897, has been a popular belief; attempts to influence the sex of an embryo or of an ovum by altered nutrition have been futile. It has been frequently observed that certain lots of insects only produce a greater number of males. This observation, however, is better explained by the fact that insect females, because of their higher rate of metabolism, succumb more easily in the absence of proper food supply than males. Another method of sex control is that advocated in 1909 by Russo, who asserted that by feeding or injecting lecithin in pregnant rabbits he was able to secure a greater percentage of females. No one has been able to confirm these results. It is only in recent years that a seemingly scientific basis for sex control has been found and

experimentally tested in lower animal forms. Thus in *dinophilus*, a sea worm, Lenhossek¹ has shown that two types of ova are present, and that males and females are produced at will by fertilization of the proper type of ova. In some insects, Wilson² and others find different types of spermatozoa, and believe these to be the determining factors. Recently Loeb³ has furnished additional evidence that sex is determined by the kind of sperm cell engaged in fertilization. Loeb, Delage and others have succeeded in producing larvae from unfertilized eggs. This was accomplished in eggs of sea urchins, starfish and annelid worms and mollusks by chemical stimulation. Guyer found that by injecting lymph into the unfertilized egg of the frog, development could be induced, and Bataillon later showed that the same process could be initiated by pricking the unfertilized egg with a needle. Loeb has succeeded in raising seven parthenogenetic frogs from unfertilized eggs stimulated by pricking. These frogs are now over a year old, and are normal in every respect as regards appearance and behavior. As two of the frogs recently died, their sex has been determined. This had been done on other parthenogenetic frogs, but the results were inconclusive, as the gonads of young frogs and tadpoles contain both sex elements. The four parthenogenetic frogs studied by Loeb were all males. Loeb concludes from this work that all eggs of the frog are alike, but that there are two kinds of spermatozoa, one with and one without a sex chromosome, and that if a spermatozoon of the former type enters an egg, a female is produced. Since in artificial parthenogenesis no sex chromosome is introduced, the parthenogenetic frog is a male. Further work is now started to determine whether the spermatozoa of parthenogenetic frogs can fertilize normal eggs, and no doubt much of interest will be learned from experiments of this nature.

NATURAL ICE

It is a common practice, especially in the field of organic chemistry, to purify substances from soluble impurities by freezing. As an example, chemically pure, or, as more commonly called, "glacial" acetic acid is the frozen portion from a concentrated mother liquor. It would be expected, therefore, that ice taken from moderately large streams or ponds which are not grossly polluted would be much superior to the water from which it is formed. Cummings⁴ pointed out that not only is this the case, but also the number of bacteria is reduced by the freezing, and—of greater importance—the longer the ice is kept, the slighter the chances for the bacteria to survive. Natural ice should therefore be as good a product as artificial ice, if not better. The entire volume in artificial ice is generally frozen, which does not allow the impurities to be expelled, whereas in natural ice only a portion of the water is frozen. Natural ice is usu-

1. Lenhossek, quoted by Morgan: *Pop. Sc. Month.*, 1903, lxiv, 97.

2. Wilson: *Science*, 1909, p. 53.

3. Loeb: *Proc. Nat. Acad. Sc.*, 1916, ii, 313.

4. Cummings, H. S.: *Safe Ice*, *Pub. Health Rep.*, Aug. 7, 1914, p. 2006. *The Danger of Infection from Ice*, editorial, *THE JOURNAL A. M. A.*, Aug. 29, 1914, p. 786.

5. Marriott, W. McKim: *The Therapeutic Value of the Hypophosphites*, *THE JOURNAL A. M. A.*, Feb. 12, 1916, p. 486.

ally stored for a considerable time, while artificial ice is used shortly after manufacture. In this connection, the recent report of Edward Bartow² of the Illinois State Water Survey is interesting. Bartow has made a number of sanitary examinations of ice obtained from rivers and ponds in Illinois, and also, in some instances, of the water from which the ice was obtained. Out of forty-nine samples, he found that in only one ice did the turbidity exceed five parts per million, while the color of all the samples was so low that it could not be detected in an ordinary drinking glass. The highest total residue found in the ice examined was thirty-four parts per million, but in most samples, it was less than ten, which compares favorably with distilled water. Always of importance in water analysis is the chlorid content, as a relatively large amount indicates sewage. In the specimens of ice examined, only traces of chlorid were found. Of greater interest to the physician, however, is the fact that the bacterial content of the ice was greatly reduced in comparison with the number of bacteria in the water from which the ice had been frozen. In one case with 12,000 bacteria per cubic centimeter in the "raw" water, there were but 125 in the ice; 520 were reduced to 3; 1,400 to 16, etc., in every instance practically 99 per cent. reduction, which is better than that obtained from the average filtration plant. Gas-forming bacteria were greatly diminished. As Bartow states, "nature certainly does its share toward furnishing pure natural ice. If reasonable precautions are taken so that no ice is obtained from grossly polluted ponds or rivers, and the surface of the ice is protected, there need be no difficulty in placing pure ice on the market." Even though ice (natural or artificial) is pure, there still remains a great source of infection from improper delivery and handling. Care should be exercised that the ice and ice chest are washed with pure water, irrespective of whether the product is for an ice drink or used as a chilling agent for food.

THE "OPEN FORMULA" BUGBEAR

Slowly but surely the public is coming to realize that one of the most effective ways of discouraging fraud in the "patent medicine" business will be to demand that the names and quantities of the potent ingredients of all "patent medicines" be declared on the label. This is worrying the "patent medicine" fraternity. As one of their spokesmen has admitted, the publication of the essential ingredients in "patent medicines" would make it very difficult for the manufacturer to continue to make fraudulent claims for his product and "get away with it." Through their press agents, the nostrum makers are employing all the arts of sophistry to convince the public that nobody wants a declaration of the potent ingredients of "patent medicines" except the doctors, the jealous competitors of the "patent medicine" makers; that such a requirement would be confiscatory; that it would constitute a depri-

vation of property without due process of law, etc., *ad nauseam*. One of the publications devoted to "patent medicine" interests recently utilized much space in an effort to show that physicians, while in favor of "open formula" requirements when applied to "patent medicines," are opposed to any legislation that might require physicians to let their patients know the composition of the medicines prescribed. It probably is a fact that there are some physicians who honestly believe that there are certain instances in which it is against the best interests of the patient to let him know just what drugs are being prescribed. It is, at any rate, a debatable question. But the opinions held by physicians on this problem are entirely beside the point in discussing the "patent medicine" business. Like Mr. Gilbert's "flowers that bloom in the spring," it has nothing to do with the case! People who put themselves in the hands of physicians do so, presumably, in the belief that they, as laymen, do not consider themselves competent to diagnose and treat their own ailments. Then it is for the physician to decide what is the matter and what should be done for it; the responsibility rests on him. In the taking of "patent medicines" an entirely different element is introduced. Here the patient considers himself competent to diagnose and treat his own ailment; the responsibility is personal. Obviously, he should be permitted to know what he is going to pour down his own throat. No amount of fine spun casuistry can befog the fundamental fact that the prescriber of drugs should know what he is prescribing.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Personal.—Dr. David A. Beattie has been appointed health officer of San Jose, succeeding Dr. Paul Sanford.—Dr. Alice Rhode has been appointed instructor in research medicine in the George Williams Hooper Foundation for Medical Research of the University of California.—The foundation has sent Dr. Ernest Linwood Walker, a member of its staff, to carry on investigations as to tropical diseases in the upper Amazon. He will be stationed for most of the year 1,500 miles up the river in the region of Porto Zelho, Rio Madeira, Amazon, Brazil. He has there the privileges of the hospital maintained by the Madeira Mamora Railroad, of which Dr. Allen M. Walker is chief surgeon.—Dr. Reginald Knight Smith has been appointed assistant clinical professor of obstetrics in the University of California Medical School.

GEORGIA

Conference on Charities and Correction.—A conference on charities and correction is to be held in Macon in October, immediately following the meeting of the State Federation of Women's Clubs. The Georgia Conference on Social Service was the name selected for the new organization.

Hospital Notes.—Work has been commenced on the new Macon City Hospital, and the contract states that it is to be completed within 240 working days. The contract price is \$80,949. One of the new buildings is to be a five-story structure with a fresh air porch on each floor and a roof ward containing private rooms, the children's department,

2. Bartow, Edward: Univ. Illinois Bull. 19, 1916, Water Survey Series No. 12.

the medical ward and operating rooms. The second building is the service building, and the third is a three-story structure containing an outpatient department, dispensary for whites and negroes, and on the two upper floors, wards and rooms for negro patients.—The annex of the new Columbus City Hospital is completed. The building is a two-story and basement structure, 40 by 50 feet, and has cost, with equipment, about \$15,000. It will accommodate seventy-five patients, and will be used for incurable cases and communicable diseases.—A charter has been asked for the Frances Berrien Hospital, Rome. The incorporators are Drs. John T. McCall, Robert H. Wicker, John L. Garrard and Augustus F. Routledge.

ILLINOIS

Epidemic Dysentery.—An epidemic of bacillary dysentery has prevailed at Brereton where there have been thirty-two cases with eight deaths.

Note on Sanatoriums.—The matter of building county tuberculosis hospitals comes before the voters of Ogle, Adams, Morgan, Livingston, La Salle, Rock Island, Greene and Kane counties at the November elections.

New Bureau Begins Work.—The new sanitary engineering bureau of the state board of health has moved to Jacksonville from the University of Illinois, Urbana. Its principal activities are control over the installation of water supply and sewage systems; sanitary surveys; supervision of city waste collection and disposal, and street cleaning; examination of swamp and overflow lands within the state with a view of encouraging their reclamation for both health and profit; investigation of methods of heating and ventilating auditoriums; sanitary inspection of public school buildings; typhoid fever investigations; public addresses on sanitary engineering topics and informal advice by correspondence.

Personal.—Dr. Harry W. Ackmann, Rockford, has been appointed physician for the Rockford City Traction Company and the Rockford and Interurban Company, succeeding the late Dr. William R. Franklin.—Dr. John J. Fyke completed a half century of practice at Odin, August 24, and was presented with a silver loving cup.—Dr. George E. Bushnell, Rochelle, is ill at the Penoyer Sanitarium, Kenosha, Wis.—Dr. Charles E. Crawford, Rockford, was elected physician of the grand lodge of the Order of Sons of St. George, at its annual meeting held in Waterloo, Iowa, recently.—Dr. S. W. Latham, Eldorado, at present a member of the state senate from the Fifty-First District, announces his candidacy for lieutenant governor of the state on the Republican ticket.

Chicago

Crile in Chicago.—Dr. George W. Crile, professor of surgery in the Western Reserve University, Cleveland, delivered a lecture on August 21, to the graduates of the medical department of the University of Illinois, on "Exhaustion and Restoration."

Not Augustana but Augustinian.—The report that the Augustana Hospital authorities are planning to erect new hospital buildings at Marquette Manor is incorrect. The work is being undertaken by the Augustinian Society of Illinois.

Personal.—Dr. Charles F. Lynch, Chicago, has been appointed city health officer of Lansing, Mich.—Dr. Willis L. Nance, who for six years has been alderman of the Sixth Ward in Chicago, is a Republican Candidate for Member of the Board of Trustees of the Sanitary District of Chicago.

Campaign Against Tuberculosis.—A city wide campaign against tuberculosis will begin September 15. The initial plans for the survey, to include eight square miles in the most congested part of the city, were completed at a meeting of the board of directors of the Municipal Tuberculosis Sanitarium, August 23. The district wherein the work is to be initiated extends from State Street to Ashland Avenue, and from North Avenue to Twenty-Second Street. About \$20,000 will be spent on this survey, which will be in active charge of forty-two physicians and a necessary clerical force—the work being superintended by Drs. Thomas A. Hogan, John Ritter and Clarence L. Wheaton. It is expected the survey will be completed and a spot map prepared, showing every case of tuberculosis in the territory, and that this work will be accomplished by Jan. 1, 1917.

KENTUCKY

State Medical Society Changes Date of Meeting.—It is announced that the annual meeting of the Kentucky State

Medical Association will be held at Hopkinsville, October 10-13, instead of October 17-20, as originally announced.

Personal.—Dr. Charles A. Edelen, Louisville, has been appointed chairman of the medical staff for the state fair for 1916, succeeding Dr. Irvin Lindenberger, who is in the state service at Fort Thomas.—Dr. Hervey S. Keller, Frankfort, has been appointed a member of the tuberculosis commission to succeed Charles A. Edelen, Louisville, resigned.—Dr. Urban V. Williams of Frankfort has resigned as a member of the state tuberculosis commission.—Dr. Milton Board, Louisville, has been elected medical examiner for the Workmen's Compensation Board.—Dr. Dunning S. Wilson, Louisville, has resigned as superintendent of the Waverly Hill Sanatorium, on account of his duties with the field hospital, Kentucky National Guard.—Dr. Frank G. Le Rue, Smithland, recently appointed superintendent of the Western State Hospital, Hopkinsville, has taken charge of the institution.—Dr. Henry P. Sights, formerly superintendent, has returned to his former home at Paducah and resumed practice.

MARYLAND

School Opening Delayed.—Health Commissioner Blake of the municipal health department, on August 23 issued an order forbidding the opening of the public and private schools of Baltimore until September 25.

City Playgrounds Closed by Dr. Blake.—Health Commissioner Blake ordered all children's public playgrounds closed, and children of all ages will be kept away from them until the fear of an epidemic of infantile paralysis has passed.

Soda Water Glasses to Be Abolished.—The state board of health, by advertisement, served notice on all druggists and dispensers of soft drinks that glasses in which they have been serving drinks to their customers must not be used after September 1 unless they are willing to destroy the glass after it has been used once.

Hopkins to Seek Causes of Infantile Paralysis.—An investigation is to be begun, August 25, by the Johns Hopkins Hospital into the causes and spread of infantile paralysis. The research will be conducted by the Department of Children of the Harriet Lane Home, and the Department of Pathology. Dr. Montrose T. Burrows of the Pathological Department and Dr. Kenneth D. Blackfan, resident pediatrician of the Harriet Lane Home, will have charge. A minute record is to be taken of the cases in the city and of the movements of the victims in the weeks previous to developing the paralysis.

MISSISSIPPI

Personal.—Dr. Gilbert F. Douglas, physician of the East Mississippi Insane Hospital, has resigned.

New Unit for Sanatorium.—A new unit is to be added to the Meridian Tuberculosis Hospital by Mr. A. J. Lyon, consisting of a cottage, to accommodate two patients, together with a common reception room.

Decision Against the State Board.—Chancellor O. B. Taylor, in the case of Dr. William T. Matthews, county health officer of Le Flore County, against the Mississippi State Board of Health, rendered a decision, July 22, that the state board of health cannot remove any officer from his position except in cases where he has been indicted and convicted in a court of law. The state board is said recently to have removed Dr. Matthews and to have appointed Dr. F. M. Santifer in his place. The charge against Dr. Matthews was that he failed to report a case of smallpox. Dr. Matthews claims that the charge was trivial and was trumped up for political purposes.—The report of the state board of health for June shows a marked increase in the cases of typhoid fever as compared with 1915, the respective figures being 533 and 819, and in malaria, of which 10,703 cases were reported in June, 1915, and 12,878 cases in June, 1916. The most marked decreases have been in amebic dysentery and pellagra.

NEW YORK

Amendment to Medical Practice Act.—The July *Bulletin of the Department of Health* gives a summary of an investigation conducted by the public health committee of the New York Academy of Medicine to ascertain the opinion of those in authority in the medical colleges of this state with reference to the desirability and practicability of amending the Medical Practice Act so that a fifth year as intern in a hospital shall be required of all applicants for a license to practice medicine in this state. A questionnaire was sent

to the ten medical colleges of the state and answers were received from nine. From the statistics available it is shown that a large proportion of the students of New York state secure hospital positions immediately after graduation; where they fail to do so the reason is usually due to their financial status. Information from the Department of Education shows that there is a sufficient number of internships in the state to provide for all graduates of medical schools. In 1914 there were 459 graduates and 859 internships. The attitude of the medical schools is unanimously favorable to the principle of requiring a year of hospital experience. Among the practical difficulties in the way of a realization of this ideal is the lack of standardization of hospitals. The difficulties in the way of this legislation have not been deemed insurmountable and an amendment has been submitted for approval to the faculties of the medical schools. All that have replied have endorsed the amendment except the New York Medical College and Hospital for Women. The Medical Society of the State of New York at its last annual meeting also approved of the amendment. The committee has finally adopted the proposal to amend the present public health law relative to the practice of medicine as follows:

Section 1. Subdivision 4 of Section 166 of Chapter 49 of the laws of 1909, entitled "An act in relation to the public health, constituting Chapter 45 of the consolidated laws," is hereby amended to read as follows:

"4. Has studied medicine not less than four school years, including four satisfactory courses of at least (seven) eight months each in four different calendar years in a medical school registered as maintaining at the time a standard satisfactory to the regents (.), and has performed satisfactory clinical work for a period of twelve months in a hospital which has a daily average of not less than thirty patients and has not less than fifty beds devoted to the treatment of medical and surgical diseases, and which is registered by the regents as maintaining at the time satisfactory clinical and laboratory standards. New York medical schools and New York medical students shall not be discriminated against by the registration of any medical schools out of the state whose minimum graduation standard is less than that fixed by statute for New York medical schools, etc."

New York City

Personal.—Dr. John Van der Poel sailed on the *Nieuw Amsterdam* for Rotterdam on August 25.—Dr. Charles G. Child, Jr., has resigned from the Woman's Hospital.

Age, Sex and Nativity of Poliomyelitis.—The weekly *Bulletin* of the department of health reproduces an interesting table showing the age and sex distribution of 848 fatal cases of infantile paralysis which occurred from January 1 to August 1. Only six of these deaths occurred previous to June 1. Of these deaths 507 were males and 431 females. The largest number of deaths occurred among those 2 years of age. The total number of deaths of those under 5 years of age was 419 males and 266 females. During the age period from 5 to 9 years there were 76 deaths of males and 60 of females. During the age period from 10 to 14 years there were only 17 deaths, 9 male and 8 female. There were only 10 deaths among the older age groups. There were only 5 deaths among colored children, 2 males and 3 females. The following table shows the nativity of the parents of the 848 fatal cases:

Both parents born in U. S.	253
Both parents born in Italy	177
Both parents born in Russia	115
Both parents born in Ireland	40
Both parents born in Austria-Hungary	39
Both parents born in Germany	23
Both parents born in other foreign countries.....	120
Total foreign	514
Mixed native and foreign.....	81

Infantile Paralysis.—On Friday, August 26, there were 94 new cases reported and 22 deaths. This is the lowest number reported for any Friday in August and for any day of the week. For the week ending August 19 the average number of cases reported daily was 130, while for the week ending August 26 it has been 108 cases. On August 25 there were 3,936 cases of infantile paralysis in the hospitals of the city.—The brace fund of \$15,000 which was originally asked for by Dr. Emerson has been completed, but it has been found that this sum will be inadequate to provide for all those needing orthopedic appliances and it is now announced that \$26,000 will be required.—The Dispensary and Hospital for Deformities and Joint Diseases which has opened a special clinic for infantile paralysis cases is now making an appeal for a fund to be used in carrying on the work.—Montefiore Home and Hospital announces that it has opened a ward for the treatment of children recovering from infantile paralysis.—It is said that about one third of the cases reported to the health department daily are not true cases of infantile paralysis; these, of course, do not appear

in the daily lists. About two out of every 100 cases are diagnosed wrongly by the diagnosticians of the health department.—One of the features in connection with the work of prevention of infantile paralysis has been the issuing each day of "daily hints" for publication in the daily papers by the bureau of public health education of the health department.

PENNSYLVANIA

Personal.—Dr. Joseph K. Weaver, Norristown, has been reappointed a member of the state board of prison inspectors.—Dr. William S. O'Neill Sherman, Pittsburgh, sailed from New York, July 8, for Liverpool to represent the United States Steel Corporation in the research work to be prosecuted by the Rockefeller Institute in the base and field hospitals of the allies.

Infantile Paralysis Report.—During the twenty-four hours ended 4 p. m., August 26, twenty-one new cases of infantile paralysis were reported to the state health department from points in Pennsylvania outside of Philadelphia. Since July 1, 674 cases of the disease have been reported to the state department. The total number of deaths is 168.—As a matter of precaution the board of health of Media has forbidden the appearance of the Chautauqua from September 14 to 20.—The Pennsylvania State College trustees have decided to postpone the opening of the college until September 18.

Pittsburgh Establishes Quarantine Against Poliomyelitis.—Beginning at midnight on August 17, the Pennsylvania department of health established at Pittsburgh a quarantine against all trains from the west, north and south making their first stop in the state at this point. All children under 16 bound for a Pennsylvania point not provided with health permits certifying that they were free from the disease and had not been exposed to it, will be turned back and deported beyond the state line. Seven fourth-year men of the medical school of the University of Pittsburgh have been selected as special quarantine officers.

Philadelphia

Personal.—Dr. Charles K. Mills has been appointed consulting neurologist to the Philadelphia Hospital for Contagious Diseases.—Dr. Holmes Walker has been provisionally appointed an assistant medical inspector at a salary of \$1,400.

New Health Centers Opened.—The twelve centers which the department of health and charities established at the beginning of the summer have served their communities so well that three new centers have just been opened, located at Front and Tasker, at 1136 North Second Street and at 3101 Grays Ferry Road, where from seven to ten nurses are in charge.

Gift Toward Red Cross Hospital.—A fund of \$25,000 is being collected for the purchase of a base hospital for the Red Cross and a cheque for \$10,000 has been given by Cyrus H. K. Curtis to start the movement. The money for the hospital will be turned over to the Southeastern Chapter of the Red Cross and will be subject to the call of Dr. Richard H. Harte, the chairman. This base hospital will consist of tents, cots and full equipment for a central hospital to which cases may be moved from time to time from field hospitals or be held in readiness of great public calamities.

Jeanes Millions for University.—Recommendation that a fund of more than \$3,000,000 for the treatment of cancerous, nervous and disabling ailments be given to the University of Pennsylvania Hospital has been made by Dr. Winford H. Smith, superintendent of the Johns Hopkins Hospital, Baltimore, who was selected by the trustees of the fund, jointly the incorporated trustees of the Philadelphia Yearly Meeting of Friends and a body organized as the board of managers of the Jeanes Hospital, to come to Philadelphia and make a survey of its hospitals and medical work and give them his opinion as to where the fortune would work the greatest benefit. The fund is the estate and its increment willed for the purpose by Anna J. Jeanes, a noted Friend philanthropist, who died in 1908.

Infantile Paralysis.—One hundred and thirty-two cases of infantile paralysis were reported to the bureau of health during the week which ended August 26, an increase of twenty-six over the preceding week. These cases are in widely scattered districts of the city.—Instructions for the injection of immune serum, with orders to use it on every child suspected of having infantile paralysis, if the consent of parents can be obtained, were sent on August 26, by Dr.

Andrew A. Cairns, chief medical inspector, to the fifty-one physicians under him, together with the statement that the serum would be available at his office. It will also be issued to physicians in general practice if they have paralysis patients under their care.—In just one week after the conference held at Dr. Wilmer Krusen's office in city hall on the use of the Wynnefield branch of the Children's Hospital for the care of convalescent patients, it was in operation with enough money to maintain it for one month. The Idlewild chapter of the Pennsylvania Women's Division for National Preparedness of the Red Cross at Media sent to this convalescent hospital 356 garments.—Aiding in the effort to stop the spread of infantile paralysis, the Child Federation has issued a bulletin and posted it in 300 courts and alleys which warns mothers to call the doctor the minute baby seems the least bit ill.—All public, private and parochial schools in this city and throughout the state will remain closed until September 18.—Eleven deaths from infantile paralysis, the largest number on any day this summer, were reported to the health department on August 19. In the week ending at noon August 19, 102 new cases were reported, twenty more than in the preceding week. This number makes a total of 280 cases and seventy-seven deaths. The demand for health certificates is so great that a force of eighteen clerks is kept busy at the City Hall and it is estimated that 10,000 certificates were issued on August 19.—Dr. Samuel S. Woody, chief resident physician at the Philadelphia Hospital for Contagious Diseases, has reported to Dr. Andrew A. Cairns that the cases recently admitted were of increasingly virulent type.—Dr. Wilmer Krusen has requested the Philadelphia Free Library to prohibit children from reading in the library and its branches, and has requested the Philadelphia Rapid Transit Company to take extra care in cleaning its cars for the rest of the summer. Churches and Sunday schools will exclude children under 16 in accordance with the request of the health director, and a police order was issued on August 17 prohibiting all street carnivals.—The board of managers of the Children's Hospital has offered its building at Wynnefield for a convalescents' hospital, planned by the Emergency Aid and Director Krusen.

CANADA

Alberta Physicians to Meet.—The annual meeting of the Alberta Medical Society will take place in Edmonton on September 21 and 22. The president is Dr. Thomas H. Whiteaw, Edmonton.

Medical Society of Nova Scotia.—The sixty-third annual meeting of the Medical Society of Nova Scotia was held at New Glasgow on July 5. Dr. Evan Kennedy of New Glasgow was the president. Only a business meeting was held; but Dr. Alexander P. Reid, Middleton, read a paper on his reminiscences from the end of the fifties of the last century down to the present time. Prof. Fraser Harris was elected resident for the ensuing year, and Dr. James R. Corston, Halifax, secretary-treasurer.

Hospital News.—Work on the old Toronto General Hospital which was being transformed into a military base hospital has been temporarily discontinued, because the Ottawa military authorities require from the city of Toronto a two years' lease after the war. Lieut.-Col. Thomas B. Richardson, the officer in command, is applying to the board of control for the extension. The hospital is to accommodate 1,040 beds, but up to the present time has only about 500 patients. Already the improvements have cost \$30,000.—The West Cliff (England) Canadian Eye and Ear Hospital at Folkestone is under command of Lieut.-Col. J. D. Courtenay, Ottawa. Lieut.-Col. Samuel H. McKee, C. M. G., Montreal, second in command. Major Alex. B. Osborne, Hamilton, Ont., is in charge of the eye department; and Majors William Brown, Lindsay, and Henri M. DuHamel of the ear, nose and throat department. Capt. Percy G. Bell, Winnipeg, is registrar.—Lieut.-Col. Perry G. Goldsmith, Toronto, is on the staff of the Duchess of Connaught Canadian Red Cross Hospital, Taplow, England.—Erection of the new Kootenay Lake General Hospital, Nelson, B. C., is to be commenced soon.—The Royal Victoria Jubilee Hospital, Victoria, B. C., requires a resident medical superintendent who must be a married man and familiar with Roentgen-ray therapy and photographic work. The salary is to be \$3,000 with free quarters.—An assistant physician is urgently required for the Mount Sinai Sanatorium for Incipient Tuberculosis, at St. Agathe de Monts, Que. The salary offered for the first year is \$500. A licensed graduate of the Jewish faith would be preferred.

GENERAL

American Hospital Association to Meet.—The American Hospital Association will hold its next annual meeting in Philadelphia, September 26-30.

The Plattsburg Camps.—Educational camps for medical men will be held at Plattsburg, N. Y., August 24-September 6, September 8-September 21, and September 22-October 5, each camp continuing for two weeks. The qualifications necessary for entering are the same as for the regular military training camps excepting that the applicant must hold the degree of Doctor of Medicine. The instruction is relatively elementary and is designed to give the medical men the army point of view and a knowledge of medico-military methods. About fifty physicians attended the first camp at Plattsburg.

Red Cross Nursing Service.—Under the efficient management of Miss Jane A. Delano, chairman of the National Committee on Nursing Service, a corps of more than 7,000 graduate nurses has been enrolled for Red Cross service. This branch of the work has become so important that it was deemed advisable to secure a superintendent for this bureau and for this duty, Miss Clara D. Noyes, superintendent of the Bellevue Training School, New York, has been secured and will assume her new duties about October 1. There are already about 1,000 nurses ready for the base hospital units now in process of organization and similar groups of ten nurses each, known as the emergency detachment of nurses, are being organized to meet possible service needs.

Bequests and Donations.—The following bequests and donations have been recently been announced:

Mt. Sinai Hospital, New York, a donation of \$150,000 for the endowment of its department of abdominal surgery, by Charles A. Wimpfheimer.

Hospital for Women and Children, Boston, to establish a free bed, \$5,000; Baker's Free Hospital for Women, Boston, to establish a free bed, \$5,000; Boston Children's Hospital, \$2,000, and Children's Island Sanitarium, Salem Harbor, \$1,000, by the will of Mrs. R. B. Warren, Boston.

Pennsylvania Hospital, Philadelphia, Protestant Episcopal Hospital, Presbyterian Hospital, Polyclinic Hospital and Samaritan Hospital, each \$10,000; Philadelphia Home for Incurables, Jewish Hospital Association and Medical Chirurgical Hospital, each \$5,000, by the will of Hall Engles. The bequests to the Pennsylvania and Presbyterian hospitals are to endow two free beds in each institution in memory of Mr. Engles' mother, and the bequest to the Protestant Episcopal Hospital is to endow two free beds in memory of the testator.

St. Mary's Hospital, Philadelphia, \$5,000 to endow a bed, by the will of George W. Nevil.

Servants and Relief of Incurable Hospital and Skin and Cancer Hospital, New York, each \$5,000, by the will of Mr. Miner Veitch.

Modification of Patent Laws.—At its last meeting, the Pennsylvania Pharmaceutical Association adopted a resolution calling on Congress "to strongly support the pending Tariff Bill, affording protection to American industries." Also, another resolution was adopted, asking Congress to modify the present patent laws "discontinuing the patenting of products but recognizing only applications for patents on processes." The following preambles preceded the adoption of the resolutions:

WHEREAS, The American public is obliged to pay extravagantly high and unjustly extortionate prices for the synthetic drugs and medicines they are obliged to buy from foreign holders of patents on medicinal products, and

WHEREAS, The United States patent laws in granting product-patents, instead of process-patents to foreign manufacturers are hindering instead of "promoting science and useful arts" for which they are instituted, and

WHEREAS, The synthetic drug industry is primarily and basically dependent upon the dye-making industry, and as the dye stuff industry cannot be successfully carried on without ample tariff protection and the liberation of the infant American organic chemical industry from the bondage of American patent laws, which favor priority and deter invention and progress and which accord American protection to foreigners which their native countries deny them, and

WHEREAS, The present United States patent laws favor the creation of monopolies in this country by the citizens of Germany, France, Austria-Hungary, Italy, Japan and the Argentine Republic, which is denied the citizens of those countries by their own laws, and

WHEREAS, A patent on products creates a monopoly not only on the product itself, but on all subsequent improvements in process for the making of the same, thereby destroying the stimulus for improvements and discovery through research.

Medical Treatment at Government Expense for Injured Federal Employees; Compensation for Disablement.—An act to provide compensation for employees of the national government injured while in the performance of their duties, which has passed both houses of Congress and will become a law as soon as the conference committee to which it has been referred has adjusted certain minor details, will increase the demand by the United States government for the services of physicians throughout the entire country. For all injured civil employees of the United States, numbering approximately 400,000, it provides medical, surgical, and hospital services and supplies at government expense.

Medical, surgical, and hospital services and supplies are to be furnished by the United States to any civil employee injured in the line of duty, immediately after the injury and for a reasonable period thereafter, whether disability has or has not resulted, unless the employee refuses to accept them. United States medical officers and hospitals are to furnish such services in so far as may be practicable; otherwise they are to be furnished by private physicians and hospitals designated or approved by the United States Employee's Compensation Commission, created to carry the law in effect. Private physicians and hospitals are to be paid for such services from the employee's compensation fund, appropriated by Congress. If necessary in order to obtain proper medical, surgical and hospital treatment, the injured employee may be furnished transportation at government expense to some place where such treatment can be obtained.

The furnishing of treatment to injured employees is, however, merely a part of the larger scheme of compensation for disablement and death in the discharge of duty. Compensation is already provided by law for approximately 100,000 civil employees of the government who are engaged in specially hazardous employments. The act that is about to replace the older statute extends the same benefits to the remaining 300,000 employees, whose work is not extra-hazardous. Compensation is to be paid for the disability or the death of the employee resulting from personal injury while in the performance of duty, provided the injury was not caused by his willful misconduct, deliberate intent, or intoxication.

For total disability, compensation is not to exceed two thirds of the total compensation of the employee. If the disability be but partial, compensation shall not exceed two thirds of the difference between the pay of the employee before the injury and his wage-earning capacity after it. In no case, however, is the compensation to exceed \$66.67 a month. An elaborate scale is laid down for the allotment of benefits to dependent relatives and kin if the employee dies, and provision is made for the payment of funeral expenses by the government, in the discretion of the commission. Payments are to be made monthly and are to continue indefinitely, during the disability of the employee or the dependency of the beneficiaries, but authority is given for the payment in certain cases of a lump sum in commutation of instalment payments.

Every claim for compensation, except in case of death, must be accompanied by a certificate from the employee's physician stating the nature of the injury and the nature and probable extent of the disability. The employee must submit to all necessary examinations by a medical officer of the United States, or by a physician designated or approved by the commission, but the employee may have present any duly qualified physician selected and paid by him. In case of disagreement between two such physicians, the commission is to appoint a third to make the examination.

For the purpose of carrying the law into effect, a commission is created, to be known as the United States Employees' Compensation Commission, to consist of three members appointed by the president, by and with the consent of the Senate, each with a compensation of \$4,000 a year. The principal office of the commission is to be in Washington, D. C.

FOREIGN NEWS

Trolley Car Ambulance.—A city in Brazil is said to use a trolley car ambulance for the transportation of its patients to and from a hospital in the suburbs.

Infantile Paralysis in Cuba.—The *Revista de Medicina y Cirugia* of Havana states that cases of poliomyelitis have appeared in that city and at Guines and Vueltas, but that they have all been isolated cases and there has been no mortality.

Typhus Stamped Out in Madrid Province.—Typhus has been epidemic in and around Madrid recently. Isolation barracks were installed on the grounds of one hospital and the epidemic was promptly arrested. Our Madrid exchange says that the mortality was only 10 per cent., notwithstanding the large number of cases.

The Alvarenga Prize in Brazil.—The Alvarenga prize this year in Brazil was awarded to G. Riedel, chief of the biologic chemistry service at the Hospicio Nacional and instructor at the University of Rio. His work described extensive personal research on the protective ferments, and a process for determining the specific ferments by superficial tension. This eliminates the sources of error with the Abderhalden dialysis technic.

Durante's Jubilee.—The fiftieth anniversary of the entrance into practice of Prof. F. Durante of the chair of surgery at the University of Rome occurred recently, but he said that on account of the way Italy is making history just now he did not wish the proposed celebration of the occasion. With Baccelli he founded the *Policlinico* twenty-three years ago. He is known as a surgeon far and wide.

Hospital Ship for Sulu Archipelago.—The National Health Board of the Rockefeller Foundation has entered into a cooperative agreement with the Philippine government for the equipment of a hospital ship to go from island to island in the Archipelago, meeting people at shipping points, bringing medical service to the afflicted, training midwives, giving general instructions to the people and guiding and stimulating them to self health. The agreement with the government is for the maintenance of this ship for five years. At the end of this period it is hoped that the ship will have demonstrated its usefulness and that the government will continue the work.

Deaths in the Profession Abroad.—V. Llorente y Matos, a leading physician at Madrid, member of the national board of health and founder of the Institute of Microbiology and Serotherapy, aged 59.—J. Broeckart, rhinologist and laryngologist at Ghent, aged 49. He had made a special study of the innervation of the throat and published several studies on the recurrent nerve and on paraffin prosthesis, the technic for which he much improved, especially for treatment of ozena.—W. Lindt, instructor in laryngology and otology at the University of Bern, aged 56.—B. P. Sormani, privat-docent of serology at the University of Amsterdam, originator of the "syphilis index" (an aid to the estimation of the state of the infection in syphilis, mentioned in *THE JOURNAL*, Aug. 23, 1913, p. 632), aged 35. A recent article on the specific limit of resistance of the red corpuscles as a factor in the outcome of the deviation of complement test was summarized in *THE JOURNAL*, May 8, 1915, p. 1624.

Sick and Wounded Interned in Switzerland.—While the war rages around it on all sides, Switzerland is able to offer sick and wounded prisoners a haven of peace. Its hotels and sanatoriums have been placed at the disposal of the belligerent nations to receive and care for their sick and wounded prisoners at low rates, ranging from a little over \$1 to \$1.60 a day. Clothes are supplied by the country of the interned, and they are policed by some of their own members. Postal service is free to them in Switzerland and for mail leaving the country. Belgium, France, Germany and Great Britain have taken advantage of Switzerland's offer to care for sick and wounded prisoners and there are said to be now a total of 13,417 thus interned in Switzerland, including 2,948 German soldiers, 452 British and 8,941 French. The relations between the interned and the native populace are kept within narrow bounds. The man's family can come to reside in the town with him, but strict surveillance is kept over them and the interned. While allowed a certain amount of liberty, yet they are compelled to stay within a given area. The contracting powers have agreed to return to Switzerland any of the interned who escape from the country. The only disabilities that bar are chronic alcoholism, mental troubles requiring institutional care and contagious diseases during their acute transmissible stage.

WAR NOTES

Drug Shipment to Orient Permitted.—A letter from the French ambassador, received by Oscar W. Strauss, New York, August 23, brought advice that the French government would permit entry of a shipment of drugs and medical supplies for the Jewish hospital at Jaffa and Jerusalem, valued at \$18,000.

OUR TROOPS ON THE BORDER

Red Cross Nurses for Duty on the Border.—In response to a request from the surgeon-general of the army to furnish the names of 100 Red Cross nurses willing to be assigned to active duty on the Mexican border, Miss Jane A. Delano, chairman of the National Committee of Red Cross Nurses Service, has sent fifty-five nurses to the Southwestern states to assist the Army Nursing Corps in caring for the sick and wounded of the armed forces of the United States on the Southern frontier. Of these nurses ten were sent to Eagle Pass, thirty to San Antonio, three to Brownsville, six to Douglas, Ariz., two to El Paso and four to Laredo. By special authorization of the surgeon-general each of the twenty-five Red Cross base hospital units has been requested to designate from its Red Cross personnel two nurses for service on the border.

LONDON LETTER

LONDON, Aug. 14, 1916.

The War

ARMY MEDICAL ORGANIZATION

The thoroughness of the Germans in organizing for this war during a whole generation is a commonplace. But when the history of the war comes to be written, the manner in which this country improvised and in a short time organized an army ten times as great as had ever been maintained by it for war, on a scale which had never been even contemplated, will also be considered remarkable. In the organization of the army, medical arrangements more quickly than any other have attained a high degree of efficiency. Such, indeed, probably never have been equaled, with the possible exception of the Japanese army. In the *British Journal of Surgery*, Sir Alfred Keogh, the director general of the medical corps, has described how the work of expansion was performed. This was rendered possible by certain preparations which had been made in peace for the service of civilian physicians in the army. Owing to the magnitude of the war, the regular officers of the medical corps had to devote all their energies to administration, while the technical work of the care of the sick and wounded was left to specially selected experts. Consulting surgeons were appointed by whom all subsequent surgical developments were determined. They set the scope and standard of practical work and scientific investigation. They determined whether or not the means at the disposal of the hospital surgeons were adequate. They supervised the operations and approved of the operators, so that on them depended whether or not all that was best in British surgery was available for the soldier. Through these consultants the maximum of surgical efficiency was attained. They and they only could insure a high standard of clinical and scientific work. The staffs of the hospitals in this campaign were drawn from numerous schools. Differences of practice and of opinion consequently existed, discussions were frequent, and authoritative pronouncements were necessary. Free play was given to the imagination of many who would have made the future better than the present. New branches of work were organized to meet special conditions, and there was a division of labor. Old problems of military surgery were investigated in the light of the newer knowledge. The Medical Research Committee (appointed under the insurance act) gave valuable aid in establishing laboratories at home and abroad. Never before had such organized researches been carried on during war. Whenever a difficulty arose, whether connected with epidemics or some surgical problem, it was possible to fall back on the laboratory workers for guidance, and therefore none of the new administrative measures were simply experiments: they were the outcome of scientific suggestions. As the war went on, it was possible more and more completely to classify the wounded into groups, each demanding special experts. Orthopedics is perhaps the most important example. Great work has been done for the wounded soldier in overcoming his disabilities in the special hospitals formed under the supreme control of our greatest orthopedic surgeon, Lieut.-Col. Robert Jones. Sir Alfred Keogh is fully convinced that the more the organization of hospitals into special departments is pursued the greater will be the degree of efficiency reached. Experience has shown, and continues to show, that in such departments research is encouraged, and knowledge acquired and diffused more readily than could otherwise have been the case. One cannot avoid an uncomfortable feeling that if hospitals in civil life had been organized on such a plan, a higher efficiency would have been manifest at the outset."

Drastic Act for the Control of Venereal Disease
in Western Australia

In Western Australia an act has been passed for the free diagnosis and treatment of venereal diseases somewhat on the lines of the regulations recently issued in this country and described in a previous letter. But the Australian act goes much further and contains compulsory and penal provisions which would be difficult to pass in the mother country, where the "rights" of the individual are more respected than in her somewhat socialistic colonies. No person other than a physician, or person acting under the direct instructions of a physician, shall attend on or prescribe for any person suffering from any venereal disease for the purpose of curing, alleviating or treating such disease, under

a penalty of \$250 or six months' hard labor. Every person suffering from any venereal disease shall, within three days of his becoming aware or suspecting that he is suffering, consult a physician and place himself under treatment by such physician, under a penalty of \$100. He must keep under treatment until he receives a certificate of cure, under a penalty of \$100. If he changes his physician he must declare the name and address of his last previous adviser, and the new physician shall notify such previous adviser. The penalty for the infraction of this provision is \$25. Every physician must report all cases of venereal disease in prescribed form to the commissioner of public health, stating age and sex of patient, but not name and address, under a penalty of \$25. If a patient fails to attend his physician for six weeks the physician must notify the commissioner, giving name and address of patient, under a penalty of \$25. The physician shall give the patient written notice of the danger of the disease, particularly warning against marriage until cured, under a penalty of \$25. In case of a person under the age of 16 years being infected, the parents or guardians are to exercise their authority to secure observance of the act, under a penalty of \$50. They must report to the commissioner failure of the person to carry out the law, under a penalty of \$50.

The most drastic provision of the act relates to compulsory examination and treatment. When the commissioner has received a signed statement in which shall be set forth the full name and address of the informant, stating that any person is suffering from venereal disease, and whenever the commissioner has reason to believe that such person is suffering from such disease, he may give notice, in writing, to such person requiring him to consult a physician or produce a certificate that such person is or is not suffering from the disease. If the commissioner is not satisfied with such certificate, he may authorize any health officer or any two physicians to examine such person to ascertain whether or not such person is suffering from the disease, and the said officer or physicians shall have power to examine the person accordingly, and shall report the result of his or their examination to the commissioner in writing. In case of a female one physician shall, if the person so desire, be a female physician if one be available. If the report states that the person is suffering from the disease, and the commissioner judges there is risk of infecting others, he may issue a warrant for the arrest of the person and detention in hospital for two weeks, where any examination necessary may be made. If further detention is deemed necessary, the governor, on the recommendation of the commissioner, may issue a warrant for the arrest and detention of the person for such time as he thinks fit and for treatment and examination. The detained person has the right to apply to the courts for an independent examination by two physicians, one named on behalf of the patient, who shall certify his state. Such appeal may not be repeated within six months of a previous appeal. The section applies to persons already in prison, and the hospital detention is to count as part of their term of imprisonment. The warrants issued authorize the use of force to carry them into effect, and the police "shall on sight of the warrant" render all necessary aid, under a penalty of \$100. No person shall knowingly infect any other person with venereal disease or knowingly do or suffer any act likely to lead to the infection of any other person with such a disease, under a penalty of \$250 or six months' hard labor. The commissioner is to provide, free of charge, all laboratory investigation necessary to accurate scientific diagnosis to all physicians. Powers are given to subsidize hospitals for the treatment of the infected, and at such hospitals the treatment shall be free. Every physician in receipt of any salary from the state shall examine and treat free of charge any infected person who applies to him, and the commissioner shall reimburse him under a penalty of \$25. All proceedings under these sections of the act in any court shall be *in camera*, and it shall be unlawful to publish in any newspaper a report of any such proceedings. The penalty for the first offense is \$500 or six months' imprisonment, and for the second offense \$2,500 or twelve months' imprisonment.

Advertisements of medicines or appliances for venereal diseases, impotence, or female irregularities are prohibited. No circulars, books or printed notices may be circulated by hand, exhibition, newspaper, or by the post. Finally, the government has issued a booklet on venereal diseases, so that ignorance cannot be pleaded as an excuse. The manner in which they are contracted, the symptoms, and the precautions to be taken by infected persons are described.

PARIS LETTER

PARIS, Aug. 3, 1916.

The War

THE TREATMENT OF WAR WOUNDS

At the Réunion médico-chirurgicale de la V-e armée, Dr. Leroy gave an account of the good results he has had in the treatment of war wounds by Lemaitre's method: thorough exploration of the track of the projectile, removal of all foreign bodies, excision of contused lacerated tissues, painting of the surfaces of the wound with tincture of iodine, primitive and secondary suture. The earlier the treatment the better the results. This method has the advantage of suppressing pus and fever and rendering amputation and suppurative arthritis rare, yet assuring to the wound a safe evolution without fear of insidious, late, gaseous gangrene, or of secondary hemorrhage, and above all, without production of those fistulas in the bone or muscle which are so refractory, and of those obstinate false joints which are almost invariably the consequence of operative abstention at the outset. This practice, which seems at first sight too bold and too free, is in reality prudent and eminently conservative; 298 wounded were treated according to this method, and 175 patients with wounds of the soft parts have all been discharged. The projectiles have been removed without suppuration and without fever. Many of the wounds cicatrized either by secondary or primary union (twenty-six cases of the latter). Primary suture is successful whenever cleaning out the wound is completely effected. The appearance of fever or of pus is a proof of defective operative technic. The results of this immediate disinfection are of a still more brilliant demonstrative value in joint wounds. Of eighteen articular wounds, thirteen have been cured with *restitutio ad integrum* of the joint (six knee joints out of seven cases observed), five were obliged to submit to total or partial resection because of the extent of the open lesions. There was no death and no amputation. Twenty-one cases of various fractures have also been treated; two amputations were necessary on account of the extent of the lesion; all the others have either been discharged or are firmly united or nearly so. Free excision of all muscular tissue which threatens to slough in gaseous gangrene has given results so satisfactory as to be astonishing. Of thirty-five cases of gaseous gangrene, Dr. Leroy lost only five. In two of these, the intervention had not been sufficiently free. These muscular resections have sometimes attained considerable proportions. The following up of the track has sometimes led to discovery of unsuspected lesions of important organs. Eight times, these were in the great vessels, three times in the vertebral canal (three cured without injury to spinal cord), one in the peritoneal cavity (transthoracic laparotomy, cured). Speaking generally, the mortality in ambulance cases has diminished by more than one half since application of this procedure.

PERIARTICULAR ABSCESSES COMPLICATING SUPPURATIVE ARTHRITIS OF THE KNEE

Dr. Chaput, hospital surgeon, has drawn the attention of the Société de chirurgie de Paris to the gravity of periarticular abscesses originating in the retrocondylar synovial membrane and which proves fatal to the majority of patients suffering from suppurative arthritis of the knee. These abscesses result from perforation of the synovial membrane. Some are produced by direct propagation of the infection. Others develop in the lymphatics of the space behind the knees, but this is rare. Others again form in the thickness of the vastus internus a little above the articulation. The diagnosis of periarticular abscesses is usually very difficult, and as a rule one does not recognize them until the last possible moment, at which time it is generally too late to cure the patient. It is possible, however, to make a much earlier diagnosis by observing the following signs: 1. Considerable edema of the leg and of the foot in the course of an arthritis of the knee should always make one suspect a posterior periarticular abscess. 2. When pressure on the thigh or on the calf provokes an increase in the flow of pus from the articular incisions, there exists a periarticular abscess. 3. This condition may also be suspected in every arthritis of the knee which, being well drained, continues to afford abundant discharge of pus accompanied by persistent fever. In the treatment of these abscesses, the only possibility of success is a very early and even preventive intervention. The articulation must be sufficiently drained, and all foreign bodies and bony splinters removed. If the fever does not pass away in forty-eight hours, one may suspect a periarticular abscess, and one

should excise at the points of election according to its position. These incisions very often evacuate the pus; or, if the abscess is not yet formed, they will prevent it.

PRODUCT OF THE SALE OF RED CROSS STAMPS

Since the commencement of the war, many persons have been in the habit of employing for their correspondence the Red Cross stamps. These stamps are of numerous kinds, each of the societies constituting the French Red Cross having published a series, but the most used are those which were issued by the Ministry of Posts and Telegraphs and serving for the franking of correspondence up to 10 centimes (practically 2 cents) 5 centimes of which goes to the Red Cross (THE JOURNAL, Oct. 31, 1914, p. 1591; Jan. 2, 1915, p. 68, and Jan. 22, 1916, p. 290). Up to the present, the amount collected by the Red Cross in this way is 1,508,000 francs (\$304,940). The organization has thus been able to increase by 350,000 the number of hospital days in its formations at the front.

Against Alcoholism

A delegation at the Ligue nationale contre l'alcoolisme, presided over by Professor Debove, has just drawn the attention of the ministry of public instruction to the importance of antialcoholism teaching in the schools and the desirability of issuing a circular drawing the attention of the teaching staff to the importance of the matter. The ministry has promised to send out such a circular particularly to the primary schools. The same delegate submitted to the ministry of the marine a complete program for antialcoholism propaganda among the personnel of the fleet and the workmen of the dockyard. The Ligue nationale contre l'alcoolisme intends also to undertake a campaign in the country in favor of total prohibition. On the other hand, the hygiene commission of the Chamber of Deputies, believing that the project adopted by parliament to suppress the privileges of the small distiller and to impose a surtax on alcohol is insufficient, has charged its reporter, Mr. Schmidt, to prepare a bill establishing the monopoly of the wholesale and retail sale of alcohol. This proposition is inspired by the example of Russia, where there is government monopoly of the manufacture of alcohol, and at the commencement of the war its sale throughout the empire was prohibited.

Eyeball Compressor for Investigation of Oculocardiac Reflex

It is known that compression of the eyeball causes a transitory modification of the cardiac rhythm which is known as the oculocardiac reflex, described by Aschner in 1908. In the normal condition, this reflex causes a slowing of the pulse (of from 4 to 10 beats to a minute); in a great number of pathologic conditions it is modified. Either the slowing is increased or the reflex is absent or there is an acceleration of the pulse. To provoke this reflex, it is usually necessary to have a recourse to an assistant. Digital compression varies necessarily with the assistant, it is not always uniform in the same person, it is not measurable, it is not aseptic, and it requires the presence of a third party. Dr. Roubinovitch of the hospital at Bicêtre has devised an apparatus which permits a regular, uniform, measurable, aseptic, mechanical compression of the eyeball. It can be employed without calling for the aid of a third person and without danger of sepsis.

A Strange Quack

Pierre Teillon, aged 60 years, formerly a wine grower, appeared recently before the courts accused of the illegal practice of medicine. It appears that he was in the habit of treating all sorts of cases by means of sulphuric acid, and that he had caused the death of one unfortunate woman. In answer to questions of the president, the accused gave the following reply:

"I had noticed that molds which grow in the inside of casks were completely destroyed by sulphuric acid. On the other hand, I had read in a dictionary that Pasteur recommends the application of sulphuric acid to the bites of rabid animals. From this I concluded that sulphuric acid is a product which, applied to the human body, was capable of producing cures by destroying the noxious principles of the blood which are different sorts of molds. Acting on my idea, I made some experiments, first of all on my horse which was at that time ill, later on myself, and then on my sister. We were all cured. Since that time, in the interests of humanity, I have set myself to treat with sulphuric acid all those who come to me. I wished my fellow men to profit from my discovery."

The tribunal recompensed the excellent intention of Pierre Teillon by condemning him to three months in prison.

Marriages

GEORGE FRANCIS BICKNELL, M.D., Indiana Harbor, Ind., to Miss Pansy Miller of Gary, Ind., at Valparaiso, Ind., August 23.

ASST. SURG. CARL MICHEL, U. S. P. H. S., to Miss Mary Eloise Field of Casa Rosa, San Juan, Porto Rico, August 12.

AUDLEY OWENTON SANDERS, M.D., Lindsay, Calif., to Miss Inga Hansen, of Hanford, Calif., at Los Angeles, recently.

CARLOS ALCIBIADES DE LA PUENTE BALDION, M.D., to Mrs. Mary A. Bennett, both of Philadelphia, August 16.

DANIEL PHILLIP KINCAID, M.D., to Miss Bessie Loraine Sowers, both of Memphis, Tenn., August 16.

ERNEST CHARLES ASBURY, M.D., to Miss Nellie Smith, both of St. Louis, at Detroit, recently.

ENOCH GEORGE KLIMSS, M.D., to Miss Estella Brozaitas, both of Philadelphia, August 17.

SIMEON ALFRED JACOBS, M.D., New York, to Miss Lena Siegel of Baltimore, August 20.

JOHN C. STEVENS, M.D., to Miss Mayanna Mayer, both of Harrisburg, Pa., August 15.

MOSES A. JONES, M.D., to Miss Irene Mershon, both of Valter, Okla., recently.

Deaths

Commander Edward Kershner, Medical Inspector, U. S. Navy (retired); Hagerstown, Md.; New York University, New York, 1861; aged 77; a Fellow of the American Medical Association; emeritus professor of naval, military and state hygiene in the New York Post-Graduate Medical School; a veteran of the Civil War, in which he was on duty on the *U. S. S. Cumberland* when she was sunk by the *Merrimac* in Hampton Roads; fleet surgeon of the Asiatic Station for several years; inspector of the Infant's Hospital, Randall's, Y., and of the Alms House, Blackwell's Island; who was retired from the navy, April 2, 1902, after seventeen years and seven months' sea service, and twelve years and eight months' shore or other duty; died suddenly in Hagerstown, August 20, from cerebral hemorrhage.

William Riley Franklin, M.D., Rockford, Ill.; Chicago Homeopathic Medical College, 1883; aged 57; a Fellow of the American Medical Association; a member of the consulting staff of the Rockford City Hospital, local surgeon of the Burlington System and the Rockford Interurban Railway; was drowned, while swimming at Michillinda, Mich., August 19.

Frederick D. Smith, M.D., Coopersville, Mich.; Philadelphia University of Medicine and Surgery, 1870; aged 71; formerly a Fellow of the American Medical Association; a member of the Michigan State Medical Society; for forty-two years a practitioner of Coopersville and president of the People's Savings Bank; died at his home, August 18.

George Whitehouse Ryan, M.D., Boston; Tufts Medical College, Boston, 1899; aged 44; a graduate of the U. S. Naval Academy, and a veteran of the Spanish-American War; for several years surgeon-in-chief of the Brockton (Mass.) Relief Hospital, and of the Boston Emergency Hospital; died at the Commonwealth Hospital, Boston, August 15.

John Ashby Rosenberger, M.D., Del Rey, Calif.; Jefferson Medical College, 1894; aged 44; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of California; was killed by the overturning of his automobile near Fresno, Calif., August 15.

Henry H. Roedel, M.D., Lebanon Valley, Pa.; University of Pennsylvania, Philadelphia, 1857; aged 84; for more than a century a practitioner of Lebanon; a member of the Medical Society of the State of Pennsylvania; died at his home, about August 18, from senile debility.

Thomas Hall Emery, M.D., Monkton, Md.; University of Maryland, Baltimore, 1896; aged 43; a member of the Medical and Chirurgical Faculty of Maryland; sanitary officer of the tenth district of Baltimore County; died at Saranac Lake, N. Y., August 15, from tuberculosis.

John Buchanan Murrey, M.D., Nashville, Tenn.; Vanderbilt University, Nashville, 1877; aged 67; for more than twenty years secretary for the Nashville Board of Underwriters; and

for a long time a practitioner and druggist of Nashville; died at his home, August 16.

Herschel DeLos Baker, M.D., Springfield, Mo.; University of Michigan, Ann Arbor, 1883; aged 64; a member of the Missouri State Medical Association and a specialist on diseases of the eye, ear, nose and throat; died at his home, August 14, from endocarditis.

Silas W. Fowler, M.D., Delaware, Ohio; Jefferson Medical College, 1871; aged 69; formerly a Fellow of the American Medical Association; author of a biography of the physicians of Delaware County, Ohio; died at his home, August 13, from pneumonia.

John S. Wallace, M.D., Brunswick, Mo.; Bellevue Hospital Medical College, 1873; aged 67; a Fellow of the American Medical Association; a member of the state senate; died suddenly, August 17, from heart disease, while on his way to make a professional call.

Joseph Leo Milton, M.D., Oakland, Calif.; University of California, Oakland, 1891; aged 46; a Fellow of the American Medical Association; professor of orthopedic surgery in the Oakland College of Medicine and Surgery; died at his home, August 19.

James H. Rose, M.D., Harrisburg, Ill.; Medical College of Evansville, Ind., 1878; aged 68; a member of the Illinois State Medical Society; and for thirty years a practitioner of Harrisburg; died at his home, August 17, from heart disease.

Josiah Washington Hoff, Ann Arbor, Mich.; a practitioner since 1844; aged 93; formerly a Fellow of the American Medical Association; a member of the Ohio State Medical Association for forty-five years; died at his home, July 23.

William Jefferson Rowe, M.D., Buford, Ga.; Medical College of Georgia, Augusta, 1887; aged 60; formerly a member of the Medical Association of Georgia; died at the home of his daughter in Flowery Branch, Ga., August 12.

Elijah C. Troutt, M.D., Birds, Ill.; St. Louis College of Physicians and Surgeons, 1907; aged 31; formerly a Fellow of the American Medical Association; died at his home, August 11, from progressive muscular atrophy.

Oliver Jay Ruth, M.D., Colchester, Ill.; Keokuk (Iowa) Medical College, 1891; aged 49; formerly a member of the Illinois State Medical Society; died in Winterset, Iowa, August 19, from intestinal obstruction.

Leander W. Burt, M.D., Lancaster, Calif.; University of Southern California, Los Angeles, 1905; aged 33; director of the Lancaster Chamber of Commerce; died at his home, July 18, from ptomain poisoning.

John Wesley Carver, M.D., East Peru, Iowa; Keokuk (Iowa) Medical College, 1906; aged 36; a member of the Iowa State Medical Society; a member of the town council; died at his home, July 31.

Wilbur Lee Pepper, M.D., Philadelphia; Jefferson Medical College, 1892; aged 40; a Fellow of the American Medical Association; died at his father's summer home, Rehoboth Beach, Del., August 13.

Marvin Debrill Parham, M.D., Church Road, Va.; Medical College of Virginia, Richmond, 1860; aged 79; a member of the Medical Society of Virginia; died in the Petersburg (Va.) Hospital, August 16.

Edward E. Berry, M.D., Plattville, Wis.; aged 87; Rush Medical College, 1866; surgeon of the Thirty-Third Wisconsin Volunteer Infantry during the Civil War; died at his home, August 9.

John H. Roebuck, M.D., Bethlehem, Pa.; University of Pennsylvania, Philadelphia, 1865; aged 76; a member of the Medical Society of the State of Pennsylvania; died at his home, August 17.

Charles Milton Hanna, M.D., Preston, Ohio; Kentucky School of Medicine, Louisville, Ky., 1898; aged 43; died at his home, August 16, from cerebral hemorrhage.

Clarence James Lockhart, M.D., Freedom, Pa.; Cleveland-Pulte Medical College, Cleveland, 1912; aged 28; was shot and killed by a patient at Freedom, August 20.

Dwight Snellen Babbitt, M.D., Defiance, Ohio; Eclectic Medical Institute, Cincinnati, 1869; aged 74; a veteran of the Civil War; died at his home, August 13.

E. Forest Harbert, M.D., Wyatt, W. Va.; College of Physicians and Surgeons, Baltimore, 1913; aged 32; died at his home recently from tuberculosis.

Elias Selig Feuerstein, M.D., Brooklyn; University of Vienna, Austria, 1887; aged 55; died at his home, August 15, from a nervous breakdown.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

THE HYPOPHOSPHITE FALLACY

Report of the Council on Pharmacy and Chemistry

The Council has adopted the following report and authorized its publication. W. A. PUCKNER, Secretary.

The introduction of hypophosphites into medicine was due to an erroneous and now discarded theory as to the cause of tuberculosis of which one Dr. J. F. Churchill of London, and later of Paris, was the promulgator and propagandist.¹ This theory was that the so-called "tuberculous diathesis" was due to a deficiency of phosphorus in the blood. Believing that the hypophosphites, while nontoxic, were capable of further oxidation in the organism, Churchill recommended them as the best means of supplying the supposedly lacking phosphorus. It is now known that tuberculosis is not due to a deficiency of phosphorus. Of more importance is the fact, now known, that little phosphorus, if any, is assimilated from the hypophosphites—far less than from phosphorus compounds of ordinary food.² There is no justification for giving hypophosphites for the sake of their phosphorus content. For various reasons, however—partly from force of habit and partly because of the power of advertising—many physicians still prescribe hypophosphite preparations, and consequently, they are still included in the Pharmacopeia and in textbooks on materia medica and therapeutics. They are put out in the form of "specialties" and of proprietary preparations, and are lauded extravagantly by the manufacturers of the latter.

Although the overwhelming weight of evidence was against the probability that the hypophosphite preparations are of value as therapeutic agents, the Council thought it well to investigate the subject. Dr. W. McKim Marriott of Baltimore was therefore requested to review the evidence for and against the therapeutic usefulness of the hypophosphites and to conduct such experiments as seemed necessary. His report has already appeared in THE JOURNAL.³

Dr. Marriott found that nine observers (Paquelin and Joly, Vermeulen, Boddaert, Massol and Gamel, Panzer, Delaini and Berg), who endeavored to test the alleged utilization of the hypophosphites in the organism, reported that there is complete, or practically complete, elimination of hypophosphites in the urine, with little or no effect on the body. Only one experimenter (Patta) claimed that a considerable amount of ingested hypophosphite was retained in the body; however, he used a method now known to be inaccurate and made obvious errors in calculation, so that his conclusions are unwarranted.

Since the evidence was even to this extent contradictory, Marriott performed a series of experiments. The methods of this study and details of results are described in his paper, in which he also discusses the experiments of some other observers. Marriott writes:

"None of the subjects of the experiment [Marriott's] experienced any effect whatsoever from the administration of the drug. . . . Almost all of the ingested hypophosphite is promptly eliminated unchanged. . . .

"These experiments [Forbes'] demonstrate conclusively that the hypophosphites possess no specific value as a source of phosphorus for the body. This is not to be wondered at in view of the fact that 85 per cent. of the phosphorus ingested in the form of hypophosphite is excreted unchanged, and there is no proof that even the remaining 15 per cent. is available to the organism. It is doubtful if there are any

conditions in which the body suffers from lack of phosphorus. Even should such conditions exist, phosphorus, in the form that it occurs in the ordinary foods, or as phosphates, is more efficient in supplying the deficit than hypophosphites that must be oxidized before utilization and which are only about 15 per cent. oxidized if at all. For example, half a glass of milk contains more available phosphorus than three large doses of hypophosphites of 15 grains each, as great a dosage as is usually given.

"What, then, is the therapeutic value of hypophosphites? There is no reliable evidence that they exert a physiologic effect; it has not been demonstrated that they influence any pathologic process; they are not 'foods.' If they are of any use, that use has never been discovered."

In view of the foregoing, it seemed to the Council advisable to examine the claims under which a few of the proprietary hypophosphite preparations are marketed. The following are representative:

FELLOWS' SYRUP OF HYPOPHOSPHITES

No very exact information concerning the composition is furnished by the manufacturers (Fellows Medical Mfg. Co., New York). They say that the product

" . . . contains the chemically pure hypophosphites of iron, quinin, strychnin, calcium, manganese and potassium, agreeably blended in the form of a bland, stable syrup with a slightly alkaline reaction. . . . "Each fluid drachm contains the equivalent of 1-64th of a grain of pure strychnin."

The Fellows' Hypophosphites advertising furnishes something like a barometer of the popular status of hypophosphites. In one circular (undated, but, from certain references contained in it, presumably issued ten or fifteen years ago) we read:

"It is an indubitable fact that the hypophosphites have earned the distinction of having their therapeutic value more completely established than have any other remedial agents. . . . it is only by accepting the current view, which was originally advanced by Mr. Fellows, that we can satisfactorily account for the incontestable fact that the hypophosphites are of supreme importance in the treatment of a very extensive variety of affections. . . . the hypophosphites increase the consumption of oxygen and the elimination of carbon dioxide. In this manner, they stimulate nutrition and promote constructive metamorphosis. . . . It is now universally conceded that the widespread utility of the hypophosphites is due to the fact that they substantially improve metabolic processes, thus increasing the disease-resisting capacity of all the tissues."

The circular, continuing, emphasizes the "incomparable phosphorus-contributing properties" of Fellows' Syrup, its "extraordinary reconstructive properties" and "the magnificent results which invariably attend its employment in the treatment of anemia, chronic bronchitis, chlorosis, neurasthenia, mollities ossium, delayed union of fractures, rickets, convalescence," etc.

A circular bearing the copyright date 1914, on the other hand, admits that:

"The theories for the favorable action of Fellows Syrup of Hypophosphites have undergone several changes."

The same circular further maintains, however, that:

" . . . the fact has never been challenged that in Fellows Syrup of Hypophosphites we have one of the most efficient, most complete, most all-round tonics and roborants in the materia medica."

No attempt is made to base this assertion on the therapeutic action of the constituents. In other words, the old theory, which formed the basis for the popularity of Fellows' Syrup, has been thrown overboard, but no substitute is deemed necessary; the momentum already acquired is apparently regarded as sufficient to insure its continued sale.

Fellows' Syrup of Hypophosphites is a semisecret, unscientific preparation—an affront to sound therapy—exploited by means of extravagant and misleading statements.

SYRUPUS ROBORANS (SYRUP HYPOPHOSPHITES COMP. WITH QUININ, STRYCHNIN AND MANGANESE)

Little information concerning this preparation seems to be furnished at present by the manufacturers, Arthur Peter & Co., Louisville, Ky. According to an old circular, it contains, in each fluidounce,

	Grains
"Hypophos. Potass.	1½
Hypophos. Manganesc	1
Hypophos. Lime	1
Hypophos. Iron	1½
Hypophos. Quinin	6/16
Hypophos. Strychnin	1/16
"1/128 grain Strychnia to Teaspoonful."	

1. Churchill, J. F.: De la cause immédiate et du traitement spécifique de la phthisie pulmonaire et des maladies tuberculeuses, Paris, 1858.
2. The Hypophosphite Fallacy, THE JOURNAL, April 25, 1914, p. 1346.
3. Marriott, W. McKim: The Therapeutic Value of the Hypophosphites, THE JOURNAL A. M. A., Feb. 12, 1916, p. 486.

Further, according to the same circular:

"The Hypophosphites are especially useful in all diseases where there is a lack of nutrition. . . . They are the best of all remedies in Rachitis, non-union of fractures, Osteomalacia and Syphilitic Periostitis."

As for Syrupus Roborans itself:

"This elegant preparation is . . . the best general tonic and constructive known."

The unwarranted therapeutic claims formerly made for it seem to be no longer circulated. Syrupus Roborans is an unscientific, shotgun mixture.

SCHLOTTERBECK'S SOLUTION HYPOPHOSPHITES OF LIME AND SODA
(LIQ. HYPOPHOSPHITUM, SCHLOTTERBECK'S)

The Schlotterbeck & Foss Co., Portland, Maine, the manufacturers, say of their preparation:

"This solution contains 30 grains of the combined Hypophosphites of Lime and Soda to the ounce. It contains No Sugar, No Acid and it is Perfectly Neutral."

"Indications for use.—Galactostasis, Imperfect Metabolism, Neurasthenia, Nervous Dyspepsia, Insomnia, Convalescence, Acetonuria, Cyclic Vomiting in Infants, Diabetes, Starvation, Deficiency of Lime, Mother's Death during Pregnancy, Dentition of Infants, Rachitis, Furunculosis, Premature Parturition, Obesity."

"Migraine is often caused by conditions for which this Solution is one of the most satisfactory remedies."

"In Insomnia due to advancing age, it will often act as a hypnotic."

Of the hypophosphites the Schlotterbeck & Foss Company say:

"If 'damning it with faint praise' on the part of some of the leading medical authorities, or utterly condemning it as useless, on the part of others, would kill a medicine, the Hypophosphites would long since have disappeared as medicinal agents. Negative testimony in regard to the value of a drug does not settle anything."

Of their own preparation they say:

"When we get the results that ought to follow the administration of hypophosphites, we have proved that Schlotterbeck's Solution enters the system unchanged."

"This Solution is primarily a blood and nerve tonic and chemical preparation."

Schlotterbeck's Solution of Hypophosphites of Lime and Soda is a semisecret preparation marketed under claims that are both unwarranted and misleading.

ROBINSON'S HYPOPHOSPHITES

According to the manufacturers, the Robinson-Pettet Company, Louisville, Ky., each fluidounce of this preparation contains:

Hypophosphites Soda	2	gr.
Hypophosphites Lime	1 1/2	gr.
Hypophosphites Iron	1 1/2	gr.
Hypophosphites Quinin	3/4	gr.
Hypophosphites Strychnine	1/16	gr."

is claimed to be

Nutritive, Tonic Alterative. A Standard Remedy in the treatment of Pulmonary Phthisis, Bronchitis, Scrofulous Taint, General Debility, Anemia, etc. Stimulates Digestion, promotes Assimilation."

He declared composition of the preparation is unscientific, and the therapeutic claims are unwarranted.

EUPEPTIC HYPOPHOSPHITES

Robinson, Baker & Co., Detroit, Mich., who market Eupeptic Hypophosphites, call this preparation:

"A superior combination containing the Hypophosphites of Potassium, Calcium, Iron and Manganese, and the bitter tonics, Quinin and Strychnine, agreeably associated with natural digestive ferments of the gastric secretion. It is thus a general reconstructive tonic. . . . It is of especial value in the treatment of mental and nervous diseases, in debilitated conditions generally and in all exhaustion from over work."

On the basis of the manufacturer's statement, Eupeptic Hypophosphites must be regarded as a semisecret, unscientific, shotgun preparation, exploited through unwarranted therapeutic claims.

McARTHUR'S SYRUP OF THE HYPOPHOSPHITES COMP. (LIME AND SODA)

As far as the recent literature and trade package are concerned, no information as to the composition of this product is furnished beyond what is conveyed in the name. The advertising for McArthur's Syrup, like that for Fellows' Syrup and Peters' Syrupus Roborans, has been modified as it has passed. A few years ago it was advertised under the same claims as the following:

" . . . Has Stood the Test during many years for unequalled efficacy in the treatment of Tuberculosis. . . . Indicated also as a Tonic and Tissue Builder in convalescence from Fevers, in Nervous Diseases, Rickets, Senile Debility and Bronchitis."

"Its use is indicated in . . . diseases of the chest, chronic cough, throat affections, general debility, brain exhaustion, cholera infantum and wasting diseases of children."

At present no definite claims seem to be made for it; the manufacturers evidently find the magic name of hypophosphites sufficient to evoke the spell for which the advertisement writer's aid was once sought. A testimonial contained in a circular which seems to be still used illustrates both the kind of aura which surrounds hypophosphites in the minds of physicians who are still living in the past, and the kind of logic which has made the reputation of this and many other equally worthless preparations.

"Just about six years ago I had a severe attack of La Grippe which almost killed me. Left me with Asthma (Catarrh) and a severe cough. Did not get out of the house for three months. Took over a dozen bottles McArthur's Hypophos. — came out all right and since then worked hard, but last Fall took another cold, but worked on, used McArthur's Hypophos., am using it now, am on my 12th bottle."

"I have five or six patients whom I have put on McArthur's Hypophos., but I do not prescribe the single bottle, but *wholesale* no less than half dozen bottles. One patient is on his 24th bottle with orders to get another half dozen and keep it up all winter. I have given the same order to all (keep it up all winter) and I myself intend to do the same, for with its use I have lost no time — rain or shine I am doing my work. I know what it has done for me and what it is doing for my patients."

It would be hard to find a more characteristic example of the naive mental processes of the simple folk who in all good faith write testimonials for worthless medicines. This well-meaning practitioner (a homeopath, by the way), because he "came out all right" after an attack of grip, returns all praise to McArthur's Hypophosphites, which he has taken "wholesale." Not the faintest doubt of the validity of his *post hoc ergo propter hoc* argument seems to glimmer across his consciousness.

McArthur's Syrup of the Hypophosphites is an irrational preparation. While its faults are fewer and less glaring than those of some other proprietaries, the circulation of such a testimonial as the one just quoted is sufficient of itself to cast suspicion on the product.

BORCHERDT'S MALT OLIVE WITH HYPOPHOSPHITES, MALTZYME WITH HYPOPHOSPHITES, MALTINE WITH HYPOPHOSPHITES AND MALTINE WITH OLIVE OIL AND HYPOPHOSPHITES

These preparations are now described in the appendix to New and Nonofficial Remedies. Borchardt's Malt Olive with Hypophosphites (Borchardt Malt Extract Company, Chicago) is said to contain in each 100 c.c., 0.64 gm. each of calcium and sodium hypophosphites, with malt extract, olive oil and glycerin. Maltzyme with Hypophosphites (Malt-Diastase Company, New York) is said to contain, in each 100 c.c., 0.4 gm. each of calcium, sodium and potassium hypophosphites and 0.005 gm. each of iron and manganese hypophosphites, with maltzyme. Maltine with Hypophosphites (Maltine Company, Brooklyn, N. Y.) is said to contain in each 100 c.c., 0.64 gm. each of calcium and sodium hypophosphites and 0.42 gm. of iron hypophosphite, with maltine. Maltine with Olive Oil and Hypophosphites (Maltine Company, Brooklyn, N. Y.) is said to contain, in each 100 c.c., 0.6 gm. each of calcium and sodium hypophosphites, with maltine and olive oil. In general, no therapeutic claims are made for these mixtures so far as the hypophosphites are concerned. The addition of hypophosphites to such mixtures is irrational and, since it tends to perpetuate the hypophosphite fallacy, detrimental to sound therapeutics.

THE COUNCIL'S ACTION

The Council endorsed the conclusions of the work of Dr. Marriott referred to above, and voted: (1) that the therapeutic use of hypophosphites (except possibly in some cases as a convenient means of administering the positive element in the salt, as ammonium in ammonium hypophosphite or calcium in calcium hypophosphite) is irrational; (2) that the merits of each hypophosphite salt submitted for consideration under the foregoing exception must be judged individually, and (3) that Fellows' Syrup of Hypophosphites, Peters' Syrupus Roborans, Schlotterbeck's Solution Hypophosphites of Lime and Soda, Robinson's Hypophosphites, the Eupeptic

Hypophosphites of Nelson, Baker & Co., and McArthur's Syrup of the Hypophosphites are ineligible for inclusion in New and Nonofficial Remedies, and that Borchardt's Malt Olive with Hypophosphites, Maltzyme with Hypophosphites, Maltine with Hypophosphites, and Maltine with Olive Oil and Hypophosphites be deleted from the appendix of N. N. R. Of these preparations, all are in conflict with Rule 10; Fellows' Syrup, Schlotterbeck's Solution, Robinson's Hypophosphites and Nelson, Baker & Co.'s Eupeptic Hypophosphites are in conflict with Rule 6; the Fellows, Schlotterbeck, and Nelson, Baker preparations are also in conflict with Rule 1.

Correspondence

Publication of Death Certificates

To the Editor:—A physician may not reveal the nature of his patient's illness during the patient's life without danger of legal penalty. But when the patient dies, the physician is required to give the cause of death in a certificate, which at once becomes a public document. Many newspapers, as a custom, publish these certificates daily in a special column. The obligation of secrecy during life, and the legal necessity which results in publicity after death, are strange contradictions.

One of the evil results is that in many instances the actual cause of death is not given. What family will submit without protest to a certificate which gives syphilis, morphinism or alcoholism as the cause of death of one of its members, when it is known that that cause will be made public for the gratification of the morbidly curious and to the distress and shame of the family? Unless this practice of publishing death certificates is discontinued, there will be no accurate data on the diseases which are regarded as shameful. Further, since some other cause, usually a secondary one, must take the place of the actual cause, statistical evidence will continue to suffer confusion.

A few examples which I have observed in consultation may be cited:

A morphin habitué died of the direct results of withdrawal of morphin. The cause of death was certified as arteriosclerosis, which was present, but certainly did not cause death.

A man, aged 40, died suddenly of cerebral hemorrhage. Syphilis had been recently diagnosed by means of blood and spinal fluid tests. The cause of death was certified as apoplexy.

A man, aged 44, under treatment for malignant syphilis, died from the immediate effects of apoplexy, which was given as the cause of death.

A man, aged 50, suffered from aphasia and mental symptoms suggesting paresis. He was a known syphilitic and died evidently from focal softening. The cause of death was given as apoplexy.

A man, aged 54, suffering from locomotor ataxia, with a known history of syphilis, died from the immediate effects of rupture of the heart, undoubtedly due to gumma and scar tissue formation. The cause of death was given as myocarditis.

A woman, aged 41, gave a history of two weeks' violent headache accompanied by vomiting. Double choked disks were found, both blood serum and spinal fluid gave strong positive Wassermann reactions, and the spinal fluid contained an excess of globulin and 200 cells per cubic millimeter. The cause of death was certified as meningitis.

Clearly, all save the first death were due to syphilis, though in no single instance was the certificate made in such a way as to indicate its presence, either as a remote or an immediate factor. On the other hand, in every instance the immediate cause of death as given was clearly present, though in reality it was in the nature of an artefact.

The mortality from syphilis has long been understated. Twenty years ago it was quite generally taught in clinics that syphilis was a negligible cause of death, except as it was an etiologic factor in paresis and locomotor ataxia. Recognition of its frequency and high mortality rate has steadily increased since that time, until at present we are beginning to get an inkling of its destructive influence. The accompanying table, rearranged from the United States census statistics for 1913, shows the mortality from syphilis, tabes and paresis in the registration area, with a second column showing the figures extended to cover the estimated

rate for a total population of 100,000,000, paresis and tabes being, it is assumed, simply modified syphilis.

MORTALITY FROM SYPHILIS, TABES AND PARESIS

	Registration Area, Population 63,298,718, No. of Deaths	Total Area, Population 100,000,000, No. of Deaths
Syphilis	4,589	7,284
Tabes	1,674	2,657
Paresis	4,371	6,936
Total	10,634	16,877

It seems probable that the number of deaths from paresis is reasonably accurate, since the vast majority of patients suffering therefrom die in institutions, and the true cause is given, though even here errors of omission must be more frequent than errors of commission. Deaths from locomotor ataxia are probably properly certified in most instances, as far as the diagnostic ability of the medical attendant permits. But deaths from syphilis are clearly vastly understated. In my practice, except in institutional work, I have never known a family physician to give syphilis as the cause of death. Rarely paresis has been given. Yet during the time the five cases cited above came under my observation, had they constituted all the false certificates given in the territory from which they were drawn, and were the ratio applied to the whole United States, at least 2,000 deaths could be added to this cause alone. As a matter of fact, they probably do not constitute one-fifth the total number of erroneous certificates of death due to syphilis. How much has the publication of death certificates to do with false certificates such as those cited above?

I am not inclined to criticize those who give some euphonious designation of the cause of death as a substitute for syphilis, etc., for I believe that the dead, or at least the living relatives of the dead, have the same right to privacy as the living patient. Nevertheless, there ought to be some remedy for this state of affairs.

I suggest that the American Medical Association, through its component state associations, take some action to make publication of death certificates illegal. It is true that even were such acts passed and enforced, false certificates would still be issued. But such legislation would certainly tend to increase the percentage of accurately reported cases.

WILLIAM HOUSE, M.D., Portland, Ore.

Better Medical Care for Rural Communities

To the Editor:—I have read the Current Comment on the subject (THE JOURNAL, August 19) in which you assume scarcity of physicians in rural communities, and state, as the cause thereof, the persistent demand on the part of the public for "specialists." Speaking from experience and observation gained as a country doctor, I do not believe there is any scarcity of physicians in rural communities in this country, except possibly in a few isolated instances. During June and July of this year I traveled through the Southwest, Oklahoma and Kansas. A large part of that time was spent in rural Oklahoma. Oklahoma is a new country, and one would naturally expect to find a scarcity of physicians in new sparsely settled country, if they were to be found in any place. But I found no scarcity of physicians there. Even a little hamlet had two or three.

For the past four years, I have been located in a rural community in Pennsylvania and am well acquainted with conditions from a medical point there, and I can assure you there is no scarcity of physicians in rural Pennsylvania. I am located in a prosperous agricultural country, with coal mines on the west of us and oil in the east. Most of the people are in comfortable circumstances, and on account of a great many of them having oil on their farms, many are wealthy, comparatively speaking. We are only 12 miles from a city of 30,000, and about 50 miles from Pittsburgh, yet none of the people, or at least very few of them, run off to the cities to consult "specialists," except on the advice of myself, or some of the other physicians located in the community. Among the objectionable features of a country practice

ice are hard work, poor fees, and long drives over roads almost impassable with snow or mud. A machine can be used only a few months in a year. The houses are poor; almost all houses in the country are insanitary and without any of the modern conveniences. There are lack of facilities for educating the children, and lack of amusement. All these disadvantages make the average country doctor dissatisfied with his lot in life, especially if he and his wife have been accustomed to living in a city or large town. Almost all of the physicians in this part of the country are capable men, and I think they are far more resourceful than the average city practitioner. Allow me to digress to say I am not finding any fault with your main argument. To lower the entrance requirements to the medical colleges would not make matters any better.

C. S. HUNTER, M.D., West Sunbury, Pa.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, and these will be omitted, on request.

ALDEHYD IN URINE

To the Editor:—1. Can you give me a test for aldehyd in the urine?
2. What significance has it in liver conditions? Please use initials only.

S. R. S.

ANSWER.—1. The tests for reducing sugars, such as Fehling's, depend on the presence in the urine of substances having an aldehyd or ketone structure. The reduction of the copper salt in this ordinary sugar test, therefore, is due to the presence of aldehyds or ketones. A well known test for aldehyd is Schiff's fuchsin reaction: Dissolve 0.2 gm. of rosanilin or the hydrochlorid in 10 c.c. of a freshly prepared, saturated aqueous solution of sulphur dioxid. Allow the solution to stand until all signs of pink disappear and it comes colorless or pale yellow. Then dilute with water to 10 c.c. and preserve for use in a tightly stoppered bottle. This reagent turns pink or violet on the addition of an aldehyd. The solution must be carefully prepared and does not keep.

2. Aldehyd in the urine would have the same general significance as sugar. There is a difference of opinion as to whether the presence of one or more of the various sugars, with or without acetic and diacetic acid, definitely indicates disease of the liver. It has been shown experimentally that interference with the circulation of the liver causes no glycosuria. Von Moraczewski and Herzfeld have made tests which indicate that there is no specific substance eliminated in the urine which is exclusively characteristic of liver disease. There is some evidence that the presence of acetone in the urine bears some relation to liver conditions.

POISON OAK AND POISON IVY

To the Editor:—Relative to your Current Comment on "The Poison Principle of Poison Oak". (THE JOURNAL, Aug. 5, 1916), I should like to state that this principle must be highly volatile. Living, as I do, in a country where poison oak abounds, one often sees susceptible people poisoned by simply riding along roads where the "fence rows" have been freshly mown in July and early August. Apparently the principle is water soluble, as people who are perspiring are much more easily poisoned than those with cool, dry skin. People in the country often wash themselves with an alkaline bath. Some use sodium bicarbonate, others ammonia in water under the impression that the poison is an acid. Whether the principle is an acid or an essential and highly volatile oil I do not presume to know. The ammonia bath is, at best, not harmful to the patient if not taken too strong.

L. G. LELAND, M.D., Newton Falls, Ohio.

ANSWER.—Dr. Leland doubtless refers to the poison ivy, *Rhus toxicodendron*, as the true poison oak, *R. diversiloba*, not found in Ohio. It has been shown that the poisonous constituent of the poison ivy is neither volatile nor water soluble, the popular belief to the contrary notwithstanding. The poison exists in the form of a thick emulsion which readily sticks to the hands and clothing and which under certain conditions may retain its activity for months or years. The great abundance of poison ivy makes it easy for the clothing to become contaminated with this emulsion without the knowledge of the wearer, so that poisoning may

take place at any time. After the symptoms appear, the sufferer may remember that two or three days previously he had walked near some of the toxic plants, but knows that he did not touch any of them. He assumes, therefore, that the poison must have reached him by passing through the air. Then, too, there are a large number of plants which are reported to have occasionally produced poisoning like rhus so that it is probable that in some cases of supposed poisoning without contact the victims may have encountered some one of these rather than one of the rhus species. It was formerly believed that the rhus poison existed in the pollen and in the minute hairs of the plants. Alighting on the skins of sensitive persons, especially if the victims are perspiring, the pollen grains or hairs are not easily rubbed off, and it was assumed that poisoning might result. Many cases of poisoning without known contact with the plants were accounted for in this way until it was shown by indisputable chemical tests that neither the plant hairs nor the pollen grains contain any of the poison.

Since the poison is soluble in alcohol and in alkalies, the best preventive of poisoning after exposure is to wash the parts with alcohol or with alcohol containing a little dissolved sodium hydroxid. In absence of alcohol, gasoline may be used. An aqueous solution of an alkaline soap is effective. An aqueous solution of sodium bicarbonate is less effective but is useful.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

CALIFORNIA: Los Angeles, Oct. 3. Sec., Dr. Charles B. Pinkham, Room 527 Forum Bldg., Sacramento.
COLORADO: Denver, Oct. 3. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.
GEORGIA: Atlanta, Oct. 10-12. Sec., Dr. C. T. Nolan, Marietta.
IDAHO: Wallace, Oct. 3. Sec., Dr. Charles A. Dettman, Burke.
KANSAS: Topeka, Oct. 10-12. Sec., Dr. H. A. Dykes, Lebanon.
MASSACHUSETTS: Boston, Sept. 12-14. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.
MICHIGAN: Lansing, Oct. 10-12. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.
MINNESOTA: Minneapolis, Oct. 3-6. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.
MISSOURI: Kansas City, Sept. 18-20. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.
MONTANA: Helena, Oct. 3. Sec., Dr. William C. Riddell, Helena.
NEW YORK: Albany, Buffalo, New York and Syracuse, Sept., 19-22. Mr. Harlan H. Horner, Chief Examinations Division, The University of the State of New York, State Department of Education, Albany.
PORTO RICO: San Juan, Oct. 3. Sec., Dr. Quevedo Baez, San Juan.

Montana April Report

Dr. W. C. Riddell, secretary of the State Board of Medical Examiners of Montana, reports the written examination held at Helena, April 4-6, 1916. The total number of subjects examined in was 10; total number of questions asked, 50; percentage required to pass, 75. The total number of candidates examined was 29, of whom 21 passed and 8 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Bennett Medical College....	(1907) 76.9; (1913) 75.2; (1915)		76.7
Chicago College of Medicine and Surgery.....	(1913)		75.3
College of Physicians and Surgeons, Chicago.....	(1902) 76.4, 82.4; (1905) 81.3; (1908)		75.3
Illinois Medical College.....	(1903)		78.2
Jenner Medical College.....	(1915)		77.6
University of Illinois.....	(1913)		76.7
Keokuk Medical College, Coll. of Phys. and Surgs....	(1908)		75.1
Johns Hopkins University.....	(1899)		85.6
University of Michigan Medical School.....	(1909)		79.1
University of Minnesota.....	(1900) 81.2; (1910)		76.8
St. Louis College of Physicians and Surgeons.....	(1906)		76.4
University of Missouri.....	(1906)		78.3
John A. Creighton Medical College.....	(1914)		79.1
Columbia University, College of Phys. and Surgs....	(1911)		78.1
Jefferson Medical College.....	(1915)		75.9

College	FAILED	Per Cent.
Chicago College of Medicine and Surgery.....	(1916)	70.1
College of Physicians and Surgeons, Chicago.....	(1910)	70.2
Fort Wayne College of Medicine.....	(1892)	52.7
University of Louisville.....	(1908)	*
College of Physicians and Surgeons, Baltimore.....	(1914)	74.1
Starling Ohio Medical College.....	(1913)	71.5
Milwaukee Medical College.....	(1912)	64.6
Western University, London, Ont.....	(1914)	67.3

* Did not complete the examination.

Book Notices

THE PHARMACOPEIA OF THE UNITED STATES OF AMERICA. Ninth Decennial Revision. By Authority of the United States Pharmacopeial Convention, held at Washington, D. C., May 10, 1910. Prepared by the Committee of Revision and Published by the Board of Trustees. Official from Sept. 1, 1916. Cloth. Price, \$3. Pp. 728. Philadelphia: P. Blakiston's Son & Co., 1916.

The ninth revision of the United States Pharmacopeia, which has been over six years in the hands of the Committee of Revision, has just appeared. As was to be expected, the desire of medical men on the Committee of Revision to have therapeutic value made a requirement for admission to the Pharmacopeia has not been fully realized; it remains a book of standards for therapeutically good, bad and indifferent remedies. Among the drugs of little or no therapeutic importance or value are musk, arnica, eriodictyon, quassia, pumpkin seed, saw palmetto berries, sarsaparilla and couch grass. Many superfluous drugs and preparations are included. For instance, of the nine forms of quinin described (quinin alkaloid, bisulphate, dihydrochlorid, hydrobromid, hydrochlorid, salicylate, sulphate and tannate, and quinin and urea hydrochlorid), at least four might well have been eliminated. Two insoluble forms (the alkaloid and the tannate), two soluble forms (the hydrochlorid and quinin and urea hydrochlorid), and a moderately soluble form (the sulphate) are all that could reasonably be demanded by even the most extreme partisans of the doctrine of "pharmaceutic necessity." Further, the use of quinin salicylate for its salicylic acid content and of quinin hydrobromid for its bromid content is unscientific. The inclusion of these salts in the Pharmacopeia is regrettable.

Those interested in the promotion of rational therapy will also regret the inclusion of a number of fluidextracts of violently toxic drugs, such as aconite and gelsemium (dose $\frac{1}{2}$ minim each), belladonna root, digitalis, nux vomica and ipecac (dose 1 minim each), and lobelia (dose $2\frac{1}{2}$ minims). The more diluted forms, the tinctures, of these drugs are preferable. The inclusion of such fluidextracts in the Pharmacopeia is playing into the hands of certain pharmaceutical manufacturers, who recommend the tinctures be prepared from fluidextracts—an unscientific procedure.

The efforts of the medical members of the committee, however, have not been entirely fruitless. Of the articles described in the U. S. Pharmacopeia VIII, 243 have been deleted; sixty-seven new articles have been added. The loss of 167 titles may be set down as a gain. Moreover, most of the new substances give promise of therapeutic usefulness. Thirty-six are taken over from New and Nonofficial Remedies; nineteen are substances which are in the edition of Useful Drugs now in the press. It cannot be said, however, that all of the additions have been judiciously selected. It is an infelicitous time to add calcium and sodium glycerophosphate just when grave doubts of their therapeutic efficiency are being felt. The addition of the extracts of aconite, hydrastis and viburnum prunifolium is likewise unfortunate. All are superfluous preparations, the first because a drug so powerful that an average dose of the extract is only 10 mg. or $\frac{1}{6}$ grain is better given in the form of tincture; the second because hydrastis is a drug of uncertain value, already represented by three preparations, and the third because viburnum prunifolium has been discarded and discredited by the best therapeutic authorities. It must be accounted clear gain, on the other hand, that the deletions include many inert, obsolete or superfluous substances like bismuth citrate, kaolin cataplasm, pipsissewa, coca leaves, ladyslipper, wahoo, cotton root bark, compound acetanilid powder and compound syrup of hypophosphites, not to mention nine salts of iron and thirty-eight fluidextracts of various drugs. Wines, unmedicated and medicated, whisky and brandy are also among the articles dropped.

A number of new features are introduced, such as microscopic standards for powdered drugs, standard abbreviations for titles, the use of the term "mil" instead of "cubic centimeter," and a chapter each on sterilization, diagnostic reagents, biologic assays, electrolytic determination of metals

and the determination of alcohol, the melting point, the boiling point and the congealing point.

The chemical nomenclature is substantially the same as that adopted in the previous revision; so is the nomenclature of drugs. The addition of official abbreviations for the Latin titles of drugs will doubtless be found a useful feature.

Less commendable is the change from the familiar "Cc." to "mil." The term "cubic centimeter" is so thoroughly established and so widely used, wherever the metric system is employed, that it cannot be expected that it will be universally displaced by the word "mil." The latter is therefore only a superfluous synonym, and as such out of harmony with the simplicity of the metric system. Perhaps it may even be taken for the abbreviation of "millimeter," "milligram" or other words derived from "mille," which would be equally entitled to the same abbreviation.

AUTOPLASTIC BONE SURGERY. By Charles Davison, M.D., Professor of Surgery, University of Illinois, and Franklin D. Smith, M.D., Clinical Pathologist to University Hospital. Cloth. Price, \$3.50 net. Pp. 369, with 174 illustrations. Philadelphia: Lea & Febiger, 1916.

This is an excellent contribution to the subject of bone surgery; it presents in a small, compact volume both the theoretical and the practical considerations of the various phases of transplantation. The changes which the transplant undergoes and the part played by each of its constituents are discussed. The indications for transplantation and the technic, including the necessary instruments, are given. Most of the practical side is devoted to the treatment of fractures. The use of the transplant is urged in recent fractures where the position after attempts at reduction is unsatisfactory. Tuberculosis of the spine and congenital defects and deformities are less extensively discussed. Davison prefers to use a section of the subperiosteally resected fibula as the transplant. Regeneration of the defective shaft from the remaining periosteum is illustrated by some of his cases. The results obtained by pegging with a transplant in case of fracture of the neck of the femur are particularly good. The illustrations are good, and an excellent bibliography is attached.

THE NATIONAL FORMULARY. By Authority of the American Pharmaceutical Association. Prepared by the Committee on National Formulary of the American Pharmaceutical Association. Official from Sept. 1, 1916. Fourth Edition. Cloth. Price, \$2.75. Pp. 394. Published by the American Pharmaceutical Association, 1916.

The fourth edition of the National Formulary appears simultaneously with the U. S. Pharmacopeia IX, and is to become official at the same time (September 1). The principles which determine its scope, as frankly set forth in the preface, are apparently the same as those applied, though more faintheartedly, in the compilation of the Pharmacopeia. A statement in the preface of the new National Formulary runs:

"The scope of the present National Formulary is the same as in previous issues, and is based on medical usage rather than on therapeutic ideals. The committee consists entirely of pharmacists, or of men with a pharmaceutical training and it cannot presume either to judge therapeutic practice or to follow any particular school of therapeutic practice. The question of the addition or deletion of any formula was judged on the basis of its use by physicians and its pharmaceutical soundness. The considerable use by physicians of any preparation was considered sufficient warrant for the inclusion of its formula in the book, and a negligible or diminishing use as justifying its exclusion."

Part I of the volume contains formulas, good, bad and indifferent, including the equivalents of a large number of shotgun proprietaries. Part II contains descriptions of drugs. This is a new feature. The purpose is to provide standards for those drugs not described in the Pharmacopeia but used in N. F. preparations. Many of these drugs were described in the U. S. Pharmacopeia VIII, but have not been included in the ninth revision. Practically all are either worthless or superfluous. Part III contains descriptions of special tests and reagents.

Among the therapeutically useful formulas are those for aromatic castor oil, emulsion of castor oil, sprays of

nebulae, solution of aluminum acetate, solution of aluminum subacetate and wine of antimony. The two last named are also included in "Useful Drugs." Several formulas for new classes of preparations which may or may not be found superior to old forms are paste pencils for the application of medicaments to limited areas of the skin, mulls, which are ointments spread like plasters, and fluidglycerates, which are fluidextracts in which glycerin takes the place of alcohol. It should be noted also that, as a result of criticism, the alcohol content of some preparations has been reduced.

As a whole, the present edition of the National Formulary, like its predecessors, is "pharmaceutically useful but not a therapeutic necessity." To say that it is not a therapeutic necessity is to state the matter mildly, since most of the formulas and almost all of the drugs described have been discarded long since by rational therapists. So long as there are physicians who prescribe therapeutic monstrosities, however, the druggist should have the aid that is furnished by this book in compounding them. From the pharmacist's point of view, therefore, the book is a valuable one. Physicians who have a scientific training in the pharmacology of drugs will not want it; others will be better off without the temptations offered by its many irrational formulas.

Miscellany

Preventive Medicine and American Research—An Appreciation from Abroad

It is perhaps not sufficiently remembered by us how deeply the world is indebted to American investigators in the field of preventive medicine. American researches have thrown a bright light upon difficult problems concerning what we call tropical disease. Yellow fever may be instanced in this connection. It was in 1900 that the United States government appointed a commission to proceed to Havana, under the leadership of Major Walter Reed, of the Medical Corps, with whom were associated Assistant Surgeons James Carroll, Jesse W. Lazear, and A. Agramonte, to investigate the etiology of this disease. They succeeded in demonstrating among other things that it was spread by the bites of infected *Anopheles* mosquitoes and in no other way, and Reed's experiments remain as models of scientific research, both for the attitude with which they were adapted to the points to be solved and for the precautions taken to exclude all sources of error. To their everlasting credit the American soldiers offered themselves fearlessly as subjects for experiment; one of them after being bitten by infected mosquitoes contracted the disease, among them being Carroll and Lazear, the latter of whom died a martyr to science. Based upon these experiments, preventive measures, including mosquito destruction, were formulated at Havana, which for 150 years or more had been a veritable hotbed of yellow fever, from which since 1901 the disease has completely disappeared, save for a few occasional imported instances. The same methods have been employed more recently in other endemic areas of the disease, such as Rio de Janeiro, Para, Haos and elsewhere, from which yellow fever has now vanished. Another great victory was achieved, and an important lesson given to all tropical countries, in the Panama Canal Zone, where yellow fever, malaria and other insect-borne diseases had in the past ravaged the population year after year. The Americans began to construct the Isthmian Canal in 1904, and Colonel (now Surgeon-General) Gorgas, who had formerly served as chief sanitary officer at Havana, on Reed's commission had made their experiments, was appointed chief of the new sanitary department. In view of the previous disastrous experiences in this region it is not to say that without the labors of this sanitary department the Panama Canal would never have been completed. Through the well directed measures of Colonel Gorgas and his staff, yellow fever, malaria, blackwater fever, dysentery

and other diseases were brought entirely under control, and the general death rate among the laborers, which was 52.45 per 1,000 in 1904 fell to 20.49 in 1912. Briefly, what was once an intensely unhealthy area became salubrious, and the doctrines of Manson and Ross were triumphantly established. The work at Panama, like that at Havana, is always alluded to by writers on germane subjects, but its detailed history would repay more attention than it has received, while there are other valuable American contributions to preventive medicine which are frequently passed over. The investigation of that mysterious disease pellagra has been very carefully prosecuted in the United States in recent years, by the McFadden Thompson Commission of New York and other workers, and already with encouraging results. A great decrease has recently taken place in America and other parts of the world, including Egypt, in the incidence of ankylostomiasis or hookworm disease, due partly to the efforts of Ashford and others with the assistance of the American International Commission, an offshoot of the Rockefeller Foundation. The etiology of exanthematic typhus was independently worked out by two groups of American investigators, Anderson and Goldberger, and Ricketts and Wilder; it was only an unlucky chance which prevented the earlier publication of their results before those of M. Nicolle and his collaborators in Tunis had made public their incrimination of the body louse as the insect transmitter of this disease. The credit, therefore, of the discovery must be shared by the Americans. Much new light has been thrown upon cerebrospinal fever and epidemic poliomyelitis by American workers, and American military and other medical officers stationed in the Philippines have contributed greatly to the general fund of knowledge of tropical diseases, particularly as regards beriberi. Nor do these examples exhaust the list, but they will suffice to show some at least of our indebtedness in preventive medicine to scientific workers in America.

Our American visitors will doubtless find a good deal that is new to them in our arrangements for the care of the sick and wounded, for the prevention of disease among our troops at home and in the field, and for maintaining in other ways the health and efficiency of the British army. It may be mentioned in this connection that although antityphoid inoculation originated in England, the adoption of the procedure in America helped largely to confirm its value and assisted in gaining its acceptance by our own military authorities. We understand that only one officer of the British army has died from typhoid fever since the commencement of the war, and we believe that at the present moment there are not more than two dozen typhoid cases among our troops. This remarkable freedom of an immense army in the field from what has been generally deemed a necessary curse is greatly due to the systematic adoption by the authorities in the United States of Wright's work.—*Lancet*, London, June 3, 1916.

Date of Conception and Sex of Child in Relation to Menstruation

THE JOURNAL mentioned last December, p. 2205, that Siegel in Germany is charting data obtained by comparing the date of a soldier's brief furlough with the pregnancy of his wife. The *Ugeskrift* brings an abstract of his latest report on the subject. The charts of the later series of 220 cases show essentially the same curves as his first series of 100 cases. They demonstrate that conception was most likely to occur when the husband reached home during the first days after cessation of the menses. The probability of conception then grew progressively less until almost constant sterility was the rule for the women during the days preceding the next menstruation. The findings thus confirm the usual assumption. Siegel has been studying the data further seeking to discover laws predetermining the sex of the child. He divides the intermenstrual period into three phases: (1) from the first day of menstruation to the ninth day; (2) from the tenth to the fourteenth day, and (3) from the fifteenth to the twenty-second day. The remaining six days are not con-

sidered, as the woman may be regarded as temporarily sterile during this phase. He was able to obtain data along these lines in eighty cases. The pregnancies dating from the first period gave 37 boys and 7 girls; second period, 4 boys and 8 girls, and third period, 3 boys and 20 girls. Omitting from the figures the illegitimate children—as affording possibly less reliable data—the proportions were: first period, 19 boys and 1 girl; second period, 2 boys and 6 girls, and third period, 1 boy and 15 girls.

Medicolegal

Adulteration and Misbranding

(*United States vs. Forty Barrels (U. S.), 36 Sup. Ct. R. 573*)

The Supreme Court of the United States, in this case wherein forty barrels and twenty kegs of "coca-cola," claimed by the Coca-Cola Company of Atlanta, Ga., were libeled for condemnation under the food and drugs act, reverses the judgment of the Circuit Court of Appeals, which affirmed a judgment of the District Court entered on a verdict directed in favor of the company. The supreme court, in an opinion delivered by Mr. Justice Hughes, discusses adulteration and misbranding under the act. The court says, among other things, that a description of the purpose of the statute would be inadequate which failed to take account of the design to protect the public from lurking dangers caused by the introduction of harmful ingredients, or which assumed that this end was sought to be achieved by simply requiring certain disclosures. It cannot be assumed that simply because a prepared "food" has its formula and distinctive name, it is not, as such, "adulterated." Component parts, or constituents, of the article which is the subject of the described traffic are not excluded, but are included in the definition. "Adulteration" is not to be confused with "misbranding." The fact that the provisions as to the latter require a statement of certain substances if contained in an article of food, in order to avoid "misbranding," does not limit the explicit provisions of Section 7 as to adulteration. Both provisions are operative. "Adulteration" is "any" added poisonous or "other added deleterious ingredient," provided it "may render such article injurious to health." Proprietary foods sold under distinctive names are within the purview of the provision. Not only is "food" defined as including articles used for food or drink, "whether simple, mixed or compound," but the intention to include "proprietary foods" sold under distinctive names is manifest from the provisos in Section 8. The fundamental contention of the claimant was that a constituent of a food product having a distinctive name cannot be an "added" ingredient. In such case, the standard is said to be the food product itself which the name designates. It must be this "finished product" that is "adulterated." If this were so, the statute would be reduced to an absurdity. It does not seem to the court to be a reasonable construction that in the case of "proprietary foods" manufactured under secret formulas Congress was simply concerned with additions to what such formulas might embrace. Undoubtedly, it was not desired needlessly to embarrass manufacturers of "proprietary foods" sold under distinctive names, but it was not the purpose of the act to protect articles of this sort regardless of their character. Only such food products as contain "no unwholesome added ingredient" are within the saving clause, and in using the words quoted the court is satisfied that Congress did not make the proprietary article its own standard. Equally extreme and inadmissible is the suggestion that where a "proprietary food" would not be the same without the harmful ingredient, to eliminate the latter would constitute an "adulteration" under Section 7, Subdivision 3, by the abstraction of a "valuable constituent." In that subdivision Congress evidently refers to articles of food which normally are not within the condemnation of the act. The court can see no escape from the conclusion that the caffeine was in this case an "added" ingredient within the meaning of the statute. On the question of whether it was a poisonous or deleterious ingredient which might

render the article injurious to health, there was a decided conflict of competent evidence, and it is sufficient to say that the question was plainly one of fact which was for the consideration of the jury. The court also holds that there was error in directing a verdict for the claimant on the count charging misbranding or that the expression "coca-cola" represented the presence in the product of the substances coca and cola, and that it contained "no coca and little if any cola." To call a compound by a name descriptive of ingredients which are not present is not to give it "its own distinctive name"—which distinguishes it from other compounds—but to give it the name of a different compound. That is not protected by the proviso allowing distinctive names, unless the name has achieved a secondary significance as descriptive of a product known to be destitute of the ingredients indicated by its primary meaning.

Unsuccessful Treatment of Fracture and Failure to Discover Dislocation

(*Houghton vs. Dickson (Calif.), 155 Pac. R. 128*)

The District Court of Appeal of California, Second District, reverses a judgment for \$3,500 damages obtained by the plaintiff for alleged malpractice in the treatment of an injury to his right arm due to the kick of a horse, January 25. It appeared that the ulna was fractured, and that, after receiving emergency treatment, the plaintiff, on the day following the injury, placed himself in the care of the defendant, who, after an examination with a fluoroscope, set the arm, using splints to retain the broken bones in place. On the following day, the defendant discovered that it would be necessary to wire the fractured ends of the bone, which he did at a hospital. The defendant dressed, bandaged, and otherwise treated the arm until March 29, on which date the plaintiff consulted another physician. The latter found a dislocation at the elbow of the radius, that there had been no union of the ends of the fractured bone, that the wires used in securing the same had broken, and that pus had developed in the wound, all of which conditions, except the formation of pus in the wound, were indicated by a roentgenogram taken March 29. The court holds that the evidence wholly failed to show any lack of care and skill on the part of the defendant in setting and treating the fractured bone, and failed to show when the dislocation occurred, or that the physician in the exercise of ordinary care and skill should, under the circumstances shown, have discovered the dislocation and treated it. Assuming that the radius was dislocated at the time when the defendant undertook the treatment of the fractured bone, or that it occurred thereafter during the treatment, such fact alone did not show that the defendant was lacking in ordinary care and skill in not discovering such condition. So far as it appeared, the defendant was called on to set the fractured bones. No intimation was given him of any injury to the elbow. Whether or not the defendant should, under the circumstances, in the exercise of ordinary and reasonable care and skill, have discovered such condition, assuming it to have existed, was a question for expert testimony, and none was offered. Conceding that the physician consulted March 29 had no difficulty then in discovering the dislocation, nevertheless that fact did not show a want of ordinary care and skill on the part of the defendant in failing to discover it, since the other physician, by reason of superior learning and advantages, might have been a man possessing far more than ordinary skill in his profession. The implied contract on the part of the defendant was, not only that he possessed that reasonable degree of learning and skill possessed by others of his profession, but that he would use reasonable and ordinary care and skill in the application of such knowledge to accomplish the purpose for which he was employed, and if he possessed such reasonable degree of learning, art, and skill in the treatment of the plaintiff's injury exercised ordinary care and skill in applying it, he was not liable for the result that followed. In the absence of evidence to the contrary the law will presume the exercise of a reasonable degree of care and skill.

Society Proceedings

COMING MEETINGS

Am. Assn. for the Study and Prev. of Inf. Mort., Milwaukee, Oct. 19-21.
American Association of Railway Surgeons, Chicago, Oct. 17-19.
American Roentgen Ray Society, Chicago, Sept. 27-30.
Colorado State Medical Society, Glenwood Springs, Sept. 5-7.
Idaho State Medical Association, Twin Falls, Oct. 5-6.
Indiana State Medical Association, Ft. Wayne, Sept. 27-29.
Kentucky State Medical Association, Hopkinsville, Oct. 24-27.
Minnesota State Medical Association, Minneapolis, Oct. 11-13.
Missouri Valley Medical Society, Omaha, Sept. 21-22.
Nevada State Medical Association, Reno, Oct. 10-12.
New Mexico Medical Society, Albuquerque, Oct. 11-13.
Oregon State Medical Association, Portland, Sept. 14-15.
Pennsylvania State Medical Society, Scranton, Sept. 18-21.
Utah State Medical Association, Salt Lake City, Sept. 12-13.
Virginia State Medical Society, Norfolk, Oct. 24-27.
Wisconsin State Medical Society, Madison, Oct. 4-6.

MICHIGAN STATE MEDICAL SOCIETY

Fifty-First Annual Meeting, held at Houghton, Aug. 16-17, 1916

The President, DR. A. W. HORNBOKEN, Marquette, in the Chair

The Michigan Campaign against Tuberculosis

DR. WILLIAM DE KLEINE, Lansing: The state legislature has appropriated from the general fund of the state \$50,000 for the fiscal year ending June 30, 1916, and the further sum of \$50,000 for the fiscal year ending June 30, 1917, for the purpose of making a tuberculosis survey of the state, the employment of medical men and nurses and other experts to make the survey, and the organization of antituberculosis societies throughout the state and the prosecution of a campaign to lessen the ravages of the disease. The county has been adopted as a working unit. A three weeks' campaign is planned in each one. The work is advertised through the newspapers, through window cards, and by calls on physicians and patients. Free examinations for tuberculosis are offered at a public clinic. Chest examinations are made, and patients advised of the findings. During the week following the examinations, the nurses visit the homes of all persons found with positive or suspicious cases. They also call on all the physicians, and they are advised of the findings in their individual patients. At the same time, health talks are given in all the schools, and public lectures wherever opportunity affords.

Since Oct. 1, 1916, twenty-six counties have been visited. More than 9,000 people have been examined. More than 2,000 cases of tuberculosis have been reported, and the names of more than 1,700 persons with suspicious cases have been filed. Nurses have visited the homes of more than 3,700 people. Thousands of educational articles for newspapers have been written, mostly in the form of news items, as well as hundreds of editorials. Hundreds of lectures and health talks have been given in schools. Several counties have been induced to consider the question of erecting a tuberculosis sanatorium. Several city councils and boards of health have been induced to consider the question of employing a full-time health officer. Three of them have taken action.

The medical profession is also interested in the problem of whipping tuberculosis. Clinics are held for the benefit of the local physicians as much as for the patients. All physicians are invited to cooperate. From 50 to 100 per cent. of them come to see the work. Many of them spend a whole week.

The Tuberculosis Problem

DR. ARTHUR F. FISCHER, Hancock: We should teach the community that any of the following symptoms should arouse their suspicions and cause them to seek an interpretation: 1. A succession of colds without the energy to overcome them. 2. Persistent loss of weight without any readily explainable cause. 3. A general feeling of fatigue and malaise not explainable by normal exertion. 4. Flush of feverishness rising late in the afternoon. 5. Spitting of blood. 6. Persistent cough extending over a period of one month, especially if not preceded by nasal or throat symptoms. 7. Digestive disturbances, especially when accompanied by any of the foregoing. 8. Night sweats.

In studying chest symptoms it is essential first to know why you pound the chest and apply the ear to the mysterious column of air in the rubber tube. The entire object is to elicit the consistency of the lung tissue that lies between the normal air tubes and the surface. You must be able to detect a normal chest when you hear it before you can begin to suspect the abnormal. All these signs are studied by comparison of the right and left lungs. Comparative percussion of the two sides will elicit any dullness. Comparative auscultation of the inspiratory breath sounds in normal and in forced breathing, and finally a study of the inspiration after a definite cough are made.

The diagnosis of tuberculosis is a time-consuming proposition. It requires a patient stripped to the waist and careful going over the various sections of the lung with trained ear to elicit any shade of abnormality. This cannot be done in five minutes nor often in less than two hours, and sometimes it requires repeated examinations, coupled with weeks of temperature records, and elimination of symptoms.

The Radial Cholesterin Stone in Gallbladder Surgery

DR. HENRY J. VANDENBERG, Grand Rapids: The radial cholesterin stone occurs in the gallbladder as a result of stagnation alone. Its existence tends to keep up the stagnation which predisposes to infection. The original cause of stagnation may have disappeared. A noninfected gallbladder containing a cholesterin stone becoming infected may result in a hydrops, formation of a mixed cholesterin stone by apposition of cholesterin-pigment-calcium, or the formation of secondary stones. In many cases of multiple gallstones, a radial cholesterin stone may be found among them. The presence of a radial cholesterin stone alone without infection does not produce symptoms. Infection, then, is not necessary for gallstone formation; stagnation alone is enough. Stagnation plus infection causes the formation of ordinary gallstones.

Insanity in Pelvic Diseases in Women

DR. WALTON P. MANTON, Detroit: Pelvic disease is of frequent occurrence among insane women. In the great majority of cases the insanity is the product of a combination of causes. Occasionally cases present themselves in which the insanity is apparently due to the direct influence of the pelvic pathologic condition, as following continued brooding over the presence of a tumor or the like; but such instances are of so infrequent occurrence as to be almost negligible.

Relationship Between Gynecologic and Neurologic Conditions

DR. REUBEN PETERSON, Ann Arbor: Cases naturally fall into certain groups. These types of cases are not always distinct. As a rule they can be fairly classified as follows: 1. Women with neurologic symptoms whose pelvic organs are anatomically and physiologically normal. 2. Women with neurologic symptoms whose genital organs are anatomically normal, but whose functions are abnormal. 3. Women with derangements of the nervous system whose pelvic organs are unquestionably diseased, and where the disease may be aggravated, but does not necessarily cause the nervous manifestations. 4. Women of naturally good nervous organizations, whose nervous manifestations have followed on, and hence apparently are due to true pelvic lesions.

Perhaps the largest number of individuals in the first group are to be found among the epileptics, if we may class this disease among the functional neuroses. In many women who are epileptics the attacks come on only at the menstrual periods, later being regular and painless and the pelvis perfectly normal. This leads to the faulty deduction that removal of the ovaries and the resulting cessation of menstruation will lead to the stoppage of the epileptic seizures, notwithstanding the mass of clinical evidence to the contrary. What has been said about the epileptic is just as true for the woman who suffers from hysteria, neurasthenia, neuralgias in various parts of the body, hyperesthesia and anesthetic areas.

In the second group belongs the great majority of young unmarried women suffering from some form of functional

nervous trouble with manifestations in the pelvis, although the pelvic organs are apparently normal. Such patients not infrequently have poor family histories, coming from stock with unstable nervous systems, where there are many instances of alcoholism, epilepsy, hysteria and mental peculiarities. Pelvic examinations in women belonging to this group are not easy to make without anesthesia, and bimanual recto-abdominal examinations, especially in fleshy women, are not always satisfactory. What such patients need is the most common sense general treatment; change their occupations, curb their intellectual ambitions, see that their bodies as well as minds are exercised, encourage marriage, and take away the fear of childbirth from their minds.

In the third group there is a distinct relationship between the pelvic lesions and the neuroses, that is, the latter are usually made worse by the irritation of the local disease. It is necessary to use the greatest judgment in determining the degree of such relationship, and here the history of the case will prove most valuable.

In the fourth group the natural normal nervous organization has been changed to an abnormal one from the irritation due to neglected pelvic lesions. The headache, backache, insomnia, mental depression, etc., are directly caused by the pelvic trouble, and when this is rectified they disappear and the patient reports that she never felt better in her life.

DISCUSSION

DR. R. R. SMITH, Grand Rapids: Of the patients who present themselves to us with functional nervous conditions, we can distinguish two main elements more or less clearly. The first is the element of hyperirritation or increased irritability or sensitiveness or nervousness. What symptoms are presented? We have, in the first place, an increase in the reflexes. They are exaggerated, and the coordination is more or less interfered with. 2. We have supersensitiveness to all sensory impressions. 3. There is a great tendency toward emotional disturbance which is distinctly increased. 4. We have disturbances of the various functions of the body—digestion, menstruation, urination and other functions.

To what may the state of increased irritability be due? We have irritation from the intake of certain drugs, such as strychnin and caffeine. These all cause increased irritability. 2. It may be due to the activity of certain ductless glands. Increased irritability of hyperthyroidism is well known. Increased irritability that takes place due to activity of the thyroid is well known. 3. We have a miscellaneous group of cases due to unsatisfied sexual desire and to intellectual work and other influences that are well recognized. Then there is a group due to intestinal intoxication so-called. There is increased nervousness or irritability associated with intestinal intoxication. Pain in the miscellaneous group of cases is an important cause. Fatigue is due to various influences, but, speaking of it in the sense of overwork or a lack of sleep, it is a potent cause of increased irritability. Frequent emotional disturbances to which these patients are subject leads to marked increased irritability.

What are the characteristics of such patients? There is a lack of moral stamina, of morale, of fortitude. The patient is more or less emotional than other people. Suggestibility is increased in the hysterics. Normally, when any of us receive an unpleasant impression or unpleasant idea, one which interferes with our interest, we do one of three things. We act on it; we take such action out in fancy or we dismiss it from our minds. This is not so with the neurotic patient. When an idea antagonistic to her interests enters her mind it stays. It becomes distorted and exaggerated; in other words, it acts as a foreign body. This is an important thing because it leads to the obsessions, doubts, phobias, fixed ideas which we so constantly see in these patients and which are so hard to eliminate and which are so frequently associated with the emotions.

What may be the causes of traumatic symptoms in a patient fundamentally of neurotic mind? These causes may be divided into two groups, the acute traumas and those of slower action. The actual ones are the railroad accidents, serious financial loss and acute illness and the loss of a friend or a near relative, or surgical operation. The matter of work,

lack of work, or unsuitable work sometimes may be the cause of bringing on symptoms in such a patient. Lack of proper recreation is not a very infrequent cause. There are disturbances of the sexual relations, and I am using the term sexual relation in the broadest sense. Jealousy sometimes plays a part. In short, pain in itself in the pelvis means nothing. It may be due to organic trouble, or it may be simply a matter of the patient's nervous organization.

DR. C. B. BURR, Flint: It is essential to look for causes because they are the fundamentals in connection with the class of cases under consideration. We must not assume too much from some particular thing which we may find is the causative factor. We are weighing more and more all these things and are looking deeper and deeper for ultimate causes. Great harm is sometimes done in yielding to the disposition of the patient. This tendency is not confined to one sex. Some of the patients are obsessed. They hark back to something in the past, and those are the things frequently in neurotic cases with which shock, humiliation or experiences of that kind have been associated. That constitutes the complex, and that is the determining subconscious or unconscious tendency in the life of the individual.

DR. J. HENRY CARSTENS, Detroit: At one time it was thought that by operating on insane patients we would be able to reduce the number of inmates in asylums very materially, but we found in many instances that the removal of the pelvic lesions did not cure the insanity. The question resolves itself into one of diagnosis. We should strive to make a diagnosis in every case. There are functional troubles of the pelvic organs which have their origin very largely in the mind of the patient. If we can relieve them, we do a great deal toward restoring her to a normal condition. In a great many of these cases the whole trouble is with the thyroid. Some of these patients are syphilitic, and their true condition is not recognized. Some of these troubles are due to bad training and bad bringing up. These patients indulge in a vicious line of thinking, and what many of them need is advice along the line of clean thoughts and clean thinking, and not operation.

DR. REUBEN PETERSON, Ann Arbor: We find in the obstetric and gynecologic clinic that about 5 per cent. of the patients who present themselves have syphilis, and a great many of the patients whose cases bothered us before can now be explained from this cause.

Sarcomatous Degeneration of Uterine Fibroids

DR. FRANK C. WITTER, Petoskey: The following points may be noted: 1. Sarcomatous degeneration of any fibroid is the most frequent type of sarcoma of the uterine body wall. 2. The frequency of occurrence varies from 1.5 to 4.3 per cent. of all uterine fibroid growths. 3. Considering the frequency of occurrence of fibroids, a systematic microscopic search of the tumors removed will show a higher percentage of occurrence. 4. The mortality rate may be diminished if early operation is advised in all cases. 5. Surgical removal is the only treatment that can be safely employed.

DISCUSSION

DR. RICHARD R. SMITH, Grand Rapids: I would doubt very much some of the statistics relative to the frequency of sarcomatous degeneration of fibroid tumors, for a great deal depends on what the pathologist calls sarcoma. Pathologists vary as to what is malignant and what is not, and this causes a vast amount of difference in the statistics, from 1 per cent. up to 5 per cent. One other trouble in connection with this question is that in these tumors we do not know just where the borderline is between what is malignant and what is not. The line of demarcation between malignancy and benignancy is extremely fine.

Bacteriology of Acute Ear Infections

DR. EDWARD J. BERNSTEIN, Kalamazoo: Spontaneous cure takes place in the vast majority of cases, but most of the treatment as ordinarily applied is futile. Some patients have mastoid involvement from their incipency, notably the cases of infection with the *Streptococcus mucosus* or the *Streptococcus hemolyticus*. There should be prompt opening of the drum and microscopic examination of the fluid obtained. A vaccine should be prepared in case of need.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

The American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

August, LXXIV, No. 464

- 1 The Ductless Glands and Their Relation to the Treatment of Functional Gynecologic Diseases. M. Rabinovitz, New York.—p. 177.
- 2 Results of Routine Study of Placenta. J. M. Siemons, New Haven, Conn.—p. 204.
- 3 Postpartum Hemorrhage. F. W. Rice, New York.—p. 215.
- 4 Psychic Vaginismus; Report of Two Cases. P. H. Williams, New York.—p. 226.
- 5 Study of 117 Cases of Ectopic Gestation. E. Foskett, New York.—p. 232.
- 6 New Method of Calculating the Required Posterior Sagittal Diameter of the Outlet in a Lateral Contraction of the Pelvis. C. D. Daniels, Philadelphia.—p. 238.
- 7 Management of Pregnancy and Labor Complicated by Heart Disease. Augustus A. Hussey, Brooklyn.—p. 240.
- 8 Pregnancy Complicated by Cancer of Cervix. V. L. Zimmermann, Brooklyn.—p. 251.
- 9 The Teacher's Inheritance. W. W. Chipman, Montreal, Canada.—p. 256.
- 10 Elizabeth Steel Magee Hospital and Its Work. C. E. Ziegler, Pittsburgh.—p. 265.
- 11 Rarer Forms of Toxemia of Pregnancy. M. Hornstein, New York.—p. 270.
- 12 Treatment of Tragic Forms of Rupture in Ectopic Pregnancy by Vaginal Section and the Application of a Clamp. W. W. Babeock, Philadelphia.—p. 276.
- 13 Cesarean Section for Strangulated Ovarian Cyst Complicating Labor. R. Cadwallader, San Francisco.—p. 280.
- 14 Fried Wound Dressings. D. H. Stewart, New York City.—p. 282.

American Journal of Physiology, Baltimore

August, XLI, No. 2

- 15 Some Metabolic Effects of Bathing in the Great Salt Lake. II. H. I. and H. A. Mattill.—p. 143.
- 16 *Relation Between Amount of Catalase in Different Muscles of Body and Amount of Work Done by These Muscles. W. E. Burge, Chicago.—p. 153.
- 17 Study of Blood Gases During Hibernation in the Wood-Chuck; the Respiratory Capacity of the Blood. A. T. Rasmussen, Ithaca, N. Y.—p. 162.
- 18 The Ductless Glands and Hibernation. F. C. Mann, Rochester, Minn.—p. 173.
- 19 *Regulation of Blood Volume After Injections of Saline Solutions. Studies of Permeability of Cellular Membranes. I. L. J. Bogart, F. P. Underhill and L. B. Mendel, New Haven, Conn.—p. 189.
- 20 Action of Saline-Colloidal Solutions on the Regulation of Blood Volume: Studies of Permeability of Cellular Membranes. II. L. J. Bogart, F. P. Underhill and L. B. Mendel, New Haven, Conn.—p. 219.
- 21 *Influence of Alkaline-Saline Solutions on Regulation of Blood Volume: Studies of Permeability of Cellular Membranes. III. L. J. Bogart, F. P. Underhill and L. B. Mendel, New Haven, Conn.—p. 229.
- 22 Influence of Iodin and Sodium Iodid on Circulation. W. Salant and A. E. Livingston, Washington, D. C.—p. 234.
- 23 Thromboplastic Action of Cephalin. J. McLean, Baltimore.—p. 250.
- 24 *Rapidity With Which Alcohol and Some Sugars May Serve as Nutrient. H. L. Higgins, Boston.—p. 258.

16. **Effect of Work on Catalase of Muscle.**—The amount of catalase in the different muscles of the body, Burge says, varies with the amount of work done by these muscles; those doing the greatest amount of work contain most catalase, while the muscles doing the least work contain the least catalase. By increasing or decreasing the external physical work of a muscle, the amount of catalase is correspondingly increased or decreased. If the external physical work of a muscle such as the pectoralis of pigeons is reduced practically to zero, the amount of catalase is reduced by approximately 38 per cent. Catalase is greater in amount in the muscles of warm blooded animals in which oxidation is more intense than in corresponding muscles of cold blooded animals in which oxidation is less intense.

19. **Regulation of Blood Volume and Saline Solutions.**—The following is a summary of the more important conclusions drawn by the authors: The regulation of the blood volume in normal animals is both rapid and efficient. The activity of the kidneys is not essential to this regulation of

the blood volume. In conditions of nephritis, inability to restore the blood volume to normal after injections of saline solution usually manifests itself. Morphine sulphate produces an effect on the regulation of the blood volume comparable with that resulting from a condition of nephritis. Restoration of the blood to normal after intravenous injections of saline solutions is not primarily effected by the transfer of the excess of fluid from the blood vessels to the thoracic lymphatic system. The tissues act as a reservoir for this fluid. The capacity of the tissues of rabbits to absorb fluid is approximately four times the normal blood volume of the animal.

21. **Action of Alkaline-Saline Solutions on Blood Volume.**—The addition of alkali, up to 0.4 per cent. sodium carbonate, to the fluid injected, the authors state, has no apparent effect on the regulation of the blood volume either in normal or in nephritic animals. The rate at which, and the extent to which, injected fluid leaves the blood vessels is unaffected by the addition of sodium carbonate.

24. **Nutritive Value of Alcohol and Some Sugars.**—By determination of respiratory quotients in periods of three and four minutes' duration on subjects without breakfast, it was concluded by Higgins that (a) alcohol begins to be burned in appreciable quantity in from five to eleven minutes after taking; with some subjects the combustion began more quickly than with others; (b) sucrose, lactose and levulose begin to be burned quite as soon as alcohol, if not sooner; (c) glucose and maltose are not utilized as food as soon as the other sugars or alcohol, approximately twenty to thirty minutes elapsing before their combustion plays an important part in the metabolism. There is a distinct difference between the metabolism in men of glucose and of levulose and galactose as shown by a study of the gaseous exchange, especially the respiratory quotients.

Annals of Surgery, Philadelphia

August, LXIV, No. 2

- 25 Preparedness. R. G. LeConte, Philadelphia.—p. 129.
- 26 Surgical Lessons of European War. A. M. Fauntleroy, Washington, D. C.—p. 136.
- 27 Localization and Extraction of Projectiles and Shell Fragments. J. M. Flint, New Haven, Conn.—p. 151.
- 28 Methods of Handling Injuries on Transportation Systems and Wound Treatment. K. A. J. Mackenzie, Portland, Ore.—p. 184.
- 29 *Chronic General Infection With Bacillus Pyocyaneus. L. Freeman, Denver, Colo.—p. 195.
- 30 Etiology of Surgical Scarlatina. J. B. Roberts, Philadelphia.—p. 203.
- 31 *Melanotic Cancer. W. B. Coley and J. P. Hoguet, New York.—p. 206.
- 32 Diagnosis and Treatment of Trifacial Neuralgia. E. H. Beckman, Rochester, Minn.—p. 242.
- 33 Dislocation of First Cervical Vertebra. A. F. Jonas, Omaha, Neb.—p. 248.
- 34 Treating Cysts of the Breast by Evacuation of Fluid. F. J. Shepherd, Montreal, Canada.—p. 254.

29. **Chronic General Pyocyaneus Infection.**—The features of especial interest in Freeman's case are: Its extreme chronicity, having lasted nearly eleven months. The typical neuralgic pains followed by paresis and muscular atrophy. The absence of the bacillus pyocyaneus from the blood and its presence in the bile. The absence of any discoverable point of infection. Recovery following drainage of the gall-bladder and the use of an autogenous vaccine. The occurrence of cirrhosis of the liver. The presence of ascites and pleural effusion, which promptly disappeared, the former following an abdominal incision and the latter a single aspiration. The satisfactory recovery after so severe and protracted an illness, with the exception of a moderate paresis of the lower limbs, which seems to be improving.

31. **Melanotic Cancer.**—The authors emphasize that the chief hope of reducing the mortality of this extremely fatal type of neoplasm must rest with prophylactic treatment, i. e., the surgical removal of all pigmented moles, as soon as observed and particularly in all cases in which the anatomic locality renders them liable to irritation or to external injury. If this rule is rigidly followed the number of cases will be markedly diminished. Ninety-one cases are analyzed.

Archives of Internal Medicine, Chicago

August, XVIII, No. 2

- 35 *Dietary Deficiency as Etiologic Factor in Pellagra. E. B. Vedder, Washington, D. C.—p. 137.
- 36 *Incidence of Pellagra in Spartanburg County, S. C., and Relation of Initial Attack to Race, Sex and Age. J. F. Siler, P. E. Garrison and W. J. McNeal, New York.—p. 173.
- 37 *Lime Deficiency of Diabetes. M. Kahn and M. H. Kahn, Pittsburgh.—p. 212.
- 38 *Inactivation of Pepsin: Effects of Various Salts and Alkaline Substances. W. W. Hamburger and B. Halpern, Chicago.—p. 228.
- 39 *Rate of Absorption of Various Digitalis Preparations from Gastro-Intestinal Tract. C. C. Haskell, C. S. McCants and F. P. Gardner, Richmond, Va.—p. 235.
- 40 *Ventricular Escape; Cases Showing a Ventricular Rate Greater Than That of the Auricles. P. D. White, Boston.—p. 244.
- 41 Study of Proteins in Urine; Comparison of Gravimetric and Nephelometric Methods for Their Estimation. J. T. W. Marshall, H. W. Banks and S. S. Graves, New York.—p. 250.
- 42 *Transient Auricular Fibrillation: An Electrocardiographic Study. E. B. Krumbhaar, Philadelphia.—p. 263.

35. **Dietary Deficiency Cause of Pellagra.**—There is a certain similarity between pellagra and other known deficiency diseases, namely, beriberi and scurvy. Much of the evidence that has been presented as a proof of the infectious nature of pellagra can be explained in accordance with a deficiency hypothesis. A deficiency is demonstrable in the diets of most pellagrins. This deficiency appears to Vedder to result from the too exclusive use of wheat flour, in association with cornmeal, salt meats and canned goods, foods that are known to be deficient in vitamins. Changes in the diet of the people of the South have occurred during the past ten or fifteen years. Since we do not know all the changes that have occurred, and cannot judge accurately the importance of the known changes the author holds that it is unscientific to assume that the recent increase in pellagra cannot be due to such changes. The hypothesis that pellagra is caused by a deficiency is very plausible and must be taken into consideration in subsequent studies of this disease.

36. **Pellagra in South Carolina.**—Several points are made by the authors which bear emphasis. The disease has attacked the white race more than the negroes. The death rate in initial attack has been 41.8 per cent. for negroes and 12 per cent. for the white race. Pellagra was very rarely observed under the age of 1 year. Evidence of residence very close to an antecedent pellagrin has usually been quite clear in the cases of infantile pellagra. The milk of pellagrous mothers cannot be regarded as the cause or the vehicle of the cause of pellagra in infants. The age period 12 to 16 years is relatively free from initial attacks of pellagra. From age 20 to age 50 years, the number of women attacked by pellagra gradually diminishes and the number of men attacked gradually increases. The lower incidence rate and the higher death rate for those attacked have occurred in negroes in conjunction with greater poverty of this race and a diet poorer in quality, quantity and variety. Incidence has been lowest in the sex and age groups of negroes most completely segregated from white pellagrins.

37. **Lime Deficiency in Diabetes.**—The lime metabolism of five diabetic patients was studied by the Kahns. The patients were kept on a Folin diet, no sugar being given, and portions of the mixed diet were taken to the laboratory for analysis. The urine and feces were collected daily and analyzed. The experiments were conducted for nine days. The patients were in the mild stages of diabetes, none of them suffering from any discomfort. There was no acidosis, no ulceration, no pruritus. The glycosuria varied in the different cases from 1.5 to 2.7 per cent. It was found that the patients on this diet constantly lost lime from their bodies. The administration of calcium intravenously to diabetic patients causes a marked fall in the glucose excretion. It induces a gradual decline in the glycemia of the patients. The quantity of urine excreted is reduced. Certain symptoms ascribable to the diabetes are relieved by this treatment. Acetone, diacetic acid and betaoxybutyric acid never developed in these cases.

38. **Inactivation of Pepsin.**—The inhibition of pepsin by sodium chlorid and sodium phosphate suggests the possibility

of the clinical use of these salts in the prevention and cure of chronic gastric ulcer. The strong neutralizing value of sodium carbonate, magnesium carbonate and calcium hydroxid suggests the possibility of their use under similar conditions.

39. **Absorption of Ingested Digitalis.**—According to the authors the official tincture of digitalis is absorbed more rapidly from the gastro-intestinal tract of cats than is the infusion made from the same leaf. The three special preparations of digitalis, namely, digipuratum, digalen, and digipoten, seem to possess no decided advantage over the official tincture. Digalen is absorbed more rapidly, but the variability in strength and the low standard of strength, together with the high cost of this preparation, more than offset this possible advantage.

40. **Ventricular Escape.**—Two types of ventricular escape are described by White: (1) the occasional type, in which the automatic stimulus production in the atrioventricular node is released by depression, and hence slowing, of the pacemaker in the sinu-auricular node, and (2) the rare type, in which the atrioventricular nodal center of stimulus production is so irritable that it escapes from the control of the sinu-auricular node. Both factors, depression of the upper node and irritation of the lower node may play a part in ventricular escape in a single case, as in an instance reported, in the production of which digitalis apparently was the important factor. Three cases are recorded in which the ventricular rate exceeded that of the auricles.

42. **Transient Auricular Fibrillation.**—Four cases are described by Krumbhaar in which the transition of the cardiac mechanism was observed from normal rhythm to auricular fibrillation and back again. In two others the development of permanent auricular fibrillation was observed.

Archives of Pediatrics, New York

August, XXXIII, No. 8

- 43 Nature, Manner of Conveyance and Means of Prevention of Infantile Paralysis. S. Flexner, New York.—p. 562.
- 44 Acute Poliomyelitis: Clinical Types of Disease. H. Koplik, New York.—p. 575.
- 45 Importance of Present Epidemic of Poliomyelitis. H. Emerson, New York.—p. 584.
- 46 Abortive and Non-Paralytic Cases of Poliomyelitis—Their Importance and Their Recognition. G. Draper, New York.—p. 590.
- 47 Present Epidemic of Poliomyelitis; Types Which It Presents. L. C. Ager, Brooklyn.—p. 592.
- 48 Laboratory Aids in Diagnosis of Poliomyelitis. J. B. Neal, New York.—p. 595.
- 49 Orthopedic Observation in Treatment of Anterior Poliomyelitis. C. Wallace, New York.—p. 599.
- 50 Treatment of Acute Stage of Anterior Poliomyelitis. M. H. Bass, New York.—p. 611.

Boston Medical and Surgical Journal

August 10, CLXXV, No. 6

- 51 Diagnosis and Management of Vasomotor Disturbances of Upper Air Passages. J. L. Goodale, Boston.—p. 181.
- 52 Asthma in Children; II. Its Relation to Anaphylaxis. F. B. Talbot, Boston.—p. 191.
- 53 Preparation of Vegetable Food Proteins for Anaphylactic Tests. R. P. Wodehouse, Cambridge, Mass.—p. 195.
- 54 *Normal Reaction of Skin to Stroking. E. A. Tracy, Boston.—p. 197.
- 55 Protein Extracts in States of Hypersensitization. H. M. Bate and C. Floyd, Boston.—p. 199.
- 56 *Hay-Fever: Its Treatment With Autogenous Vaccines and Pollen Extract. L. S. Medalia, Boston.—p. 201.
- 57 Embolic Pneumonia Following Mastoid Operation; Report of Three Cases. G. L. Richards, Fall River, Mass.—p. 206.

August 17, No. 7

- 58 Fractures of Lower End of Humerus. W. E. Ladd, Boston.—p. 220.
- 59 Massachusetts Tuberculosis Dispensaries and Their Relation to Practicing Physicians. J. S. Hitchcock, Northampton, Mass.—p. 225.
- 60 Year's Work of a Local Tuberculosis Hospital. A. C. Getchell, Worcester, Mass.—p. 229.
- 61 *Suggestion as to Prevention of Infantile Paralysis. W. S. Whittemore, Cambridge, Mass.—p. 231.
- 62 Pre-Operative Roentgenologic Examination in Cancer of Breast. J. W. Lane, Boston.—p. 232.
- 63 *Auricular Standstill: An Unusual Effect of Digitalis on the Heart, with Especial Reference to the Electrocardiogram. P. D. White, Boston.—p. 233.

54. Reaction of Skin to Stroking.—The phenomenon observed and here reported of the normal reaction of the skin to mechanical irritation produced by stroking with a wooden instrument, and consisting of vasodilatation, brief in duration, followed by vasoconstriction, long lasting, Tracy holds is caused by a double nerve mechanism, one for vasodilatation (automatic) and one for vasoconstriction (sympathetic); together with at least two hormones in the blood stream, the hormone X (Eppinger and Hess' "Autonym") activating the vasodilatation mechanism; the other hormone, epinephrin (or analogue, inciters of sympathetic nerve endings), activating the vasoconstriction nerve mechanism.

56. Treatment of Hay-Fever.—The bacteria found in the secretions of the nose and eyes of hay-fever patients previous to their attacks and during their supposed healthy condition are markedly suggestive of the important rôle played by such bacteria in this disease. The presence of the bacteria and their products, Medalia believes is the determining factor between individuals being susceptible to hay-fever or not, since they may be, in a measure, responsible for the breaking up of the pollen, setting free the albumins and thus causing pollenosis.

The bacteria infection, although secondary to pollenosis, is apparently responsible for the difference between pollenosis, producing a mere transient sneezing, or true hay-fever attacks with all their accompanying symptoms. The good results obtained by the use of autogenous vaccines still further suggest the important relation of bacteria to this disease. The mechanism underlying pollenosis, with its accompanying anaphylactic symptoms, is still an open question.

The recent developments in the physical mechanism of anaphylaxis can be applied to this disease. The antiferments being absorbed by the liberated pollen albumins, the symptoms are then produced by the free ferments, which are normally present in the system, but unable to produce toxic symptoms because of the action of the antiferments. These free ferments produce the anaphylatoxins, and they in turn produce the anaphylactic symptoms of hay-fever, which resemble so closely anaphylaxis due to other sources. The underlying reason for the success of the treatment with autogenous vaccine in this disease is due to the fact that the infection is due, in practically all the cases to the staphylococcus group of organisms.

61. Prevention of Infantile Paralysis.—About a year ago, Hektoen and Rappaport published a report on the use of kaolin to remove bacteria from the nose and throat. For the past year, Whittemore has been using kaolin powder as a routine in the treatment of nose and throat infections. It apparently cleared up these infections very promptly, and, moreover, was not irritating, but distinctly soothing in its effects. He sprays it on the mucous membrane of the throat by means of the powder blower. He urges the use of kaolin as a prophylactic measure in the case of every child or adult who has come in contact with any possible source of infection with infantile paralysis.

63. Auricular Standstill.—Three cases of heart disease are described by White in which electrocardiographic evidence of auricular activity was abolished by digitalis. As soon as the effects of the digitalis had worn off, the auricular deflections reappeared. This is a rare result of digitalis administration.

California State Journal of Medicine, San Francisco

August, XIV, No. 8

- 64 Passing of the Bone Plate. P. S. Campiche, San Francisco.—p. 310.
65 Contracture of Vesical Neck; Diagnosis and Treatment. A. B. Cecil, Los Angeles.—p. 311.
66 Congenital Pyloric Stenosis. A. Weeks, San Francisco.—p. 317.
67 Preliminary Tests of Blood in Transfusions. S. H. Hurwitz, San Francisco.—p. 318.
68 *Leukopenia, Its Relation to Bronchitis. J. H. Catton, San Francisco.—p. 320.
69 Prospects of Surgical Treatment in Meningitis. H. C. Naffziger, San Francisco.—p. 322.
70 Treatment of Diphtheria. G. E. Ebright, San Francisco.—p. 324.

- 71 Psychogenic Factors in Organic Diseases. C. W. Mack, Livermore, Calif.—p. 325.
72 New San Francisco Hospital. R. G. Broderick, San Francisco.—p. 331.
73 Epidemic Cerebrospinal Meningitis. W. B. Smith, Los Angeles.—p. 333.

68. Leukopenia, Its Relation to Bronchitis.—A careful consideration of the infectious etiology of bronchitis prompts Catton to suggest the division of infectious bronchitides into elective and nonelective types: and, after a study of the leukocyte pictures in the infections which are associated with the elective type of bronchitis—the suggestion is offered that there is a definite relation between this affection on the one hand and a disturbed leukocyte balance; i. e., a tendency toward decrease in the number of granular cells and increase in the number of hyaline ones. Elective infection of the bronchi may occur in measles, malaria, influenza, pertussis, typhoid and tuberculosis; and, less frequently in German measles, smallpox, typhus, syphilis and scarlet fever. A reduction absolute or relative in the number of polynuclear leukocytes is characteristic of the above infections excepting smallpox and scarlet fever. A reduction absolute or relative in the number of polynuclear leukocytes may occur under certain conditions in smallpox and scarlet fever.

Delaware State Medical Journal

April, VII, No. 5

- 74 Uterine Fibroids. H. J. Stubbs, Wilmington, Del.—p. 2.
75 Giant Renal Calculus. J. A. Draper, Wilmington, Del.—p. 5.

Georgia Medical Association Journal, Augusta

August, VI, No. 4

- 76 Cystoscope As An Aid to Diagnosis. E. P. Merritt, Atlanta, Ga.—p. 65.
77 Practical Cystoscopy. A. L. Fowler, Atlanta, Ga.—p. 66.

Medical Record, New York

August 19, XC, 2389

- 78 Dogmatic Physiology. J. A. Gilbert, Portland, Ore.—p. 311.
79 Recent Medical Observations in European War Zone. J. A. Nydegger.—p. 318.
80 Bonime's Modification of Koch's Treatment of Tuberculosis. R. C. Newton, Montclair, N. J.—p. 320.
81 Relation of Tuberculosis of Bronchial Glands to the Diagnosis of Tuberculosis of the Lungs. M. E. Lapham, Highlands, N. C.—p. 324.
82 New Method of Extirpation of the Lacrymal Sac Without Resultant Scar. J. A. Kearney, New York.—p. 326.
83 Control of the Next Epidemic of Infantile Paralysis. F. Robbins, New York.—p. 328.
84 Epidemic Poliomyelitis. H. B. Sheffield, New York.—p. 330.
85 The Rice Diet; How to Prepare and Eat It. H. S. Bartholomew, New York.—p. 331.

Military Surgeon, Washington

August, XXXIX, No. 2

- 86 Some Medical Department Problems of Over-Seas Garrisons. R. G. Ebert, U. S. Army.—p. 111.
87 Experiences and Lessons of War Service in Serbia. W. A. Jolley, N. G. Colo.—p. 120.
88 Experiences at Red Cross Auxiliary Naval Hospital of Hamburg, Germany, During First Eight Months of Present War. H. G. Beyer, U. S. Navy.—p. 134.
89 Preparing Medical Reserve Corps of Army. L. D. Frescoln, U. S. Army.—p. 146.
90 Duties of Medical Supply Officers and Their Methods. (To be continued.) H. I. Raymond and E. P. Wolfe, U. S. Army.—p. 150.
91 Laying Out Field Hospital. W. W. Reno, U. S. Army.—p. 156.

Modern Hospital, St. Louis

August, VII, No. 2

- 92 Systematic Health Service for Employees. L. K. Frankel, New York.—p. 87.
93 Present Scope of Welfare Work in Iron and Steel Industry. T. Darlington, New York.—p. 91.
94 Provision for Medical Care Under Health Insurance. A. Lambert, New York.—p. 95.
95 Illinois Central Railroad Opens New Hospital. R. E. Schmidt, Chicago.—p. 98.
96 Industrial Welfare Work Factor in Modern Management. J. M. Eaton, Detroit.—p. 104.
97 Youngstown Sheet and Tube Company's Hospital. R. J. Kaylor, Youngstown, Ohio.—p. 109.
98 Cloak, Suit, Skirt, Dress and Waist Industries. G. M. Price, New York.—p. 111.

- 99 Welfare and Efficiency Achieved at Same Time. W. H. Walsh, Boston.—p. 115.
100 Looking Beyond Door of Welfare Service in Department Store. A. K. Walker, New York.—p. 119.

Philippine Journal of Science, Manila

January, XI, No. 1

- 101 *Preservation of Human Serum for Wassermann Reaction. E. H. Ruediger.—p. 1.
102 Case of Infestation With Dipylidium Caninum. M. P. Mandoza-Guazon.—p. 19.
103 Hemolysis by Human Serum. E. R. Ruediger.—p. 33.
104 *Experimental Study on Use of Apomorphin to Remove Foreign Bodies from Respiratory Passages. D. de la Paz and F. Garcia.—p. 51.

101. **Preservation of Human Serum.**—Formaldehyd, Ruediger says, is not a suitable preservative for serum intended for the Wassermann reaction. Serums that gave moderately positive results before liquor formaldehydi was added gave negative results, or nearly negative results, a week after the liquor formaldehydi had been added. Glycerin kept the serums sterile and did not noticeably influence the Wassermann reaction or the Tschernogubow modification of the Wassermann reaction. Unheated, old serums were strongly anticomplementary. Fresh serums that were heated to 55 C. for thirty minutes before they were mixed with glycerin did not become anticomplementary in eleven days. Fresh serums that were heated to 55 C. after they had been mixed with glycerin were anticomplementary on the eleventh day after the heating. Nearly all unheated serums that were mixed with glycerin and were kept at room temperature became permanently anticomplementary. Anticomplementary serums could be tested provided the amboceptor was increased. The anticomplementary property did not alter the result obtained with the Wassermann reaction or with the Tschernogubow modification of the Wassermann reaction. A mixture of equal parts of glycerin and serum was slightly anticomplementary as compared with the serum alone.

104. **Apomorphin to Remove Foreign Bodies from Bronchi.**—The results reported by the authors point conclusively to the impossibility of removing foreign bodies from the trachea by the use of apomorphin. It seems, moreover, that a foreign body in the respiratory passages below the larynx may, in reality, be driven farther in during the early stage of vomiting because of the descent of the diaphragm and closure of the glottis, which in turn give rise to the rarefaction of the air in the thoracic cavity and a rushing of the air into the deeper portion of the lungs. When tenacious mucous plugs are present in the bronchioles, this may be more than counterbalanced by the stimulating effect of apomorphin on the secretion and peristalsis of the bronchioles, which may loosen and facilitate the expectoration of plugs after vomiting.

Tennessee State Medical Association Journal, Nashville

August, IX, No. 4

- 105 Significance of Retinal Changes in Cardiorenal-Vascular Disease. F. P. Calhoun, Atlanta, Ga.—p. 151.
106 Retrodisplacements of Uterus: Indications and Contraindications for Employment of Pessary, Barrett, and Baldy-Webster Operations. W. T. Black, Memphis.—p. 155.
107 Tumors of Female Breast. J. L. McGehee, Memphis.—p. 160.
108 Production of Sexual Sterility from a Gynecologic Standpoint. G. R. West.—p. 166.
109 Fourteen Cases of Trachoma or Granular Lids Treated with Bacillus Bulgaricus. J. P. Crawford, Nashville.—p. 170.
110 Plea for Better Prophylactic Measures for Prevention of Specific Infectious Diseases of Childhood. J. T. Moore, Algood, Tenn.—p. 177.
111 Report of Two Gunshot Cases. W. F. Clary, Memphis.—p. 179.

Texas State Journal of Medicine, Fort Worth

August, XII, No. 4

- 112 Pellagra. K. H. Beall, Fort Worth, Tex.—p. 170.
113 Some Views on Oxidase Activity in Pellagra. G. D. Fairbanks, Brownsville, Tex.—p. 173.
114 Some Thoughts on Pellagra. I. L. Van Zandt, Fort Worth, Tex.—p. 175.
115 Epidemiology of Pellagra. E. M. Parrish, Dallas, Tex.—p. 177.
116 Food in Health and Disease: Some Recent Advances in Our Knowledge. C. Lovelace, Waco, Tex.—p. 180.

- 117 Typhus Fever: Prevention and Control. C. C. Pierce, San Francisco.—p. 182.
118 Endemic Typhus Fever in South Texas. H. L. McNeil, Galveston, Tex.—p. 188.
119 Blood Vessel Suture; Report of Cases. C. H. Harris, Fort Worth, Tex.—p. 191.
120 Local Anesthesia. A. Jacoby, Dallas, Tex.—p. 194.
121 Increasing Usefulness of Nerve Blocking or Regional Anesthesia. A. O. Singleton, Galveston, Tex.—p. 195.

West Virginia Medical Journal, Huntington

August, XI, No. 2

- 122 Value of Morbidity and Vital Statistics. S. L. Jepson, Charleston, W. Va.—p. 37.
123 Bronchial Asthma. A. H. Griggs, Eccles, W. Va.—p. 40.
124 Our Schools for Nurses; Past and Future. J. M. Sites, Martinsburg, W. Va.—p. 59.

Wisconsin Medical Journal, Milwaukee

August, XV, No. 3

- 125 Management of Emergency Surgical Case. E. A. Smith, Milwaukee.—p. 69.
126 Deep Suppurations of Neck: Report of an Extraordinary Case. J. H. Fowler, Lancaster, Wis.—p. 74.
127 A Family with Interesting Eyes. W. N. Linn, Oshkosh, Wis.—p. 79.
128 Goiter. J. K. Chorlog, Madison.—p. 80.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

July 29, II, No. 2900

- 1 *Two Hundred Consecutive Hysterectomies for Fibroids Attended with Recovery. J. Bland-Sutton.—p. 133.
2 Trench Fever. T. S. Wright.—p. 136.
3 Pathogenicity of Giardia (Lambia) Intestinalis to Men and Experimental Animals. H. B. Fantham and A. Porter.—p. 139.
4 Bacillary Dysentery (Shiga) Contracted in England. P. L. Sutherland.—p. 142.
5 The Curve of An Epidemic. J. Brownlee.—p. 142.
6 Importance of Technical Details in the Preparation of a Transparent Blood-Agar for the Cultivation of the Meningococcus. D. J. Lloyd.—p. 143.
7 Duration of Bilharziosis in South Africa. F. G. Cawston.—p. 144.

August 5, No. 2901

- 8 Disabilities of the Knee-Joint. R. Jones.—p. 169.
9 Treatment of Gas Gangrene by Intravenous Injection of Hypochlorous Acid. J. Fraser and H. J. Bates.—p. 172.
10 Convalescent Paratyphoid and Dysenteric Cases From the Preventive Standpoint. I. W. Hall, D. C. Adam and R. E. Savage.—p. 174.
11 *Treatment of Scabies by Sulphur Vapor. J. Bruce and S. Hodgson.—p. 177.
12 Economical Use of Solutions of Costly Alkaloids for Ophthalmic Purposes. N. B. Harman.—p. 178.

1. **Hysterectomy for Fibroids.**—Time, says Bland-Sutton, has amply vindicated the surgical treatment of uterine fibroids by proving that no physiologic evil attends the loss of the uterus. Coincident with this improvement in the mortality rate there has been a marked diminution in the sequelae. Among the 200 hysterectomies reported, 188 were subtotal. Hysterectomy has been performed for adenomyoma, fibrosis uteri, cancer, and septic infection, during the period covered by the 200 cases of fibroids the subject of this report. All the patients recovered, also three with ovarian fibroids and four abdominal myomectomies. These results have been obtained with a minimum use of antiseptics. The skin of the abdomen is painted with tincture of iodine an hour before operation. The cut surface of the cervical stump is swabbed with the tincture. Sterilized silk is used exclusively for ligatures and sutures. The surgeon, assistants, and nurses wear sterilized rubber gloves. After the closure of the cervical stump, the gloved hands are thoroughly rinsed with a solution of mercury perchlorid (1 in 5,000). The abdominal incision is then secured with sutures, and the line of the incision, as well as the adjacent skin, lightly painted with tincture of iodine. No dressings are used. The house surgeon submits all patients set down for operation to a systematic examination. Women with uterine fibroids who show signs of diabetes, exophthalmic goiter, cardiac disease, arterial sclerosis, and albuminuria are rarely submitted to hysterectomy. Bland-Sutton recommends to eschew textbook

descriptions of hysterectomy. He advises to learn the technic by assisting a surgeon of experience.

11. Sulphur Vapor for Scabies.—The method employed by Bruce and Hodgson is as follows: The patient is given a hot bath, allowed to soak for five minutes in the water, then is well rubbed with soap—either soft or ordinary yellow bar—and the skin scrubbed to open the burrows. The patient is then transferred to a cabinet constructed on the lines of a "home Turkish bath." A wet towel is applied around the neck to prevent escape of fumes, a sulphur candle placed in the corner of the box is lighted, and the door closed. An orderly must remain constantly in attendance so as to remove the patient at once should he show signs of faintness or develop any difficulty in breathing from escape of fumes. At the end of fifty minutes the lid is quickly removed, and the patient returns to the bathhouse, where he puts on clean and warm clothing. Sufficient air to keep the candle burning will find its way through the cracks around the floor. The authors have treated over 200 cases, and have had about 2 per cent. returns, and in these cases they think some article of clothing had escaped disinfection and thus reinfected the patient. The cases giving the best results were those which had not been under any other treatment. The great merit of the treatment is that cases can be returned to their unit on the same day as received and resume duty next day.

Journal of Obstetrics and Gynecology of British Empire, London

June-August, 1915, XXVII, Nos. 6, 7 and 8

- 13 Chronology of the Founders of the Obstetric Forceps (1569-1799). A. Doran.—p. 154.
- 14 Frequency of Puerperal Eclampsia in Trinidad; Analysis of 22 Consecutive Cases. R. Scheult.—p. 173.
- 15 Clinical Aspects of Double Uterus. M. Handfield-Jones.—p. 186.
- 16 *Case of Fatal Rupture of Bladder During Puerperium. F. M. Huxley.—p. 195.
- 17 Three Cases of Labor Obstructed by Ovarian Cyst. W. Salisbury.—p. 197.

16. Bladder Rupture During Puerperium.—On the ninth day while nursing her baby on the left arm, Huxley's patient made a sudden stretching movement of the right arm to pick up something from the floor. She was at once attacked with violent abdominal pain, collapse and vomiting. The patient looked extremely ill, the face was pale, the tongue dry and bright red, the extremities cold and clammy, temperature 102.2 F, pulse running. The abdomen was very markedly distended, symmetrical, and moved on respiration. It was neither very rigid nor very tender. There was dulness over the symphysis pubis and in the flanks, and the presence of free fluid was determined. The patient stated that she had passed no urine since the onset of the acute illness (about thirty hours), so was catheterized, 40 ounces of acid, somewhat offensive, urine being withdrawn. Catheterization was repeated at 8 a. m. the following morning, and 35 ounces of urine withdrawn. In spite of stimulant treatment the patient's condition became gradually worse, and she died early in the afternoon of the second day. On opening the abdomen an odor of urine was noticed and $\frac{2}{3}$ pint of turbid urine and peritoneal exudate escaped. In the hypogastric region the bladder was adherent to the anterior abdominal wall, and the posterior part of its fundus adhered lightly to the anterior surface of the uterus. The whole bladder wall was very thin, the organ having obviously been in a state of considerable distention. At the summit of the fundus of the bladder was a horizontal slit $2\frac{1}{2}$ inches in length, through which the urine had escaped. The edges of the slit were ragged and sharp and showed no signs of sloughing nor of healing. Signs of general peritonitis were present.

Lancet, London

July 29, 11, No. 4848

- 18 *Laparotomy for Gunshot Wounds of Abdomen. G. H. Stevenson and C. Mackenzie.—p. 173.
- 19 Advantage of Using a Broth Containing Trypsin in Making Blood Cultures. S. R. Douglas and L. Colebrook.—p. 180.
- 20 Treatment of Carriers of Amebic Dysentery: Use of Double Iodid of Emetin and Bismuth. H. H. Dale.—p. 183.
- 21 Necessity for Prolonged Treatment in Cases of Infantile Paralysis. F. Herniman-Johnson.—p. 185.

- 22 Six Cases of Wounds of Buttock with Perforation of Intestine. R. B. Blair.—p. 186.
- 23 Serious Defect in Some Registered Hospitals for Insane. H. Rayner.—p. 196.

August 5, No. 4849

- 24 *Serum Reactions of 300 Unselected Cases of Enteric Fever. E. Glynn and E. C. Lowe.—p. 222.
- 25 Acute Intestinal Obstruction. G. F. Aldous.—p. 227.
- 26 *Immobility After Joint Injury. J. Collic.—p. 228.
- 27 Extraction of Bullet From Middle Mediastinum. L. E. Barrington-Ward.—p. 230.
- 28 Cessation of Tachycardia on Outbreak of Spontaneous Perspiration. T. Oliver.—p. 231.

18. Laparotomies for Gunshot Wounds of Abdomen.—Stevenson and Mackenzie give the results of fifty laparotomies on gunshot wounds of the abdomen performed at a casualty clearing station, about $5\frac{1}{2}$ miles from the nearest front line trenches. Many of the patients were operated on within five or six hours of their being wounded; many others, however, did not reach the station for twelve to twenty-four hours. The technic of the operation done differed little from that in the similar operation of civil practice. As a general rule, morphia and atropin are administered hypodermically before operation. They do not usually give saline beforehand, relying on subcutaneous and intravenous injection during and after the operation. The "iodin" method is used for the preparation of the skin, except in those cases where the wounds involve a large area, when, after anesthetization, the patients are prepared with some phenol preparation, usually lysol. They invariably endeavor to excise completely both the entrance and exit wound, using, of course, a different set of instruments from those employed in the actual laparotomy. Warm ether is the anesthetic used most frequently. Patients are operated on as quickly as possible. The abdomen is usually opened either in or near the middle line. The wounds in the intestine are sewn up with fine thread in two layers. End-to-end anastomosis is the usual method employed when resection is necessary, except in those cases where several feet of intestine have to be removed, when lateral anastomosis is employed. Wounds of the liver and spleen are usually packed; occasionally it is possible to suture them. In those cases where the kidney is badly pulped, complete removal is indicated; in those where the wound is slight the kidney may apparently be left without much danger, and urinary fistulae usually heal up quite well. The intestine is carefully washed with saline while outside the abdominal wound, and all fecal material and doubtful lymph gently sponged off. The abdominal cavity is also thoroughly washed out with saline or hypochlorous acid and mopped dry. Some cases seem to benefit from a quantity of saline being left in the peritoneal cavity. In grossly infected cases they have also tried the injection of ether into the peritoneal cavity. In their opinion the shock produced does not warrant a continuance of this procedure, although it has given good results in cases where the infection has been localized, as in appendix cases. Large drainage tubes are inserted into the pelvis, and the flanks as well if the cavity is badly infected. The abdominal wound is stitched in layers. During the operation continuous saline is given by means of Lane's bags, and frequently an intravenous infusion is given in addition. The results give a recovery rate of 34 per cent.

24. Serum Reactions to Typhoid.—The serum reactions to typhoid, paratyphoid A, and paratyphoid B of 300 consecutive recently convalescent "enteries" were tested by Glynn and Lowe by Dreyer's technic. After making about 3,000 tests of these and other cases they find the emulsions most satisfactory. Control sera of soldiers inoculated against typhoid, but suffering from dysentery or surgical diseases, failed to agglutinate either paratyphoid emulsions, but the serum of every convalescent, twelve in all, excreting paratyphoid A or paratyphoid B bacilli agglutinated the corresponding emulsion only in titres ranging from 25 to 250. One hundred and ten, or 37 per cent., of the cases tested agglutinated paratyphoid emulsion; 36 agglutinated paratyphoid A (titer from 25 to 250) and 74 paratyphoid B (titer from 25 to 2,500). Twenty-eight cases—i. e., 9.3 per cent.—failed to agglutinate typhoid, paratyphoid A, or paratyphoid B 1-25 when tested

about seven weeks after the onset of convalescence; all but 2 had been inoculated against typhoid. One hundred and sixty-two cases agglutinated typhoid alone, and were examined on the average eight weeks after the onset of convalescence. Of 153 examined at least twice 11 showed a marked fall or rise in titer, demonstrating that almost all, if not all, had a recent typhoid infection. The diagnosis as "enteric" of cases not suffering from these diseases vitiates treatment and discredits prophylactic vaccination, while those who recover are regarded as potential bacillary carriers, and prevented from returning to active service for months. The authors believe that the prophylactic use of mixed paratyphoid vaccines will undoubtedly increase the difficulty of diagnosing paratyphoid, as typhoid vaccine has done in the case of typhoid. The difficulty will be greater in those mild cases which occur, especially in the partly protected, where the infecting bacteria cannot be demonstrated.

26. Immobility After Joint Injury.—Collic advises against immobilization of a joint following injury because it is inevitably followed by adhesions, and the longer adhesions are allowed to remain the greater the risk is of permanently impaired function. When adhesions have to be broken down an anesthetic should always be given, not so much for the purpose of avoiding pain as of ensuring the complete relaxation of the muscles, otherwise the muscles which will be involuntarily brought into action may be injured by the force necessary to break down the adhesions. Sufficient muscular relaxation cannot be obtained by nitrous oxid gas. Pain which follows the operation is insignificant and seldom lasts more than an hour. Prior to the necessary passive movements of the joint, which should be commenced within a few hours of the operation, the muscle in the neighborhood of the joint should be skilfully massaged. It must never be bandaged, and to apply a splint is folly. If the joint is not manipulated within twenty-four hours the ruptured adhesions will be reunited. The secret of success in all these cases is to give the muscle very light work at first. A few days of such treatment will generally suffice to bring the remainder, and to get rid of any pain which the earlier efforts may have caused. When this has been accomplished the muscle may be exercised more freely.

Archives des Maladies du Cœur, etc., Paris

July, IX, No. 7, pp. 285-332

- 29 Aneurysm Complicating Tuberculous Cavity in Lung. (L'anévrysme de Rasmussen.) M. Letulle.—p. 285.
30 *Pathogenesis of Certain Cases of Flint's Cardiac Murmur in Aortic Insufficiency. C. Pezzi.—p. 290.

30. Pathogenesis of Flint's Cardiac Murmur.—Pezzi comments on the practical importance of being able to exclude an organic mitral stenosis accompanying aortic insufficiency. In the presence of a presystolic sound difficult to interpret properly, a typical cardiogram, which can easily be taken with the patient lying on the left side, will decide the question in the majority of cases. The discovery of gallop rhythm supplies an additional element for the prognosis, with special therapeutic indications. The Flint murmur is usually a presystolic bruit, symptomatic of gallop rhythm and with the same pathogenesis as the latter. The sound is scarcely a "murmur"; the French call it a *roulement*, a rumbling.

Bulletin de l'Académie de Médecine, Paris

July 18, LXXVI, No. 29, pp. 35-64

- 31 Necessity for Adding Open Tuberculosis to List of Notifiable Diseases. (Sur quelques lacunes des règlements d'hygiène à Paris.) R. Wurtz.—p. 39.
32 Virilism and Inversion of Sexual Characteristics Under Dependence of Interstitial Genital Glands. R. Blanchard.—p. 47.
33 *Local Anesthesia for Operations in the Chest. Couteaud and Bellot.—p. 60.
34 Contagious Diseases in Army Corps in 1915 Only a Third of Average in Peace Times. (Marche des maladies contagieuses dans un corps d'armée sur le front en 1915.) M. Boigey.—p. 62.

33. Local Anesthesia for Operations on the Chest.—Couteaud and Bellot have extracted a projectile from the lungs under local anesthesia in thirty cases, and expatiate on the ease and simplicity with which it can be done. It

affords better control of pneumothorax, while reducing the operative shock and disturbance to the minimum. They had no accidents nor mishaps in any of their thirty cases. They flood the field of operation with a weak antiseptic solution, resect ribs and gain access to the lung without dread of operative pneumothorax. The wounds were of some standing and the projectile was causing more or less disturbance. In eight of the cases the lung was nearly or quite free from adhesions; the projectile was extracted after hooking the lung and bringing it up to the surface and fastening it there.

Le Nourrisson, Paris

July, IV, No. 4, pp. 193-256

- 35 Milk Sterilized by Heat in Infant Feeding. (Résultats de l'emploi du lait stérilisé par la chaleur dans l'allaitement artificiel.) A. B. Marfan.—p. 193.
36 *The Prognosis of Tuberculosis in Infants. Combe.—p. 202.
37 Importance of Mineral Elements in Infant Nutrition. (Rôle de la substance minérale dans la nutrition normale et pathologique du nourrisson.) H. Dorlencourt and M. Delort.—p. 211.

36. Prognosis of Tuberculosis in Infants.—Combe says that, while the prognosis is always serious, yet tuberculosis in an infant is not inevitably fatal. The outcome depends on the age when infection occurred, the virulence of the infection and the number of opportunities for reinfection, also on the extension and clinical behavior of the lesion. If a series of repeated applications of Mantoux' intradermal tuberculin test every two weeks shows that the reaction is growing less each time until it finally dies out altogether, this indicates that the lesion is not producing so much tuberculin as before or else that the body is producing enough antibodies to digest it. In either contingency, this Mantoux immunity, as he calls it, may be accepted as a sign of good omen. Necropsies show, however, that the tuberculous lesions in infants are always more extensive and more serious than would be surmised from the clinical examination. As long as the tuberculosis is restricted to the glands, the disease may progress very slowly or the child may recover. But when the gland barrier is broken down, the disease may run its course in a few weeks if the bronchi and lungs become involved, or cheesy pneumonia may drag along for months. There is also a very slow form of the disease, developing in the hilus or mesentery, *tabes hilaire* or *mésaraïque*, in which the progressive cachexia may not prove fatal for two or three years. In the surgical forms the infection develops so slowly that antibodies are produced in progressive amounts, and this autotuberculinization may result in complete immunity and clinical recovery. He has had numbers of such cases. If this autotuberculinization has occurred before birth or through the milk, before infection becomes installed, the bacilli are unable to produce their usual lesions. They may live for years in apparently harmless symbiosis so long as this balance is not upset.

Lyon Chirurgical, Lyons

May-June, XIII, No. 3, pp. 405-536

- 38 *The Healing Process in Open Wounds of the Skull. (Le processus de cicatrisation des plaies ouvertes du cerveau.) L. Bériel.—p. 405.
39 *The Cell Findings with Lumbar Puncture After Wounds of the Skull. (Note sur les renseignements cytologiques donnés par la ponction lombaire au cours de l'évolution des blessures du crâne.) L. Lévy.—p. 428.
40 Prognosis of Traumatic Aphasia Consecutive to War Wounds of the Skull. J. Froment.—p. 434.
41 Pathogenesis and Treatment of Early and Persisting Hernia of the Brain. (Fungus du cerveau.) R. Leriche.—p. 448.
42 Macroscopic Lesions of War Wounds of the Spine and Spinal Cord. A. Latarjet.—p. 472.
43 Functional Value of Nerves in Cicatrix. (Note pour servir à l'étude de la valeur fonctionnelle des cicatrices des nerfs. Recherche des courants dérivés au cours des interventions.) L. Bériel.—p. 500.
44 Device to Overcome Radial Paralysis. M. Goullioud.—p. 515.
45 *Liberation of Nerve Involved in Cicatrix. Neurolysis. E. Duroux.—p. 518.
46 *Protection of Trunk Nerves in Neurolysis. (De l'isolement et de la protection des troncs nerveux dans les opérations de restauration des nerfs.) P. Bonnet.—p. 529.

38. The Healing Process in War Wounds of the Brain.—Bériel's extensive experience with wounds exposing the brain has demonstrated the surprising fact that hernia of the brain

tissue is most liable to occur when the opening is small. The dread of hernia can be dismissed with ample trephining as the brain and the dura mater grow together in the healing process, and this symphysis is more complete the more ample the trephining operation. This growing together of the brain and dura mater is indispensable for survival. The later evolution of this symphysis seems to be a tendency to reabsorption of the cicatricial tissues and reconstitution of the meninges and their interspaces.

39. Lumbar Puncture Findings During the Course of Skull Wounds.—Lévy examined the cerebrospinal fluid at regular intervals in fifteen cases of war wounds exposing the brain, comparing the findings with the lesions found at necropsy after a long period of apparent convalescence. The first puncture was within a few hours of the injury. In every case the high tension and high albumin content of the fluid were accompanied at first by polynucleosis, but this yielded to lymphocytosis as the condition improved. This lymphocytosis persisted unmodified then, even when the case took a fatal turn. Necropsy disclosed that the meninges are capable of a defensive reaction amounting practically to a local cure. But they are not able to oppose an effective barrier to the infection and protect the subjacent nervous tissue. They retard but they cannot prevent the development of the encephalitis. This tolerance on the part of the meninges explains the lumbar puncture findings, and shows that they are not of much moment for the prognosis. The course in the fatal cases could be traced as, first, the meningeal inflammation, and then, as this retrogressed, development of secondary encephalitis below.

45. Neurolysis.—By this term Duroux says he means the "toilet" of the nerve bound down by cicatricial tissue, supplementing the liberation of the nerve with other measures as necessary. Paralysis from this incarceration of the nerve is more common among the wounded than paralysis from the nerve's being severed. The proportion of the latter in the French hospital seems to be only from 6 to 10 per cent. He describes the technic for freeing the nerve, remarking that success depends on the operation being done before the paralyzed muscles become atrophied as is the rule in two or three months. The outcome thus depends mainly on the condition of the muscles. The abolition of pain and return of sensibility may be counted on in practically every case, but the motor functioning is scarcely modified when the case is too old, or the technic of the neurolysis is defective, or the endeavor to be extremely conservative has been carried too far. Three typical cases are described, with illustrations showing the remarkable success that may be obtained when conditions are favorable.

46. Protection of Liberated Nerve.—Bonnet explains that when a nerve is released from a bed of cicatricial tissue the improvement noted at once is liable to decline as the neurolysis itself induces production of new cicatricial tissue, so that the last state is liable to be as bad as the first. In order to prevent this, the nerve must be protected, and he has found a sheath made from a graft of cellular tissue taken from the thigh best adapted for the purpose. He has sometimes utilized a sheet of fat tissue from the vicinity of the scapula, but has found it better to obtain the graft from some remote field on the body, for reasons which he enumerates. Fat tissue not only protects but pads the nerve against new injury. The only inconveniences are from the thickness of the graft, which may render it awkward to manage, and the fact that, in the rare cases in which the fat tissue is not tolerated, including droplets of fat afford an excellent culture medium for germs. He has had slight infection of the focus in three cases from this cause. Tissue from the sac of a hernia answers better for neurolysis in some cases, but it does not pad the nerve like the fat tissue. He never drains for more than two or three days.

Paris Médical

July 29, VI, No. 31, pp. 85-100

Comparative Ergograph Research on Functional Disability of the Arm After Wounds of Bone or Joint. (Impotences fonctionnelles dues aux lésions osseuses et articulaires du membre supérieur.) H. Nepper and C. Vallée.—p. 86.

- 48 Working Artificial Hands. (Mains de travail pour amputés.) Boureau (Tours).—p. 92.
49 Professional Reeducation of Maimed Soldiers. M. Perrin.—p. 96.

Presse Médicale, Paris

July 24, XXIV, No. 41, pp. 321-328

- 50 *Differential Diagnosis of Pulmonary Tuberculosis and Chronic Nasal Affections. E. Rist.—p. 321.
51 *Treatment of Prolapse of the Uterus. A. Pascal.—p. 323.

50. Differentiation of Pulmonary Tuberculosis from Cough Due to a Chronic Nasal Affection or Other Cause.—Rist has encountered a number of cases of cough in which some other affection was mistaken for pulmonary tuberculosis. If scarcely any or no signs of a lesion are found in the lung and no bacilli can be detected in the sputum but there is a persisting cough, this may be traced to some heart or kidney trouble. Mitral stenosis, in particular, is liable to keep up a cough and induce hemoptysis, and there may be fever with the congestion of the lungs for which this valvular defect is responsible. Atony and sagging of the stomach also drag down the patient and may induce coughing. Roentgenoscopy clears up such cases and the wearing of a supporting belt brings improvement almost like magic. Rist adds that incomplete forms of exophthalmic goiter are frequently mistaken for tuberculosis at first. The cough in these cases is dry, fatiguing and very tenacious, and the loss of flesh, sweats, etc., easily lead into error unless the Graefe and Moebius signs are sought for and roentgenoscopy applied with bacteriologic examination.

Patients in the foregoing groups are mostly women; when a man has a persisting cough it is very liable to be the result of a chronic nasal affection. Few infirmities, he remarks, are so well tolerated as chronic nasal affections. He relates that a rhinologist was recently sent back from the front for supposed pulmonary tuberculosis when time proved his clinical freedom from tuberculosis of the lung but revealed that he had an unsuspected purulent nasal affection, long installed. The men do not seem to notice that a nostril is obstructed much of the time. They hawk in the morning and catch cold easily. There may be a cough-producing affection without interference with breathing. The lack of resonance in the nasal passages may modify the voice in a characteristic way, readily recognized when once heard. Varices may develop at the base of the tongue with tenacious nasal trouble, and simulate hemoptysis. Secondary bronchitis is frequent, and this may set up fever along with the cough, but negative roentgenoscopic and bacteriologic findings will exclude tuberculosis. Another source of possible error is that the defective breathing leaves part of the lung unventilated.

In most of these cases some lurking chronic sinusitis is responsible for the acute and recurring rhinitis and the descending infection of the air passages below. The general practitioner must realize that the nasal accessory cavities are frequently the seat of an infectious process whose effects may be felt throughout the bronchial apparatus. Removal of some hypertrophied turbinate or polyp or the cure of some chronic sinusitis abolishes at one stroke the cough and other disturbances. Even the rhinologists fail to realize that the cough and bronchitis are tributary to the sinusitis. Rist declares that many patients of this type are found in the sanatoriums for the tuberculous, and are cited among the "successes" under tuberculin. "It is easy to cure a man of tuberculosis when he has not got it."

51. Prolapse of the Uterus.—Pascal gives ten illustrations of the preferable technics for correction of prolapse in women of 40 and in the elderly. He emphasizes that whatever method is followed, the flabby muscles must be strengthened afterward by general hygiene and exercises to restore tone in them.

Revue de Chirurgie, Paris

March, XXXV, No. 3, pp. 337-479

- 52 *Paralysis of Peripheral Nerves After War Wounds. (Des paralysies des nerfs périphériques dans les blessures de guerre. Considérations opératoires—prognostic.) E. Duroux.—p. 337.
53 Tardy Extraction of Projectiles in the Lungs; Forty Cases. Technic for Surgery of the Lung. P. Duval.—p. 365.

- 54 *Primary Resection in Treatment of War Wounds of Joints With Fracture. (De la résection primitive dans le traitement des coups de feu articulaires avec fracture.) G. Cotte.—p. 385.
- 55 Extraction of Aseptic Projectiles in the Knee; Twenty-One Cases. (Extraction des projectiles aseptiques du genou.) G. Léo.—p. 421.
- 56 *The Supraclavicular Lymph Glands Connected With the Breast. (Etude anatomique des lymphatiques de la mamelle, au point de vue de l'extension lymphatique des cancers.) P. Mornard.—p. 462.

52. Paralysis of Peripheral Nerves. Operative Treatment and Prognosis.—Duroux discusses in turn paralysis from the severing of a nerve, from cicatricial "englobement," from neuromas, and from scraps of projectiles, as well as from compression by an aneurysm or fracture, with the best method of treating each. He cites typical examples, calling attention in particular to the fine results obtained in a case in which there was a gap of 15 cm. between the stumps of the median and ulnar nerves that had been cut with a knife, over six months before. The gaps were bridged with two strips of sciatic nerve from the dog, "transplanted with all their perineural cellular atmosphere" as he describes. Normal sensibility returned, and the vasomotor and trophic disturbances (blue hand, ulcerations) retrogressed but the man is still unable to bend his fingers quite normally although the wrist can be moved freely in all directions. All the evidence confirms the wisdom of restoring the continuity of the nerve, loosening it and bringing the stumps together. This can readily be done with a gap of only 2.5 cm. If necessary the nerve can be stretched a little or the limb flexed to relax the nerve. Success depends on not waiting too long.

In case the nerve is bound down by cicatricial tissue, the operation to relieve must deal not only with the cicatricial tissue in which the nerve is embedded but also with the cicatricial tissue within the nerve. He treats neuromas on the principle that they represent a contusion of the nerve, slitting them lengthwise to release the strangulated fibers, evacuate effusion and relieve the hypertension which is inevitable when in the focus of a contusion. Paralysis from compression by an aneurysm or callus after fracture may retrogress spontaneously, as the aneurysm is evacuated or the callus absorbed. He here describes instances of each with spontaneous complete recovery.

54. Primary Resection in Treatment of Gunshot and Shell Wounds of Joints with Fracture.—Cotte reports his experience in this line with the different large joints, discussing the indications and outcome for each in turn. It is evident from the forty-nine cases that total resection of the joint offers better conditions for use of the limb later, as this wards off or attenuates infectious processes, and permits early orthopedic treatment which is indispensable in restoring to the utmost the functioning of the wounded limb.

56. The Lymphatics Connected with the Mammary Gland.—Mornard injected a stain into each mammary gland in fifty cadavers of fetuses or young children, and gives fourteen colored illustrations of the five principal types of the chain of lymph glands running up into the supraclavicular fossa. His attention was called to the subject by the frequency of recurrence of cancer in this chain of glands. In only twelve of the fifty did the arrangement of the glands on both sides harmonize with the description in the textbooks. In 50 per cent. there were two pedicles.

Archiv für klinische Chirurgie, Berlin

CVII, 1915, No. 1, pp. 1-194. Last indexed Feb. 19, p. 603

- 57 *Generalized Fibrous Ostitis With Tumors and Cysts. (Von Recklinghausen'sche Knochenkrankheit, zugleich ein experimenteller Beitrag zur Aetiologie der Knochencysten.) F. Lotsch.—p. 1.
- 58 *War Wounds of the Brain and Their Surgical Treatment. (Verletzungen des Gehirns und deren chirurgische Behandlung.) W. B. Müller.—p. 138.
- 59 *Transplantation of Pectoralis Muscle to Correct Paralysis of the Shoulder Muscles; Two Cases. (Ueber Muskelüberpflanzungen am Schultergürtel.) M. Gerulanos.—p. 159.
- 60 Technic for Resection of the Stomach. (Nochmals zur Technik der Magenresektion.) H. Finsterer.—p. 180.
- 61 Technic for Resection of the Stomach. (Sachliche Berichtigung zu vorstehenden Bemerkungen Finsterer's.) H. v. Haberer.—p. 189.

57. Generalized Fibrous Ostitis.—Lotsch devotes fifty pages to detailed reports of thirty-seven cases on record of the generalized bone disease to which von Recklinghausen first called attention as "fibrous ostitis with tumors and cysts." Lotsch further reports a case from his own experience and discusses all phases of the affection in question. He says that we can accept it now as established that the morphologically evident primary process is a proliferating and destructive fibrous metamorphosis of the bone marrow. In other words the normal fat marrow and the blood-producing marrow are crowded out by proliferation of the connective tissue stroma, a marrow fibrosis. Everything else, the changes in the bone, the tumors, the cavities from softening of bone tissue—all these are but secondary.

Pain is the first symptom, but it may be long retarded in children and the elderly, their bones yielding more readily. The pathologic fractures with this disease may occur with physiologic trauma. The periodic aggravations and remissions are likewise pathognomonic. The deformity of the bones may resemble that with Paget's disease of the bones. There are also many points of analogy and resemblance between this fibrous ostitis and puerperal osteomalacia. In twenty-eight of the cases on record the age is mentioned; each decade from birth to 40 is represented by from five to seven cases. In nineteen cases the disease had been manifest from four to twenty-four years before death, and in nine still surviving the duration has been from four to twenty years. In Lotsch's personal case the disease had commenced thirty-two years before.

Among the total thirty-seven cases all but nine were in girls and women. This predilection for the female sex is another point which distinguishes von Recklinghausen's from Paget's disease of the bones, and brings it nearer to true osteomalacia. Roentgen examination is the sovereign diagnostic measure. Treatment seems to be powerless to arrest the disease. The favorable outcome after resection of a solitary bone cyst cannot be anticipated in this generalized type. If enough bone shell is left after scraping out the diseased bone marrow, the cavity grows up fast owing to the regenerating power of the periosteum which does not seem to suffer in this disease. But, in the generalized form, it continues its ravages at other points. However, extreme painfulness or crippling may justify intervention at some point. Phosphorus, arsenic and calcium salts have never proved really successful. To give lime in rachitis seems reasonable, to supply the lime hunger of the newly formed bone. But with fibrous ostitis the lime is cast out of bones that previously contained it. Any intake of lime by the mouth would merely increase the amounts of lime being eliminated in the urine or it would pass through the intestines unabsorbed.

Syphilis has been suggested as an important factor in fibrous ostitis, but the Wassermann test was negative in the later cases—the only ones in which it was applied—and nothing suspicious of syphilis was found at necropsy in any of the cases examined postmortem. It is now probable that some upset in the balance of the internal secretions is responsible. No other supposition has proved tenable to date. In conclusion, Lotsch describes experiments on fifty-one tibias in twenty-six rabbits, aiming to induce the production of a cyst. The experiments were all failures, so far as this was concerned, but they demonstrate anew and beyond question that a hematoma in the marrow cavity, even after removal of most of the bone marrow, never seems to entail a cyst-like cavity. A purely traumatic origin for bone cysts must therefore be rejected. The article fills 137 pages and is profusely illustrated, with a bibliography of 157 titles.

58. Wounds of the Brain.—Müller advocates prompt and extensive operative intervention in all wounds of the brain, saying that a large proportion of the men that live to reach the hospital can thus be saved. The fear of meningitis should not deter from ample operative measures; every scrap of a projectile or bone splinter should be removed, and where a focus of softening or an abscess has already formed in the brain it should be drained. Among his twenty-five cases of tangential wounds, from a glancing projectile, there were

only two deaths. In one of the fatal cases the meningitis was far advanced when the man was brought in. The other fatal case emphasizes the importance of removing every splinter of bone as otherwise they may entail local softening of the brain. He says of the contrecoup that the impact on the other side of the skull may induce a patch of softening.

59. **Transplantation of a Muscle Flap in the Shoulder Girdle.**—Gerulanos is professor of surgery at Athens, and he here relates two cases of paralysis of the serratus muscle which he corrected by transplanting the pectoralis muscle. In the first case the paralysis was of traumatic origin, the injury occurring while felling a tree. The second patient was a young woman. The shoulder muscles on both sides had gradually become paralyzed and the transplanting had to be done on both sides. A substitute for the trapezius muscle was also provided by muscle tissue from the sacrolumbalis. Both cases are described in detail, with fourteen illustrations, to show the fine functional results attained, two and five years after operation. The woman was operated on at four sittings in the course of a year.

Correspondenz-Blatt für Schweizer Aerzte, Basel

July 22, XLVI, No. 30, pp. 929-960

2 A Study of Biologic Psychology. (Gefühl, Gesittung und Gehirn.) K. v. Monakow.—p. 929.

Gazzetta degli Ospedali e delle Cliniche, Milan

July 20, XXXVII, No. 58, pp. 897-912

3 *Mercuric Chlorid in Treatment of Acute Articular Rheumatism. (Patogenesi e cura del reumatismo articolare acuto.) A. Fantoni.—p. 899.

July 23, No. 59, pp. 913-928

4 *Retrograde Dilatation of the Cardia in Case of Impassable Cicatricial Stenosis. A. Franchini.—p. 916.

53. **Mercury in Acute Rheumatism.**—Fantoni acknowledges the benefit from the salicylates in febrile articular rheumatism, but insists that this does not reach the root of the trouble, while the harm it often does may counterbalance the good. He presents considerable evidence to show that acute articular rheumatism is not a disease entity but a uniform manifestation resulting from a special mode of action of a number of pathogenic micro-organisms in given conditions of attenuated virulence and suitable organic environment. This assumption is confirmed by the number of micro-organisms which have been cultivated from cases of acute articular rheumatism, and by the fact that Ghedini obtained positive responses to deviation of complement tests made with the staphylococcus, gonococcus, streptococcus and staphylococcus and the influenza bacillus, alone or associated. The test was positive for one or more of these germs in every case. Another fact substantiating the assumption is the effect of treatment. Maragliano asserts that the salicylates act exclusively on the temperature and the pain, and Fantoni reiterates that they do not shorten the course of the disease. The salicylates given even from the very first, do not abort the disease nor check its progress from one joint to another or to the endocardium. Their action is undoubtedly specific, he says so far as it goes, but it does not go far enough; its action is incomplete.

The aim in treatment should be to inject directly into the blood some drug which confers on the serum bacteriolytic, toxic and agglutinating properties while increasing the number of mononuclear cells in the blood. The serum thus modified has a destructive action on whichever of the ordinary germs may find their way into the system. He says that the drug which will accomplish this transformation of the serum into a polyvalent vaccine, as it were, is mercuric chlorid in minute doses, from 1 to 5 mg. in the twenty-four hours. Intravenous injection of these small doses produces a series of biologic effects which amount in the sum to immunity. Mariani of Genoa has had the greatest experience in this line in Italy and his enthusiasm led Fantoni to apply this method of treatment in four cases which he describes in detail. In one case this was the fourth recurrence of the disease; the other attacks had lasted from ten to forty-five days under the salicylates. Under the

mercuric chlorid the patient soon showed marked improvement and was able to be up the tenth day, and there has been no tendency to recurrence since. His dose was 0.003 gm. on three successive days and 0.004 gm. on alternate days later, a total of six or seven of these intravenous injections. He says that this treatment is certainly harmless, and he did not hesitate to apply it even when the kidneys were a little below par. Of course serious kidney disease contraindicates it. He gives it by intravenous injection of 3 c.c. of a 1:1,000 solution of mercuric chlorid.

64. **Retrograde Dilatation of the Cardia.**—The patient was a man of 27 and except for rachitis and measles he had no pathologic history until the age of 20 when symptoms suggested a probable gastric ulcer. His condition then improved for a time but he had difficulty in passing the food into the stomach. He said it seemed to stick high up in the esophagus, and the sound felt an obstruction at two points, one quite low and the other high, the lower one becoming absolutely impassable in time. The stomach was opened at two sittings and the stenosis gradually dilated with flexible Beniqué sounds progressing from No. 1 to No. 30, curing the patient completely from all further trouble from this source. The fistula into the stomach was kept open for seven months. The retrospective diagnosis was cicatricial stenosis from an ulcer in the region of the cardia plus reflex spasmodic contraction of the esophagus higher up. The introduction of the larger sounds from below sometimes started reflex vomiting, but it stopped as soon as the instrument was removed. When No. 30 was reached in the series, the dilatation was continued by way of the mouth.

Policlinico, Rome

July 16, XXIII, No. 29, pp. 893-920

65 *Continuous Horizontal Bath for Wounded Leg. (Infezione settiche negli arti feriti e nuovo bagno in posizione orizzontale per combatterle.) G. Ingianni.—p. 893.

66 Primary Diplococcus Cerebrospinal Meningitis. T. Pontano.—p. 900.

67 Organization of the Roentgen Ray Service in the Field. (Appunti e considerazioni sulla radiologia da campo. Organizzazione generale dei servizi.) E. Grego.—p. 902.

July 23, No. 30, pp. 921-942

68 Localization of Projectile by Displacing Roentgen Tube Horizontally for Ten Centimeters. (Un facile metodo di localizzazione dei proiettili. Applicazione nuova di principi vecchi.) D. Boccia.—p. 921.

69 To Reduce the Amount of Mutilations. (Per limitare le mutilazioni.) T. Pontano.—p. 923.

70 *Legislation on Workmen's Compensation. (Per la moralizzazione della legge sugli infortuni del lavoro.) A. Ranelletti.—p. 926.

July, Medical Section No. 7, pp. 193-280. Guido Baccelli Number

71 Baccelli as Citizen and Teacher. A. Murri.—p. 193.

72 Baccelli as Clinician. E. Maragliano.—p. 217.

73 Baccelli as Statesman and Leader in Social Medicine. G. Sanarelli.—p. 263.

65. **Horizontal Bath for the Leg.**—Ingianni has been using for some months a light bathtub long enough and deep enough for the leg to rest in it as it enters at one end, the limb thus submerged from the toes to the hip as the man lies in bed. This permits a continuous lavage of the wounds on the leg with some antiseptic fluid. He has been making a practice for a year of this system of continuous lavage for the arm, and found the results so excellent that he has devised the horizontal bathtub on the same principle. The opening for the leg is made very large, with a waterproof cuff that fits tight enough around the leg to prevent leaking of the water but not tight enough to interfere with the circulation. The mattress below this point is cut out. The tub can be made of metal, glass or wood or be merely a portable frame for a rubber-cloth tub. Since he has adopted this principle in treating war wounds of the extremities he has not had to amputate either an arm or leg, even in 95 cases of frozen feet with more or less extensive gangrene; in seventeen cases of compound fracture of the bones of the leg from gunshot or shell injury with suppuration; sixty cases of compound fracture of the bones of the arm, and nineteen of the elbow. In the latter group amputation seemed inevitable as also in the cases of frozen feet. He has rings soldered to the inside of the bathtub at the foot to permit extension of the limb while it is in the continuous bath, weights and pulleys per-

mitting graduated traction. By keeping the limb soaking in the antiseptic fluid for five or six hours a day, or even twice this, enough of the antiseptic is absorbed to have a general action on the infection while the fluid permeates the remotest crevices of the wound, cleanses and sterilizes. In short, he declares, "the effect of this prolonged bath is marvelous." It does not interfere with the natural circulation in the least. The fluids he has been using for the continuous bath are a 3 per cent. solution of hypochlorite or a $\frac{1}{2}$:1,000 solution of mercuric chlorid, a 1:1,000 solution of potassium permanganate, iodized water or physiologic solution. It is generally better to alternate the use of these antiseptics in turn; the mercuric chlorid always proved most effectual in the septic cases. The article is illustrated.

70. Workmen's Compensation Legislation.—Raneletti declares that the principle of compulsory treatment must be introduced into legislation on workmen's compensation. At present there is no authority to compel the injured to submit to proper treatment and complete the whole course. Precious time and opportunity are lost far too often. Only for workers in the sulphur mines does the law insist that the injured must obey the directions of the physicians connected with the works. If the victims of industrial accidents knew that they would forfeit their indemnity if they refuse to submit to and follow the doctor's directions, a new era would dawn for industrial accidents, and the compensation would acquire a just basis. He suggests another point which might be borne in mind in future legislation on disability, sickness and old age insurance, namely, that the old age pension should be increased or diminished according as the individual has made slight or considerable demands previously on the treasury.

Siglo Medico, Madrid

July 15, LXIII, No. 3266, pp. 449-464

- 74 Principles for General Anesthesia. (Advertencias utilissimas sobre la anestesia general.) D. C. Calleja.—p. 452.
- 75 *Constitutional Asthenia. S. de Santa Maria.—p. 458.
- 76 When Called in Consultation. (Las consultas medicas.) J. Allen.—p. 459. Commenced in No. 3265.
- July 22, No. 3267, pp. 465-480
- 77 Microscopic Study of Red Blood Corpuscles. F. Mas y Magro.—p. 466. Conclusion follows.

75. Constitutional Asthenia.—Santa Maria has been studying the Becher-Lennhoff index of constitutional asthenia, and has found it very instructive. In examining over 500 persons, he found the index always above 67 in persons with other signs of constitutional asthenia, while it was always below this in the normal and the obese. To get this index the distance between the notch of the sternum and the pubis is divided by the waist measure and multiplied by 100. This reveals the basis of constitutional asthenia, and discloses that this is the soil on which a number of apparently widely diverse morbid conditions develop, from characteristic, typical gastropnoia and enteropnoia to tuberculosis, hyperchlorhydria, hypersecretion and perverted or deficient thyroid functioning. In England and Germany, where the average weight is higher, the index for constitutional asthenia averages higher than in Spain. It gives a much better insight into the subject's endurance and resisting powers, and hence his aptitude for military service, than the ratio between the chest measure and the height, which is used in Spain to eliminate the unfit in passing on recruits, and Santa Maria urges that this constitutional asthenia index should be substituted for the latter. This index is not modified by the height nor the state of nourishment. He found it typical for constitutional asthenia in 60 per cent. of all his tuberculous patients examined, and Leschke found an equally large percentage among the tuberculous soldiers last year.

Hospitalstidende, Copenhagen

July 19, LIX, No. 29, pp. 697-724

- 78 *The Skin Tuberculin Test in Prognosis of Tuberculosis in Children Under Two. (Om den prognostiske Betydning af positiv Pirquets Reaktion hos Børn fra 0-2 Aar.) G. E. Permin.—p. 697.
- 79 *Case of Persisting Arrhythmia Without Valvular Defect or Subjective Symptoms. (Udtalt Arterieflimren—Arythmia perpetua—uden Klappefeil og uden Spor af subjektive Symptomer i 15 Aar. Ischias dextra.) C. Gram.—p. 707.

78. The Skin Tuberculin Test as a Basis for Prognosis in Young Infants.—Permin remarks that the various statistics that have been published on the subject of the skin tuberculin test applied to children less than 2 years old, have been obtained in a hospital or institutional environment, with few exceptions. This somewhat detracts from the reliability of the deductions as conditions in families differ from those in institutions. He has been studying the skin tuberculin reaction in the young children in the families of persons who apply to the two antituberculosis dispensaries at Copenhagen. It is the rule there to examine all the members of the families of applicants, and it has thus been possible to apply the Pirquet tuberculin test to infants under the age of 2. Forty-six gave a positive response and have all been followed to date over a number of months. Some older members of the family had pronounced tuberculosis, with opportunity for infecting the children, in all but three cases. This material is tabulated and analyzed, the conclusions being that only during the first year of life has the skin tuberculin reaction particularly grave prognosis. Of the fifteen infants less than a year old, six died, but only two of the thirty-one between 1 and 2 years old. Many of the children who had been repeatedly and extensively exposed to infection seem to be thriving through quite a long period of observation. His statistics show further that the antituberculosis dispensaries, by training the tuberculous in greater care to prevent infection of others, are doing a great work, the results of which are manifest in the clinical recovery of many children who otherwise would have succumbed to wholesale infection.

79. Persisting Arrhythmia Without Valvular Defect or Subjective Symptoms.—Gram's patient is a working man 44, always robust, with two healthy children. For fifteen years at least his pulse has been that of extreme and constant arrhythmia—arrhythmia perpetua—for which no explanation can be found. There is no trace of a valvular or myocardium affection, the blood pressure is normal, hemoglobin 104, and there is nothing to suggest that digitalis might be needed. During all this time he has been doing hard manual labor with much athletic work besides.

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July 13, LXXVIII, No. 28, pp. 1151-1196

- 80 *Treatment of Eclampsia. E. Hauch.—p. 1151.
- 81 Case of Optochin Amblyopia. (Et Tilfælde af Optochin-Amblyopia.) V. Scheel.—p. 1160.
- 82 Tuberculous Pericarditis With Effusion. Clinical Recovery Under Artificial Pneumopericardium. T. B. Hansen.—p. 1166.

80. Eclampsia.—Hauch reports 109 cases of eclampsia from the obstetric department of the Copenhagen Rigshospital. Convulsions had occurred before delivery in ninety-three but in sixteen had come on only after the child had been born. The mortality was 10 per cent. in the first of the above two groups, and 8 per cent. for the total 109 cases. He analyzes the cases to see if it could have been possible to determine which was going to have a more serious and which a lighter course, but could find nothing decisive. Hence it is imperative to treat every case, even the mildest, as if it were going to be a grave one. Only in this way can we ward off tragic surprises. His experience with the Stroganoff prophylactic method of treatment was not very encouraging, and he queries whether it is wise to add two more to the load of toxins the woman is already carrying. In any event, he thinks it is better to empty the uterus and thus get rid of what in all probability is the source of some of the toxins at least. Some of the women were reexamined a year or more afterward and several were found to suffer from occasional dizziness, headache and disturbances in vision. These later effects were encountered even in some of the supposedly lighter cases. Of the sixty-eight children weighing over 2,000 gm., 10 per cent. died, and 44 per cent. of those weighing less than this in addition to the five abortions and six stillborn children. Only transient benefit was realized from venesection in the cases in which he applied it before delivery, but after delivery had been completed, venesection seemed to give permanent relief by getting rid of some of the toxins circulating in the system, after the source of the toxins had been expelled.

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REMOVAL OF THE RIGHT COLON: INDICATIONS AND TECHNIC*

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For many years the indications for the surgical treatment of megacolon, tumors, fistulas and some diseases of the colon have been definite. The principles involved and the technique employed have been carefully considered along lines of theoretical, experimental and practical development. The results of cure or relief within the natural limitations of the character and the extent of the diseases have been excellent. Within a few years still greater progress has been made in our knowledge of diseases of the colon, largely because of the endeavor to treat surgically not only stasis as an entity, but also various acute and chronic diseases, general and local, resulting from or, when other cause is not apparent, presumed to result from it. Thus, chronic changes in the circulation, such as endarteritis, in the nervous system, such as in epilepsy and neurasthenia, in muscle degeneration, rheumatoid arthritis, enteroptosis and various chronic so-called toxic diseases, surgical treatment by removal or short-

circuiting the bowel was along lines already developed for the removal of tumors or the treatment of obstruction.

These theories have been developed mainly by the work of Lane,¹ who in short-circuiting and removing the colon made practical application of the view of Metchnikoff, namely, that the bacterial flora of the colon is responsible for many of the chronic ills of

man, and that if it were possible to eliminate or shorten the colon, these ills would be decreased. There is just enough truth in this theory and sufficient that is not true to require years to standardize the diseases and conditions between the border lines of medicine and surgery, in which the elimination of the colon will give sufficient improvement over the results of therapeutics to justify such surgical intervention. This period will be reached only when the collective judgment of the profession can select the proper cases. While Lane may be over-enthusiastic in his claims, he deserves credit for much of the knowledge of the physiology and disease of the colon possessed by the medical profession today. There is no controversy concerning operations for tumors and for obstructions.

In properly selected cases of constipation, great benefit can often be obtained by the surgical elimination of the absorbing



Fig. 1.—Removal of right colon, showing lines of section.

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Seventh Annual Session of the American Medical Association, St. Louis, June, 1916.

1. Lane, W. A.: Chronic Intestinal Stasis, *Brit. Med. Jour.*, 1912, i, 989; *Surg., Gynec. and Obst.*, 1910, xi, 495; *Lancet*, London, 1912, ii, 1706.

area of the colon. It is certainly not advisable for simple constipation, but is advisable for some selected severe cases in which the patients are disabled by the condition in spite of prolonged and varied treatment. At the present time the patients considered suitable subjects for this procedure are those who are toxic from the condition, the drugs or the absorption of unpassed intestinal contents after taking physic, and in whom the Roentgen ray shows a stasis of from three to four days' duration, which is often associated with complicating chronic infections.

We have performed general colectomy in a few cases, and the right or partial colectomy in a larger number, and we believe that except in cases in which there are tumors and local disease, the latter operation is as good for the relief of symptoms as the general colectomy. First, it removes the greatest absorbent surface in the colon; second, it is not so severe an operation, and third, it preserves the omentum, the loss of which is a serious consideration in itself, reducing protection, warmth, mobility, and the equalization of the abdominal circulation. The general colectomy often apparently leads to matting adhesions of the anterior layers of the intestine. In some cases, as reported by Clark,² these adhesions cause serious disability and in many cases require further operation and occasionally result in death.

It is true that much of the present-day surgery has been taken from fields formerly classified from the therapeutic standpoint as medical, and in the slow process of change the surgeon has been held in check by a constant dispute of the ground. Specialists have been developed to treat the stomach, the first portion of the intestine and the upper abdomen, and others who devote their attention to the lower end of the colon and pelvis. Thus it is that several yards of bowel have been left as an unclaimed field—not only unclaimed, but not wanted—and this has been forced on the surgeon for the relief of numerous chronic ailments, many of which are incurable.

In judging the probable or possible benefits of the surgery of necessity or expediency, the development and function of the large bowel should be taken into consideration.

Like the stomach and urinary bladder, the colon has a shorter heredity than the small intestine. Originally it was equipped on its right side with absorbing villi like those of the small intestine, which disappeared early. The first portion of the colon is an absorber of fluids which are taken through the portal circulation,

while the left half of the colon, especially its lower portion, has become, through convenience, an organ for the storage of the drier fecal matter. It is the natural habitat of several microbes, the activities of which produce a considerable part of its fecal contents. Such bacteria are harbored throughout life; consequently, a considerable degree of immunity to them is natural to the individual even when they become misplaced. Several diseases chronic in character, local and general, are caused by varieties of intestinal bacteria and protozoa which are not sufficiently common for the development of immunity.

The lymphatics of the colon are limited in comparison with those of the small intestine, which are very numerous. Reasoning from the nature of the contents of the colon, the converse would appear to be true; but as I have pointed out,³ it is probable that the lymphatic supply was limited so that the septic colonic contents

might be passed through the liver. This provision of nature explains why malignant diseases of the colon remain localized for such long periods as compared with malignant diseases of the small intestine. Butlin⁴ shows that in about 50 per cent. of patients with malignancy of the colon, the disease at death is still local. In young persons, however, the lymphatics are more active, and earlier distribution of the disease is evident. This is true also of cancers located in the transverse colon with its associated omental glands.

The entrance of the small bowel into the colon is closed by the ileocecal valve, which is rather badly constructed mechanically and often ineffective. By one series of observers, it is looked on as acting to delay the passage of the contents of the ileum until further time is given for absorption of nutriment.

Simple constipation has been relieved by enlarging the ileocecal valve (W. J. Mayo).⁵ Others believe the valve acts to prevent the entrance of gas and bacterial products from the colon to the ileum, whose absorbing villi do not have the liver for a purifying agent, and some surgeons operate to reconstruct the valve (Kellogg).⁶ Symington's⁷ description of the valve shows that its inefficiency is due largely to the obliquity of its entrance into the cecum; also to its lower attachment to the inner cecal wall and partial invagination into the cavity of the large bowel. In this respect it forms a mechanical barrier against back-flow such as



Fig. 2.—End-to-side union by Murphy button.

2. Clark, J. G.: The Removal of the Colon for Obstructive Fecal Stasis, with a Report of Eight Cases, *Tr. South. Surg. and Gynec. Assn.*, 1913, xxvi, 358.

3. Mayo, C. H.: *Surgical Physiology of the Lymphatic System*, *Tr. South. Surg. and Gynec. Assn.*, 1903, xvi, 442.
4. Butlin, H. T.: *On the Operative Surgery of Malignant Diseases of the Colon*, Philadelphia, P. Blakiston's Son & Co., 1900, p. 260.
5. Mayo, W. J.: Ileocecal Orifice and Its Bearing on Chronic Constipation, *Ann. Surg.*, 1900, xxxii, 364.
6. Kellogg, J. H.: Incompetency of the Ileocecal Valve the Most Common Cause of Ileal Stasis, *Lancet-Clinic*, 1915, cxiii, 602.
7. Symington, cited in Cunningham, D. J.: *Text-Book of Anatomy*, New York, William Wood & Co., 1907, p. 1078.

is formed by the mechanism of the common-duct entrance into the duodenum and the entrance of the ureter into the bladder. The viscus under tension compresses the duct entrance and requires at all times some muscular effort at delivery of its contents. Peristalsis of the intestine is stimulated by the intestinal content and varies with its variety or irritating qualities. In the small intestine it is fairly regular and constant until the bowel is emptied. This propelling effort is accomplished by the action of the circular and longitudinal intestinal muscles. The peristalsis of the colon differs from the peristalsis of the small intestine in that it is not constant; the fluid contents of the ileum passing into the cecum remain at rest for a considerable period of time until consistency is increased by the absorption of fluid. Metchnikoff is undoubtedly right in his claim that in health a great portion of the body fluids are absorbed from the large bowel. The cecum normally

empties but a few times in twenty-four hours. In the large bowel these movements are usually accompanied by an audible gurgling. In the right colon a slight reverse peristalsis has been demonstrated which favors delay. Delay in the right colon is due to the attachment at the splenic flexure, which forms a simple kink or bend in the tube. This must be of importance as it is the most constant attachment of the colon. It lies nearly as high as the entrance to the stomach, it prevents siphonage. The fact that the intestine is a muscular tube within a muscle-walled cavity makes all operations which depend for drainage on gravity ineffectual in the majority of instances. Peristalsis of the colon is also stimulated by the intestinal contents, the movement of which is caused by contraction of the circular fibers for steadying and pushing, and aided by the sacculations. The latter are formed by the three muscular ribbons, which are one-sixth shorter than the total length of the large bowel. In the forward movement of the thicker intestinal contents, the muscular ribbons serve as tractors. Space is made for the advance by the distention of the intestinal walls by the gas normally present. Thus a cecal sigmoidostomy will not help if the obstruction is above the cecum. Without obstruction, it may make a vicious circle. For various

reasons the operation has been unpopular. A few patients, however, have been reported as benefited by it.

It has been shown that there is a wide variation in the length and size of the intestine in different persons; the shortest intestine on record was 8 feet long, and the longest, 33 feet (Lynch and Draper⁸). We thus have the extreme carnivorous type and the herbivorous type. While all of the colon can be sacrificed with the maintenance of approximate good health, the loss of more than one half of the small intestine is most serious.

The large bowel originates on the left side of the abdomen, the cecum rotating around the abdomen from left to right. At about the third month it is beneath the stomach and later rests beneath the liver and over the right kidney, until shortly before birth, when it descends to its final position in the right iliac fossa. Occasionally, according to Treves,⁹ this descent

may be delayed up to two years after birth, and rarely the rotation may not occur or the cecum may be permanently fixed over the right kidney. According to the period of descent it may ride over the top of the parietal peritoneum, developing a long mesentery, the "cecum mobile" of Wilms, or it may burrow through it, covering itself with an extra layer of peritoneum. Between these two extremes and the normal are the various forms of veils, adhesions and fixations as supporting ligaments

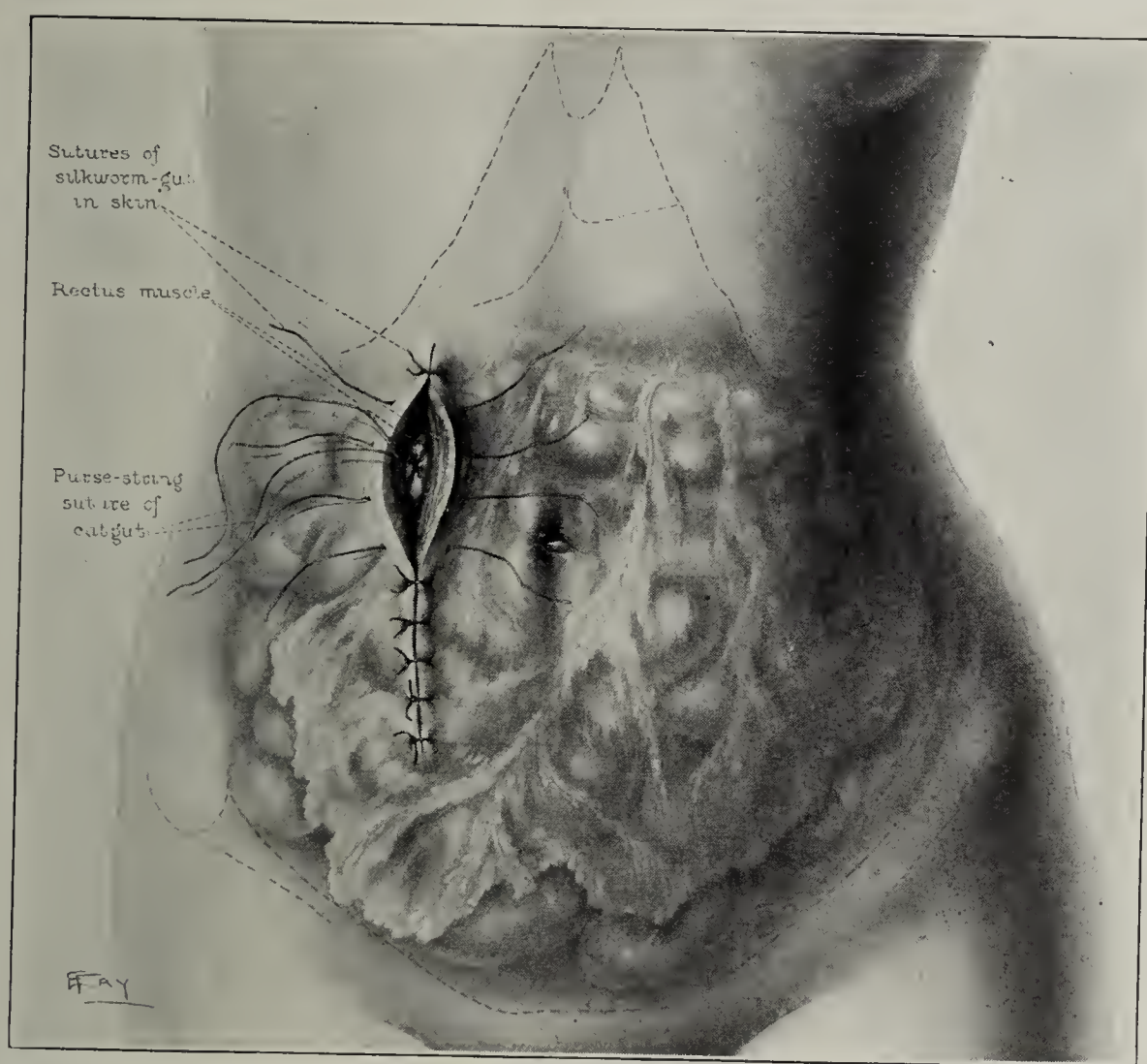


Fig. 3.—Incision, showing method of closure and end of bowel in depth of wound.

described by Long,¹⁰ Jackson,¹¹ Pilcher,¹² Gerster,¹³ Gray,¹⁴ Pringle,¹⁵ Binnie,¹⁶ Eastman,¹⁷ Flint,¹⁸ and Lane. It is at once evident that, because of the rota-

described by Long,¹⁰ Jackson,¹¹ Pilcher,¹² Gerster,¹³ Gray,¹⁴ Pringle,¹⁵ Binnie,¹⁶ Eastman,¹⁷ Flint,¹⁸ and Lane. It is at once evident that, because of the rota-

9. Treves, F.: The Anatomy of the Intestinal Canal and Peritoneum, Hunterian Lectures, Brit. Med. Jour., 1885, i, 415, 470, 527, 580.

10. Long, J. W.: Pseudoperitoneal Caults of the Colon, South. Surg. and Gynec. Assn., 1912, xxv, 446.

11. Jackson, J. N.: Membranous Pericolicitis, Tr. West. Surg. and Gynec. Assn., 1908, xviii, 269.

12. Pilcher, L. S.: Surgical Aspects of Membranous Pericolicitis, Ann. Surg., 1912, lv, 1.

13. Gerster, A. G.: On Chronic Colitis and Pericolicitis, Ann. Surg., 1911, liv, 325.

14. Gray, H. M. W.: Chronic Intestinal Stasis, Brit. Med. Jour., 1914, i, 188.

15. Pringle, S. S.: Chronic Intestinal Stasis, Brit. Med. Jour., 1914, i, 183.

16. Binnie, J. F.: Pericolicitis Dextra, Month. Cycl. Prac. Med., 1905, xviii, 341.

17. Eastman, J. R.: The Foetal Peritoneal Folds of Jönnesco, Treves and Reid and Their Probable Relationship to Jackson's Membrane and Lane's Kink, Surg., Gynec. and Obst., 1913, xvi, 341; A Further Study of Pericolic Membranes, ibid., 1914, xviii, 228.

18. Flint, J. M.: Embryonic Bands and Membranes About the Caecum, Johns Hopkins Hosp. Bull., 1912, xxiii, 302.

8. Lynch, J. M., and Draper, J. W.: Anastalsis and the Surgical Tapy of the Colon, Am. Jour. Med. Sc., 1914, cxlviii, 828.

tion, all vessels and nerves of any importance are to be found on the inner leaf of the mesentery, the outer fold being principally fixative. Division of the latter adds greatly to the mobility of the bowel without impairing its vitality and simplifies some operations on it.

In the development of the intestine the vitelline duct (or should a remnant be left, a Meckel diverticulum) is attached to the ileum about $2\frac{3}{4}$ feet from the ileocecal valve (Cunningham). Embryologically, then, the lower ileum is developed with the colon.

It is to be noted that in those operations in which the colon is removed—for example, Lane's operation—or in which in certain diseases it is rendered completely functionless for considerable periods by means of a low ileostomy as advocated by Brown,¹⁹ the lower ileum becomes dilated and takes the place of the colon. Clark shows the dilatation of the ileum to be regular following colectomy. In low ileostomy the fluid contents of the ileum soon thicken, and emptying occurs at intervals with less gas and little odor.

TECHNIC

In operating on the right colon an incision is made in line with and through the right rectus. It should be ample in length to give free working space. Following a cursory examination of the right colon, a general exploration of the entire abdomen should be made to search for metastases in malignancy and also to avoid overlooking associated disease, thus preventing useless or unnecessarily extensive operations in malignancy or failing to make them sufficiently extensive.

If extirpation is decided on, extensive protective gauze packing is adjusted to the inner side of the colon. An incision is made along the white fold of parietal peritoneum where it joins the peritoneal covering of the outer side of the colon. This permits of extreme mobility and allows the bowel to be elevated outside of the abdominal incision. The space to the outer side is filled with a protective gauze pack. The ileac mesentery is perforated, and the ileum is divided between double clamps 3 inches from the ileocecal valve, the cut ends projecting from the forceps being sterilized with the actual cautery. From below up, the mesentery of the cecum and ascending colon is divided between forceps up to the transverse colon, and the omentum is ligated and separated from the right one third of the transverse colon (Fig. 1). At this point the colon is divided between clamps, the loose bowel removed, the projecting stump from the distal clamp also being treated by cautery. The vessels supplying this region, few in number and readily seen, are ligated with catgut. In nonmalignant cases the division of the mesentery is made closer to the bowel, while in malignancy more of

the mesentery is taken, including the lymph glands which drain the area. Care should be taken in the separation of the colon to avoid injury to the duodenum. While the ureter should be observed on the right side, it does not come into the operative field except in extensive malignancy when ligation of the ureter or removal of the kidney may be necessary. We have been able to remove such advanced tumor growths in numerous instances, including several in which the patients had been explored and declared inoperable from one to several months previously. In the latter type of cases the tumors are usually adherent to the incision in the abdominal wall and require a block removal of the entire area over the growth. In such cases there is greater danger of recurrence in the abdominal muscles than of recurrence within the abdomen.

Using chromic catgut as a suture, the end of the colon is prepared for closing by inserting the needle and catching into the bowel first on one side and then the other over the forceps, including the peritoneum and muscle, the loops crossing the forceps being left loose. Any contents of the bowel are now forced onward, and a rubber-covered clamp applied for control about 4 inches from the end.

The forceps closing the end of the bowel are now removed, the end opened and the female or spring side of a proper-size Murphy button pushed through the loose sutures into the opening and left loose within the colon (Fig. 2). The two ends of the thread being drawn taut, immediately invert the mucous end of the colon and approximate the peritoneal surfaces. A second row of sutures is applied to make the closure more perfect, the ends of the suture being left long. (Ligation of bowel end and purse-

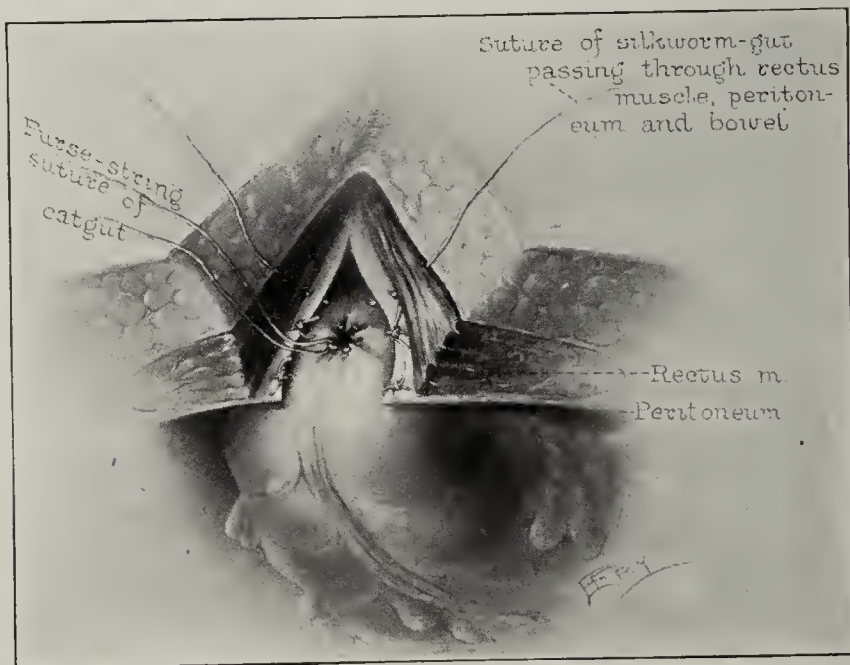


Fig. 4.—End of colon brought up to peritoneum and sutured.

string invagination is equally good.) The button within the bowel is manipulated so that its tube is pressed against one of the muscular bands, about $2\frac{1}{2}$ inches from the end of the bowel. The bowel is incised on the tube of the button, so that it can be pushed through the wall of the intestine, no suture being used. This is held until the other half of the button is adjusted into the end of the ileum by suture. The two halves are then pushed together, making an end-to-side union. If deemed necessary, a few interrupted sutures of fine catgut or silk may be used over the button, to adjust adjacent epiploic tags or omentum for protection and support at the point of union. The anastomosis can be made by suture, but the Murphy button is safer, quickly adjusted and ideal for the purpose. Some prefer side-to-side union in spite of the tendency to dilation of the blind ends. The triangular opening in the mesentery beneath the union is now closed by catgut suture. A few sutures are inserted to adjust the parietal peritoneum over the exposed cellular tissue from which the colon was separated (Fig. 3). The wound is now closed, the end of the colon being drawn into the peritoneal opening as closure is made. The

19. Brown, J. Y.: The Value of Complete Physiological Rest of the Large Bowel in the Treatment of Certain Ulcerative and Obstructive Lesions of this Organ, with Description of Operative Technique and Report of Cases, *Tr. South. Surg. and Gynec. Soc.*, 1912, xxv, 440.

colon is brought into the muscle but not through it, the muscles being sutured above and below this point; the long suture from the end of the bowel hangs out of the incision. A strip of gauze is inserted to the end of the bowel to keep the muscles apart. The procedure is employed as a safety valve to relieve gas should stasis with great distention occur between the fourth and sixth days. Peritonitis causes most of the deaths by necrosis of the union from distention. In a series of twenty cases we have had no deaths from the use of the Murphy button and the safety-valve method. By drawing on the projecting suture and using small pointed forceps along the taut thread, the bowel is readily opened and gases permitted to escape. If not required by the sixth day, the suture is cut, the gauze removed and the opening allowed to close. If the suture is not needed, the healing is not prolonged; if needed, closure is usually effected within a short time (Fig. 4). This safety valve is of great benefit in about 15 per cent. of the cases. Should the peritoneal cavity be contaminated, drainage is secured by stab incision with drain in the loin.

The method of operation described is safe and remarkably effective for tumors, granulomas and fistulas. In cases of toxemia the general condition is improved, and in 80 per cent. the constipation is improved. The general improvement made in the latter cases is somewhat less marked than in operations of necessity for tumor and obstruction (Fig. 5). In operating on the left colon for obstructive conditions by the Mikulicz-Bruns method or by resection, appendicostomy is of great value.

Not including the rectum, there were 262 resections of the large intestine for malignancy. Of the patients who recovered and who were operated on more than five years ago, 54 per cent. are alive. Of those operated on more than three years ago, 67.5 per cent. are alive.

From January, 1898, to Dec. 31, 1915, the right half of the colon was resected for tumors, disease and stasis in 235 cases, with an operative mortality of 12.5 per cent. In our early work the operability was lower, the mortality lower and the permanency of cure higher. This led to an increase in the operability of these otherwise hopeless cases, with the result that there was an increase in the mortality and a decrease in the permanency of cure; but considered from the standpoint of the total number of cases seen, a great increase in the number cured. The present operability is 62 per cent. Unless the operability percentage is given, statistics in regard to the results of operations for malignancy are misleading.

Moderation in Eating.—For the sake of health, medicines are taken by weight and measure; so ought food to be, or by some similar rule.—Skelton.

THE VALUE OF ILEOSIGMOIDOSTOMY AND SIMILAR PROCEDURES

IN THE TREATMENT OF CHRONIC
MULTIPLE ARTHRITIS*

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Whether or not its truth is admitted, the originality of Lane's idea and the brilliancy with which he translated the thought into action must be admired. Chronic infectious arthritis had long been a troublesome thorn in the side of the profession; in an occasional case there was spontaneous recovery or amelioration of symptoms following this or that mode of treatment, but it was generally recognized as a fact that in the average case of chronic infectious arthritis medical science offered little hope of cure. The many theories as to the etiology of the disease and the numerous methods advocated for treating it bore strong witness

to our lack of definite knowledge as to its real cause, and despite treatment, the sufferers usually continued to suffer and, through alternating periods of relative quiet and of acute torture, passed slowly on into years of utter helplessness. What wonder, then, that the attractive theory of intestinal stasis with its resulting sequelae of microbic invasion, toxemia and joint infection and its possible relief by a relatively safe and simple surgical operation should draw wide notice and that both surgeon and patient should hasten to test in the fire of experience the practical worth of the novel thought! For it is only through actual experience on human beings that the degree of worth in such an

idea can be truly estimated, since under no other circumstances can the real conditions of the disease be reproduced. It is only because of this fact and because the present number of reported observations is relatively small that Dr. MacAusland and I presume to present to this section the result of our work in such a limited number of cases. Our paper makes no pretense of being anything but a record of the effect, immediate and remote, of ileosigmoidostomy, etc., in cases of chronic, multiple nontuberculous arthritis.

Other series have been published, the most significant, perhaps, being one by Fagge and Hughes¹ and another more recently by Rea Smith² in a paper presented before this section last year.

The first-mentioned authors draw their material from the records (from 1909 to August, 1914) of Sir

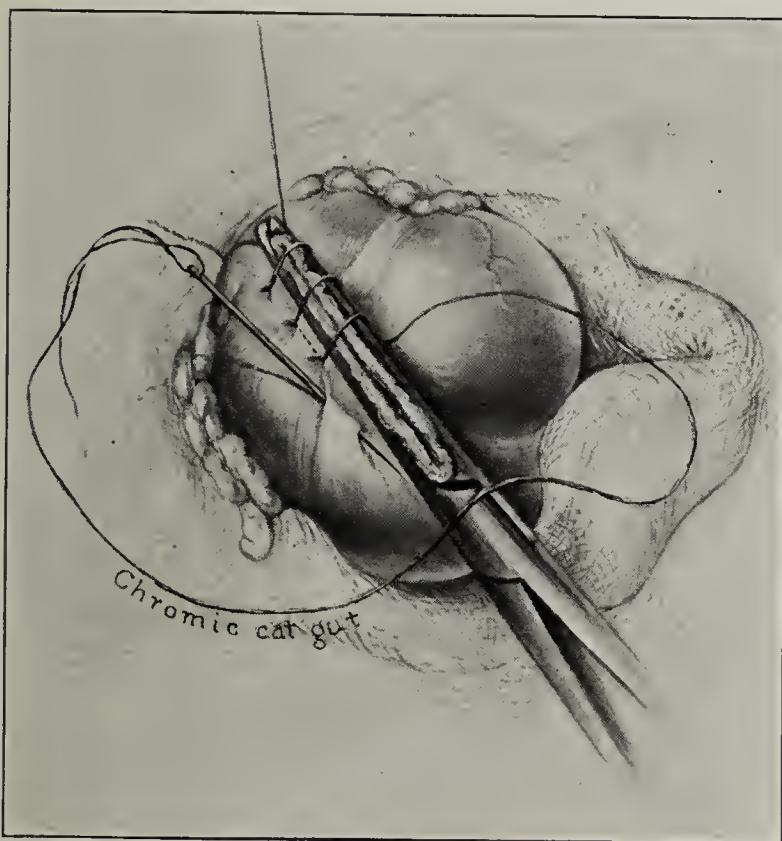


Fig. 5.—Aseptic method of inverting mucous membrane by a running suture.

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Fagge and Hughes: Brit. Jour. Surg., 1914-1915, ii, 657.

2. Smith, Rea: Ileocolostomy and Colectomy for Arthritis Deformans, THE JOURNAL A. M. A., Aug. 28, 1915, p. 771.

Arbuthnot Lane and give the results obtained through the performance of colectomy (four cases) and ileosigmoidostomy (three cases) in persons with multiple, nontuberculous arthritis. The immediate results were good in all instances; the pain and the joint stiffness were less, and the patients all felt more comfortable. The late results were in the main fairly satisfactory. Two cases could not be traced; in one, in which a colectomy was performed, the patient died of pulmonary embolism on the thirteenth day; of the other four, two may be classed as recoveries (one and one-quarter and two and one-half years after operation) to all intents and purposes, one as continuing to improve at the end of three months and the fourth as unchanged, two and one-half years after operation.

Of course, recovery, when spoken of here in connection with joints, is not to be understood in the sense that bony ankylosis and gross deformities disappeared. It means that such initial conditions as swelling, effusion, tenderness, etc., and their immediate sequelae were remedied.

I have been unable to find a detailed account of Smith's cases, but his results are remarkably good. He reports the outcome of his experience with fourteen patients. In two instances he did a primary colectomy, and this procedure was followed by a marked benefit to both patients. In twelve of the cases, ileosigmoidostomy alone was done as a primary measure. One of the patients died on the fifth day in uremic convulsions, a death which may not be laid at the door of surgery, as Smith notes; five were very greatly improved, three to the stage of resuming their usual work; in the remaining six patients, while temporary improvement followed the operation, it was not permanent and they soon relapsed into their former conditions; four of the six underwent a second operation, colectomy, with great and seemingly permanent benefit to three of them. How long after operation the report was made, I do not know. Thus, ten of the fourteen patients on whom Smith operated were either cured or put in such condition that they could get about without assistance, a truly remarkable showing.

Our series consists of ten cases; in eight, ileosigmoidostomy was done. In all these the ileum was cut across about an inch and a half above the ileocecal valve, and the end of the distal portion was inverted and closed; in four instances, the end of the proximal portion was also closed and a lateral anastomosis with the lower sigmoid carried out; in the other four, the open end of the proximal arm was implanted into the side of the sigmoid. In one of the remaining cases cecosigmoidostomy was done; in the other, a hemicolectomy, the proximal end of the ileum being implanted into the side of the distal portion of the transverse colon. There was no mortality. In one case, the only one in which a cure really followed, a technical defect gave rise to a fecal leakage which was successfully repaired at a second operation.

The immediate effect of operation in these cases is always a beneficial one, remarkably so in some instances. This fact has been noted by others. In one case of Lane's series, the day following operation saw a striking change in the patient's condition; there was an increase of 25 degrees in the extension of the knee-joints and, for the first time in six months, the patient could hold a pen in her right hand and could write her name. While I have observed no such wonderful alteration as this in the joint conditions, it can-

not be denied that in many ways the patients receive marked and speedy relief from the operation. The cold, moist hands and feet become warm and dry; the tender, painful joints feel easy and comfortable; the clammy sweats cease, and the patient experiences and admits a general betterment. In other words, the purely toxemic symptoms are relieved and the relief comes quickly, in from forty-eight to seventy-two hours, as a rule. Later, in favorably influenced cases, there follow subsidence of the swellings about the joints, especially the small ones, an increase in the degree of joint motion and a change for the better in the regularity and character of the bowel movements. Even in cases that later relapse, the amelioration may continue for some time, weeks, months or even a year (as happened in one case of our series) and thus give promise of permanency. Usually, however, in our experience the gain has been general rather than local, temporary rather than permanent. The general bodily health improves and continues to be better permanently, while the joint conditions, though they may be relieved for a longer or shorter time, usually relapse ultimately into their former or even a worse state.

In our series of ten cases we can boast of but one cure. After ten years of more or less constant trouble with hands, hips, knees, ankles and feet, a young man willingly submitted to ileosigmoidostomy, and now, almost three years after operation, remains entirely well. I wish I knew exactly why. A second patient, ten months after a hemicolectomy, reports herself as continuously improving both in her general and in her arthritic condition. She is one of the two patients who complain of postoperative diarrhea; she has six or seven bowel movements daily; in the other patient, diarrhea is only occasional. A third patient gained much for a year and then fell back into her former wretched state. To the other seven, operation gave no relief as far as their joints were concerned, but it improved their general health; four state that their joint condition is worse. These reports indicate the condition of our patients from one and one-half to three years after operation.

In these three series, then, we have to do with thirty-one cases of multiple infectious arthritis. Two of the patients could not be traced, and hence the late result in these cases is not known. Of the twenty-nine others, twelve were cured or greatly benefited, five by colectomy (primary or secondary) and seven by simple ileosigmoidostomy. Considerable improvement followed colectomy in three cases, and ileosigmoidostomy in one. Colectomy left the condition unchanged in one case, and ileosigmoidostomy in six; four of these patients later submitted to secondary colectomy with permanent (as far as we may judge) relief to three of them. Four patients were worse after ileosigmoidostomy than before it. One death (pulmonary embolus) followed colectomy, and one (uremia), ileosigmoidostomy.

In estimating the value of any mode of surgical treatment, proper regard must be had for both the mortality and the morbidity that is connected with its accomplishment. Sir Arbuthnot Lane³ believes that the immediate risk of ileocolostomy is greater than that of colectomy, and that the convalescence after the latter is far less bothersome. This statement may

3. Lane, Sir Arbuthnot: *Brit. Jour. Surg.*, 1914-1915, ii, 599.

represent the truth in Lane's clinic, but I am sure it would not hold true for the average surgical clinic in this country: for Lane has brought his own technic to a very high level in the performance of colectomy, and has had wider experience with that operation than any of us will probably ever have. It seems certain, however, that the mortality from neither procedure is prohibitive. The death from uremia in one of Smith's patients was not unexpected; the surgeon had recognized the condition before operating, and the patient had full appreciation of the chances and was willing to take the risk; the fault, if fault there was, is neither surgery's nor the surgeon's. The patient to whom pulmonary embolism brought death ran the same risk as the healthiest of us would have to take, if he submitted to a laparotomy for any cause whatever. If we may draw conclusions, then, from a study of so limited a number of cases, it is a safe assumption that the mortality rate need not cause undue apprehension. Nor can any increase in morbidity be said to follow these procedures. In only two cases did diarrhea result, and diarrhea is the only postoperative sequela we encountered; in one it was almost negligible, being only an occasional event, while, in the other, it was

mouth, gums, teeth, tonsils, throat, nose and accessory cavities should be carefully investigated. Roentgenograms of the skull, with special reference to diseased sinuses and to the possibility of slumbering, unsuspected infections about the dental roots, should be made. Urethral, vaginal and uterine discharges should be stained and examined microscopically. The urine should be carefully searched for evidence of renal infection. Hugh Young warns us, too, that the seminal vesicles may harbor the guilty organism. When all other possible sources of infection have been excluded, either through demonstration of their absence or through their elimination by suitable treatment, then attention should be turned to the intestinal tract and to the possibility of intestinal stasis, the frequent predisposing cause, if current opinion is correct, of the formation and absorption of intestinal toxins and perhaps even of microbic invasion of the blood current. Smith believes that the intestine may be the real primary source of many of the foci of infection which themselves are now regarded as truly primary. The cure of some cases of general infection without recourse to treatment directed to the intestinal tract is not confirmatory of the universal truth of this opinion.

The discussion of just what intestinal stasis is, of its cause and of just how much dependable knowledge of either or both may be obtained from the average roentgenographic examination is most interesting. It must be admitted that there is lack of agreement on many phases of this topic. Mr. Arthur Keith⁴ of London, for instance, studied roentgenograms by Jordan of many cases of intestinal stasis (a term, by the way, which he considered "somewhat elastic"), and never succeeded in finding one which gave him satisfactory evidence of pressure or traction of a peritoneal band on the intestinal tract. His anatomic investigations on colons removed by Lane simply strengthened him in this opinion. In fact, he believes that neither position of the intestine nor peritoneal bands play an important rôle in the causation of chronic intestinal stasis, which, in his mind, is always secondary to a disorder of the neuromuscular mechanism of the bowel. All this is quite contrary to the impression that may be taken from the writings of other men. Again, Rinkenberger⁵ of Los Angeles, working in Lane's clinic in 1911, demonstrated in healthy young men roentgenograms absolutely identical with those which Lane was showing as indicating intestinal stasis. My own experience with roentgenologists in this field has led me not to accept their interpretations as absolutely definitive. With our patients, the assumption of the presence of intestinal stasis and the consequent recommendation of operation has been reached more through a process of exclusion than through a certain demonstration of the stasis by roentgenograms. A careful search was always made for sources of infection other than intestinal. These being absent or eliminated, the presence of intestinal stasis and toxemia was assumed. The roentgenologic examination was regarded simply as or as not corroborative. It may be said in passing that in all our cases the roentgenologist reported "ileac stasis." In none of the cases, however, was an evident anatomic cause for the stasis demonstrated at operation.

SUMMARY OF RESULTS IN THIRTY-ONE OPERATIVE CASES

Results	Colectomy	Ileosigmoidostomy	Total
Cured or greatly improved	5 (2 primary, 3 secondary)	7	12
Considerably improved	3	1	4
Worse.....	..	4	4
No change.....	1	6; 4 other cases (a total of 10) were not influenced by ileosigmoidostomy and had a subsequent colectomy	7
Death.....	1 (pulmonary embolus)	1 (uremia)	2
No report.....	2	..	2
Total	12	19	31

troublesome. In the balance against this must be weighed the fact that amelioration in general health was attained in all the patients, that a better working condition of the bowels was secured and maintained, and that even those whose joint conditions grew worse were suffering from the effects of the uninfluenced disease and not of the operative procedure.

When and on what grounds, then, shall abdominal section be urged in these cases? Of course, the earlier the patients reach the surgeon the better is the chance of cure. When advanced destructive joint changes have taken place, no treatment can bring about complete relief. It is unfortunate but true that many sufferers from chronic arthritis pay little attention to the often slight primary signs of the disease, the discomfort and the stiffness frequently confined for a time to the finger joints, the wrist, etc. It is only when the trouble has spread to other and larger joints that the patient takes alarm and seeks a physician, who himself often fails to appreciate the possibility that some focus of infection, more or less obscure, may be the active cause of the trouble and by his hit-or-miss method of treatment postpones still further the introduction of at least intelligent attempts at relief. It should be emphasized that, just as soon as there arises even a suspicion that the process may have an infectious cause, painstaking search should be made for that cause. The

4. Keith, Arthur: Brit. Jour. Surg., 1914-1915, ii, 576.
5. Rinkenberger, F. W.: Abstr., THE JOURNAL A. M. A., Aug. 28, 1915, p. 770.

I must admit that my mind is not entirely clear either as to why operation benefits some cases and does not influence others, or as to just what it is that operation does in some cases and fails to do in others, with or without relief to the patient. The doing away with the so-called ileal stasis by drainage of the terminal ileum is not the curative, or, perhaps, I should say not the only curative, factor in a successful operation; for, in the sole case in which we can honestly claim a real cure, a roentgenogram taken a month ago (three years after the operation) shows a markedly dilated ileum and all roentgenographic signs of ileac stasis, twenty-four hours after the injection of the bismuth meal (4 ounces of bismuth in a pint of buttermilk). Yet the man's general health and joint conditions are entirely normal. It may be that Smith's idea is the correct one and that the factor essential for success is either removal of the colon or, if the colon is left in place, absence of any obstruction in the colon between the cecum and the point of anastomosis; in other words, if the colon is sidetracked, the segment thus excluded must be freely open, entirely unimpeded and fully capable of emptying itself. Supportive of the correctness of this idea is the fact that in seventy-two hours the colon in our cured patient was practically entirely free of all the bismuth introduced through a bismuth enema. Only a very small remnant remained in the ascending colon, and for some reason that small remnant was still there thirty days after the giving of the enema.

With relatively so little clinical material on which I may base a judgment, I do not feel justified in drawing conclusions of a definite character as to the general efficacy of either colectomy or ileosigmoidostomy in these cases. My present feeling in the matter may be set forth about as follows:

1. In many instances heretofore we have been dealing with long-continued, advanced cases in which neither operative nor any other method of treatment may be justly expected to be of much avail; hence, cases in which the probability of an intestinal source for the infection can be established should have an early operation.

2. Before advising abdominal operation in any case, all foci of infection other than intestinal should be sought for and, if present, should be eliminated.

3. Every patient to whom operation is proposed should have set before him clearly the pros and cons of operation, its possibilities and its uncertainties; for, while I am sure that operation has some influence on all cases, since, in our experience, it has never failed to help the purely toxic symptoms, yet its answer to our chief demand, the relief of the joint conditions, is disappointing in its uncertainty and frequently in the results obtained.

4. Even though I believe that a somewhat greater degree of danger is attached to the performance of colectomy, yet I should at present advise it rather than a simple short-circuiting operation, because of Smith's excellent results with the former as a primary measure, and still more because of his successful use of it as a secondary procedure in cases uninfluenced by a previous ileosigmoidostomy.

5. In no case, whether or not operation is considered, should such general measures as outdoor life, proper diet, exposure to sunlight, etc., be neglected.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MAYO AND BOTTOMLEY

DR. REA E. SMITH, Los Angeles: The two postoperative complications which arise most frequently to spoil the success of a Lane operation are (1) backing up of fecal matter into the cecum and (2) unusual postoperative adhesions. The most frequent cause of failure in Lane's work is the unusual development of postoperative adhesions. The symptoms usually become manifest about the end of the first year after operation. At that time the patients may have a relapse and, as a result of the narrowing of intestines by the contraction of adhesions they may have more stasis than they had before the original operation. These adhesions are due to infection at the time of operation. The Lane procedure is open to a technical criticism. Lane sutures through and through the infected colon wall—the infected silk soils his gloves as well as the abdominal packs which it touches—thus rendering the whole field unsterile. The same infected hand then goes into the pelvis and lifts up the small intestines so that the split in the mesentery can be stitched. The adhesions we find on secondary operation after Lane's short circuiting operation are in patches, widely disseminated patches of local peritonitis due to infection at the time of the original operation. Recognizing this fact it is possible to do a short circuiting safely. The operation should be changed so that the colon is opened last and the field treated as infected from that time. In the Mayo right-sided colectomy the abdomen is not invaded after the colon is opened. The Murphy button is used and there is much less likelihood of infection and therefore of failure due to adhesions. I reported fourteen operative cases of arthritis last year. I am not as enthusiastic now as I was at that time. Twelve patients are living, three of the twelve are perfectly well at twenty-eight, twenty-six and eighteen months following operation. The patient, whom I showed here last year as a cure at the end of fourteen months, had to be reoperated on two months later for acute obstruction in the ileum due to postoperative adhesions. Because her obstruction was high she did not have a return of her joint symptoms, and she has had no return since. Her abdomen was full of adhesions from patches of local peritonitis following the Lane short circuit operation. Of the remaining nine cases in the series, two show no change; the other seven are all better than they were a year ago, but they have not gone on making the rapid spectacular recovery that the other three have made. None of them would go back to their former condition, because of the improved general condition and freedom from pain.

DR. W. R. MACAUSLAND, Boston: My experience with this procedure is based on a series of ten patients in whom the routine methods of treatment had failed; that is, no source for the infection could be found in teeth, tonsils, sinuses, kidneys, etc., and furthermore their intestinal symptoms were not relieved by the ordinary medicinal means. I cannot but feel strongly that the source of many arthritic conditions is to be found in the intestinal tract and the large majority of chronic arthritis cases have been unrelieved by the ordinary methods because this has been overlooked. In spite of the removal of tonsils and drainage of foci at the roots of teeth, most of these joint conditions are slowly progressive. There are all stages from the initial infection to the stage showing much destruction of cartilage with great disability and obviously in order to effect any substantial relief treatment must be inaugurated early in the course of the disease, before severe joint changes have occurred. When making a comparison of results by various methods we must make allowance for the joint changes which have taken place in each case. It may be well to call attention to the fact that the so-called "toxic arthritis" is coming more and more to be considered in this class. "Toxic" as a term must be restricted to such changes as are found without the presence of organisms, and in which it is reasonable to suppose no organisms are present. Those arthritic conditions resulting from chemical changes from disturbed metabolic conditions are also strictly omitted from consideration in this discussion. It is well known, however, that chemical, toxic and bacteriologic changes fre-

quently give approximately the same findings; that is, one may have a destructive process accompanied by some form of exudate from any of these causes. It is well to consider all cases of polyarthritides, progressive in nature, with all signs of an active process in and about the joint, as being actually infected with organisms metastatic from some focus, known or unknown. The ten cases operated all presented intestinal symptoms and chronic constipation. It was observed frequently that slight exacerbations in the disease were due to an acute intestinal upset, accompanied by temporary diarrhea. The ordinary signs of intestinal stasis were present in all. Following the failure of ordinary methods and after demonstrating an actual ileostasis as being present, these ten patients were referred to Dr. Bottomley for a surgical correction of their intestinal condition.

DR. JEROME MORLEY LYNCH, New York: With reference to the so-called ileocecal valve: It seems to me that this segment of the intestinal tract being in the limelight it is about time that we come to some conclusion as to whether it is a muscle or a valve. If a muscle, then no operation can possibly be of any benefit. If a valve, then operation, if one follows Nature, will probably prove useful. It seems remarkable to me that the wonderful paper of Elliot has been overlooked for seven or eight years, because it must be at least that time since the paper first appeared in which he made a number of very exhaustive and accurate experiments with regard to the value of this segment of the gut. I think he has shown conclusively that this is not a valve but a muscle. We have been able to show on humans that by the injection of ten minims of epinephrin you can shut a so-called leaking valve as tight as a drum. Thus some patients were examined after barium enema and the insufficiency was promptly corrected for several hours by epinephrin. The connection between the internal secretions and the mechanism of this muscle is very important. What the relationship is we do not know as yet. Draper and I consider it probable that the Bauhinian valve has about the same value to the economy as the ureterovesical, which we have shown to be about 10 per cent.; the neuromuscular control being 90 per cent. Dr. Stockard of Cornell proposed for this operation of Dr. Mayo's the term "developmental reconstruction." It means something definite. It means placing the colon in a position that it occupies when rotation occurs at about the third month of fetal life. We have performed this operation twenty-eight times in all. First, for primary cancer of the ileocecal sphincter, for segmental atresia, for dysmorphia of the elbow-deformity type at the hepatic flexure. We have performed cecostigmoidostomy six times. Every case has failed. We have done cecocolonic anastomosis in seven cases, simply for comparative study.

DR. J. E. TUCKERMAN, Cleveland: I would ask a question of Dr. Mayo. On what can he base the statistics or percentage of operability; what is the standard on which he bases a percentage of operability? How can he compare percentages of operability between one surgeon and another since his own opinion as to what is and is not operable is undergoing a change? Is the operability based on the mechanical feasibility of doing the particular procedure or on the judgment of the surgeon as to whether that particular procedure is justified?

I was surprised in the discussion to learn that all adhesions are due to infections. Dr. Smith made that statement. I think it is hardly possible Dr. Smith means that.

DR. J. S. HORSLEY, Richmond, Va.: Dr. Lynch has spoken of the ileocecal valve being a muscle and he says that he proved this by injecting epinephrin in cases in which the ileocecal valve was incompetent and found that it caused contraction and closure of the valve. Cannon and other physiologists have shown that while epinephrin causes contraction of the smooth muscle in the systemic blood vessels of the limbs and surface of the body it not only fails to cause contraction of the smooth muscle of the intestine, but actually relaxes it. In fact, one of the most delicate tests of the presence of epinephrin is the relaxing effect it has on a segment of small intestine when attached to a recording apparatus.

DR. J. W. DRAPER, New York: Epinephrin will relax the musculature of the small intestine, but contract that of the ileocolic sphincter. If it is given hypodermically to an individual showing insufficiency of the sphincter it will normally close that sphincter. Failure to do this may be a means of differentiating between functional and mechanical derangement of the region. Dr. Lynch and I resected the right side of the colon. The woman was 50 years of age, was in the terminal stage of arthritis, in constant pain, unable to turn over in bed, unable to use her knife and fork, unable to write. The extraordinary thing was that within twenty-four hours from the colonic reconstruction that woman could turn over in bed and she herself commented on it. In three days the pain was gone and she was able to sleep without hypnotics. The rapidity of this clinical improvement suggests to us that there is a change in the biochemistry of the intestinal epithelium, perhaps throughout the canal, which accounts for the improvement, for it is impossible to believe that an interference with bacterial migration through the gut wall by operative removal of a diseased segment can be the only source of the improvement. Only those cases should be treated by developmental reconstruction of the colon in which the most scrupulous study had excluded all other sources of infection. It would be deplorable for this operation to come into general use for the treatment of arthritis.

DR. J. E. JOHNSON, Memphis, Tenn.: Dr. Mayo's operation has several advantages. The end of the colon cannot drop down, hanging from the omentum, thus forming a pouch. He saves the omentum, which has the advantage that there is less danger of adhesions. His technic is good; there is less danger of infection. We become bewildered with the many theories advanced as to the cause of a condition which necessitates colectomy. Let us look at just what we find. It is obvious that the trouble is in the ileocecal region. On one side of the ileocecal valve we have the ileum, the great absorber; on the other side the cecum or sewer. If we have the contents which have been retained for too long a time in the cecum, regurgitated into the ileum, what is the result? We have a putrid material, about one-half by weight bacteria thrown into the great absorber. We have a toxic poison plus a bacterial infection. The colon is built for a sewer and its mucosa has its natural defenses against the contained bacteria. The ileum is built for an eater and has no such defenses. From the toxic poison we get a splanchnic paralysis, which is just as characteristic of this condition as drop wrist is of lead poisoning. From the bacteria absorbed in the ileum, the chronic infection, a terminal ileitis and a pericolicitis, result, to combat which Nature builds stronger defenses, consisting of veils or membranes. These membranes when rotated gather together in strong bands. These membranes contract as all inflammatory tissues will, and secondly, we have the distortion. It will be noted that this condition appears at no other location; they are all alike only in degree. I have not seen a case of these membranes without visceroptosis nor a case of visceroptosis without these membranes. I mean where I have examined the patients with the fluoroscope in the vertical position before operation. This seems quite significant. It will be noted that all of these patients have suffered from toxic sick headaches when they are pale, sweat and vomit. These headaches cannot be laid to any dietary indiscretion or the regurgitation through the imperfect ileocecal valve which causes the sick headaches in youth, and which later causes splanchnic paralysis and the formation of inflammatory membranes. We have done eleven colectomies for stasis, some right side and others to the sigmoid; we have anastomosed the ileum into the upper part of the rectum, by the end to side method of Lane. Ten of these patients are living and doing well. I should advocate a right colectomy in all cases in which there is no obstruction in the distal colon.

DR. CHARLES HORACE MAYO, Rochester, Minn.: If, when compiling the statistics for malignancy, we disregard the patients we have turned down, and those who either die immediately after operation or look forward to recurrences,

and accept only those who are decidedly benefited by operation, we get figures which are not a very good basis for conclusions by others as to what may be done in these fatal conditions. Therefore, in Winter's statistics you must take into consideration all of the patients you see—any that you run across. If you do not operate, they are in the class of those who are going to die of the disease. We are trying to find out how many die of the disease and how many can be saved. Sometimes the Roentgen ray is a wonderful aid. We have tumors of the liver, malignant involvement of the stomach, secondaries, extraordinary tumors that can be felt at the bottom of the pelvis by palpating the rectum, and extraglandular involvement in the supraclavicular fossa, so that many patients would be refused operative treatment whose condition needed something immediate. Taking the whole list and locating the disease at only one point, fixation, we used to say, meant contraindication for the possibility of cure. We now know that that is wrong and, therefore, when we do not find metastasis at a distance, we now at least explore all fixed tumors of the large bowel and make most extensive operations, knowing that if we do not do it, we are condemning the patients to death and suffering. Concerning some of the other points brought up, I believe the discussion has been very fair. It is unfortunate that sometimes in the development of the new things in surgery their use in therapy is too greatly condemned, so that surgeons are kept from doing work along these lines for those who are suffering, and no method has been developed as yet for their relief. I would like to see these innovations going on so that the men having the obsession be given sufficient amount of rope to either develop something or hang themselves.

SPLENECTOMY FOR HEMOLYTIC JAUNDICE*

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The past few years have shown a great increase in the interest manifested by American surgeons in the surgery of the spleen. Splenectomy has been demonstrated to be a safe and effective means of curing certain diseases (for example, Banti's disease), and is extensively employed in other conditions in which its ultimate benefit still has to be proved by a more prolonged study and report of late results.

Among the conditions which seem to be promptly and permanently benefited by splenectomy is the group of so-called hemolytic jaundice cases, which occur in two forms, the congenital and the acquired.

The accumulating evidence of the results of splenectomy has proved the etiologic relation of the changes in the spleen to the disease. The former hypothesis of essential hemolysis must be abandoned. What the exact nature of the process may be is still more or less obscure, but that the spleen plays the most important part is certain. The constant presence of urobilin and urobilinogen in the urine is simply an evidence of the destruction of the hemoglobin molecule in the process of hemolysis, and these substances disappear soon after splenectomy is performed.

No bile is found in the urine unless there is a complicating disease of the biliary tract. This complication has been noted many times.

In the congenital group we have the well-recognized familial type, in which heredity plays such a striking part, and also congenital cases, in which no family history exists, but in which the jaundice appears at birth or in early infancy and persists throughout life or until relieved by operation.

The acquired type forms another distinct clinical group, the symptoms of which closely follow those of the congenital type. We have had three typical cases in patients on whom splenectomy has been performed in the second surgical division of the Roosevelt Hospital, since May, 1912, when the first case to be reported came under my care. The patient, a young woman, aged 30, of the congenital, nonfamilial type, was the first patient on whom splenectomy was performed for congenital hemolytic jaundice in this country.

Her history was as follows:

F. N. (history No. B2654), a married woman, aged 30 years, on May 6, 1912, was admitted to the second surgical division of the Roosevelt Hospital, transferred from the medical service of Dr. Evan Evans. Her only complaint was a mild degree of persistent jaundice, she being otherwise healthy. She was one of a family of eleven, her father, mother, three brothers and seven sisters being alive and well. None of them had ever been jaundiced, nor was there a history of jaundice in any branch of her family. She was the first child, born at full term in normal labor. Jaundice was first noticed when she was 3 days old, and this had continued all her life. She had measles, mumps and whooping cough as a child, but no other illnesses. Her appetite was good, she slept well, took plenty of exercise and drank no alcohol, and coffee and tea only moderately.

The jaundice was present in mild degree with no other symptoms until she was about 21 years of age, when she first had an attack of deepening of the jaundice. Since that time similar periodic attacks (acholuric crises) have occurred, with a general tendency to deepening of the jaundice, but with no other symptoms. She has never had itching, slowing of the pulse, or any of the symptoms which accompany an ordinary obstructive jaundice.

In July, 1907, in Baltimore, cholecystostomy was performed, but no gallstones or other lesions of the biliary tract were found. Jaundice returned and persisted as before as soon as the biliary fistula healed.

On January 22, 1909, two and one half years after the cholecystostomy, she was admitted to the Johns Hopkins Hospital, and was under observation by Dr. Thayer for about two weeks. A diagnosis of congenital hemolytic jaundice was made by Thayer,¹ who did not advise operation. Her red cell fragility tests at that time were practically identical with those taken by us three years later. Thayer stated in his comments that "in congenital hemolytic jaundice recovery is unknown, but some improvement may be obtained by persistent treatment with iron." Pathologic changes in the spleen and splenomegaly were recognized, but their definite relation to the etiology of the disease was not appreciated, and the cause of the fragility and increased hemolysis was thought to reside in the blood itself. From Jan. 26 to Feb. 11, 1911, she was in a hospital, in New York, again for the jaundice. A diagnosis of congenital stenosis of the common duct was now made, but operation was not advised. From July 16 to Aug. 14, 1911, she was under treatment in the same hospital, ill with typhoid fever, and from August 18 to September 12 she was back with a relapse.

The persistence of the jaundice so preyed on her mind that on March 5, 1912, she was again operated on, at the Roosevelt Hospital, first surgical division, in the hopes of finding calculi or some lesion of the biliary tract. No calculi were found, and no lesion of the gallbladder or ducts; a few whitish spots on the surface of the left lobe of the liver were seen, and one was excised for examination. It showed simply anemic, degenerated liver cells. The operation was a simple

* The first three papers in this symposium, by Drs. Lee, Minot and Vincent, Krumbhaar and Miller, appeared in THE JOURNAL, Sept. 2, 1916, pages 719 to 730.

* Read before the joint meeting of the Section on Practice of Medicine and the Section on Surgery, General and Abdominal, at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Thayer and Morris: Bull. Johns Hopkins Hosp., 1911, xxii, 85.

exploration. On April 10, 1912, she was readmitted to the Roosevelt Hospital, medical division, service of Dr. Evans. Careful studies were made by Dr. Evans and Dr. Mortimer Warren, pathologist to the hospital, whose report, which follows, covers the periods before and after splenectomy.

The jaundice was general, of a moderate degree, lemon yellow in color, lacking the greenish tinge of obstructive jaundice. The edge of the spleen was 4 to 6 cm. below the costal margin.

Urobilin was present in the urine, but no bile. Bile was present in the feces, which were of normal color. The Wassermann reaction was negative.

Blood examination showed hemoglobin 63 per cent., red blood cells 4,400,000, and white blood cells 8,000. The differential count showed polymorphonuclears 65 per cent., lymphocytes 20.5 per cent., large mononuclears and transitionals 0.5 per cent., eosinophils 3.5 per cent., and basophils 0.5 per cent. The red cells were small and of good color, and there were no nucleated red cells. Plates were abundant. About 20 per cent. of the red cells showed postvital reticulation. Five fragility tests taken between March 16 and April 22, 1912, before splenectomy, showed, as an average, a minimum resistance of 0.72 per cent., and a maximum resistance of 0.27 per cent. On May 9, two days after splenectomy, test showed a minimum resistance of 0.72 per cent., and a maximum of 0.36 per cent. Four tests taken from May 10 to May 25, 1912, six to eighteen days after splenectomy, gave as an average a minimum resistance of 0.50 per cent., and a maximum of 0.32 per cent. Test made Sept. 9, 1912, four months after splenectomy, gave a minimum resistance of 0.48 per cent. and a maximum of 0.30 per cent. Test Oct. 1915, three years and five months after splenectomy, showed a minimum resistance of 0.40 per cent. and a maximum of 0.35 per cent. The hemoglobin, which was 65 per cent. two days after splenectomy, reached 80 per cent. on June 7, 1912, one month later. The red blood cells, at first greatly reduced, were about normal. Red blood cells showing postvital reticulation appeared only in moderate (normal) numbers after operation. On May 9, 1912, two days after splenectomy, examination showed leukocytes 30,000, polymorphonuclears 80 per cent. On Oct. 9, 1912, four months after operation, examination revealed leukocytes 11,000, polymorphonuclears 53 per cent., lymphocytes 22 per cent. Examination of blood Oct. 18, 1915, three years and five months after operation, gave as a result, hemoglobin 95 per cent., red blood cells 4,204,000, white blood cells 13,000, polymorphonuclears 58 per cent., lymphocytes 30.3 per cent., transitionals 7.9 per cent., eosinophils 3.6 per cent., with plates abundant. The red blood cells showing postvital reticulation were 0.5 per cent.

On the advice of Drs. Evans and Warren, and in the belief that pathologic changes in the spleen were responsible for the excessive hemolysis, and possibly for the fragility of the red cells, splenectomy was performed on May 7, 1912. There were no adhesions, and the operation was technically simple and well borne.

The spleen was only moderately enlarged, weighing 360 gm. measuring 19 by 12 by 6 cm. Gross section showed no evidence of pathologic change beyond congestion, except for the presence of numerous light-yellow, firm nodules from 1 to 2 mm. in diameter. The surface was roughened with many red-colored pinpoint spots scattered over the surface.

Microscopic examination showed marked congestion, with much of the blood interstitial. There was no marked increase in fibrous tissue. The arterioles appeared thickened, and nodules were noted in areas of sclerosis, showing proper stain remains of elastica. They were, therefore, dilated arterioles, possibly the result of typhoid. Follicles were somewhat crowded out.

The diagnosis was made of congestion of the spleen, chiefly interstitial. Except for a mild, left-sided pleurisy, with effusion, which developed on the sixth day and lasted about a week, convalescence was uninterrupted. Diminution in the jaundice could be definitely noted on the third day after operation, and by the tenth day, for the first time in her life, she was entirely free from jaundice, and has remained so

ever since. The prompt and permanent disappearance of the jaundice, together with the great improvement in the red cell resistance, has been most satisfactory.

This case presents several striking features, among which was the marked degree of fragility of the red cells before operation and their prompt return to the normal after splenectomy, a result which has been by no means uniform in the reported cases. Another was her rather checkered surgical experience, owing to the fact that her treatment coincided with the developmental stage of our knowledge of the condition, and of the etiologic relation of the diseased spleen to it. As Chauffard so aptly remarks, "she was more icteric than sick," but in spite of this fact, the presence of the jaundice and the feeling that she was different from other healthy women so preyed on her mind that she persisted in her efforts to find a cure for her malady.

The case presented the characteristic findings of hemolytic jaundice, as described first by Hayem² in 1898, by Chauffard³ in 1907, and by Elliott and Kanavel⁴ in their interesting case of the familial type, and many other careful observers, namely, persistent, nonobstructive jaundice without itching, slowing of the pulse or the presence of bile in the urine; paroxysmal exacerbations of the jaundice, at times accompanied by dull, aching pain in the upper abdomen; chronic splenomegaly of a moderate degree; secondary anemia of a moderate type; fragility of the red cells of a very marked degree, with complete return to the normal after splenectomy; increase in the number of reticulated red cells to 20 per cent., which fell to normal (0.5 to 1 per cent.) after splenectomy; the presence of urobilin and urobilinogen in the urine.

The second case was of the acquired type, of short duration, the patient having had symptoms for only nine months preceding the operation. As has been previously noted in this type, the onset of the jaundice was ushered in by an acute illness, accompanied by fever, after which the jaundice persisted and increased in degree without the occurrence of definite crises.

In contrast to the preceding case, the red cell fragility in this case was not very marked, and did not change perceptibly after splenectomy. The vital stain reticulation of the red cells reached 16 per cent. and dropped to normal after operation. The secondary anemia was moderate in degree, the hemoglobin and red cell count approaching the normal soon after operation. Auto-agglutination tests were negative, as in Micheli's case, in contrast to the experience of Vidal, Abrami and Brulé,⁵ who found it constantly positive in the acquired type, and absent in the congenital and familial types. Urobilin and urobilinogen were present in the urine, and the feces were normal in color and contained bile. Splenomegaly was pronounced, the spleen weighing 800 gm. Splenectomy was followed by a prompt disappearance of the jaundice and a complete return to health.

An abstract of this patient's history follows, and further detailed studies of the case have been published by Dr. G. A. Friedman, from whose service at the Vanderbilt Clinic he was referred to me for operation.

M. T. (history No. B7036), an Italian, a single man 18 years of age, was referred from the Vanderbilt Clinic early in November, 1915, where he had been carefully studied by

2. Hayem: *Presse méd.*, 1898, i, 121.

3. Chauffard: *Semaine méd.*, 1907, No. 3, p. 25.

4. Elliott and Kanavel: *Surg., Gynec. and Obst.*, 1915, xxi, 21.

5. Vidal, Abrami and Brulé: *Presse méd.*, 1907, lxxxi, 641.

Dr. G. A. Friedman, who made a diagnosis of acquired hemolytic jaundice and advised splenectomy. Except for diseases of childhood, the nature of which he did not know, the patient had had no previous illness. He had come to America from Italy eighteen months before. Jaundice was first noted about nine months before he came to the hospital, and had been persistent up to the time of admission.

Examination showed a rather slender, well-nourished young man, with marked general icterus of a lemon yellow hue. His spleen extended to within an inch of the umbilical level in the mammary line.

The urine contained urobilin and urobilinogen; the feces were of normal color and contained bile and also urobilin.

The blood examination showed a moderate degree of secondary anemia; 78 per cent. hemoglobin; 4,200,000 red cells, with 16 per cent. postvital reticulation, and a normal differential count. Auto-agglutination tests were negative. Two fragility tests before operation showed a minimum resistance of 0.48 to 0.50 per cent., and a maximum resistance of 0.30 to 0.35 per cent.

Splenectomy was performed on November 23, 1915, at the Roosevelt Hospital. The gallbladder and ducts, liver, stomach and pancreas were normal. The spleen measured 17 by 10 by 7 cm. and weighed 800 gm. It was slightly adherent along the posterior border and at the upper pole, but delivered without great difficulty and the operation was well borne.

The jaundice began to fade within two or three days and was entirely gone by the tenth day. The patient has remained well and entirely free from jaundice since the operation.

The spleen was rather soft and flabby, the cut surface was dark red and rather granular, and the trabeculations stood out prominently. Microscopically, there was no increase of fibrous tissue; the follicles were of varying size, some having disappeared. There was marked interstitial suffusion with red blood cells. The changes in the pathology of the spleens removed have been fairly uniform and correspond with those found in previous reports. There is marked interstitial suffusion of red blood cells, dilatation of splenic sinuses, loss of follicles and absence of germinal centers. There is practically no increase of fibrous tissue.

Six days after splenectomy the fragility test showed a minimum resistance of 0.50 per cent. and a maximum of 0.35 per cent., that is, there was no change following the operation. On December 20, four weeks after operation, the fragility test was the same, reticulation of the red cells was normal (0.5 per cent.), and urobilin and urobilinogen had disappeared from the urine. The patient gained in weight and resumed his work four weeks after the operation.

This case illustrates the acquired type of hemolytic jaundice, evidently dependent on the splenic changes and on no previous etiologic factor that could be determined.

The fragility of the red blood cells in this case was slight, and was practically unchanged after splenectomy.

The third case was of the congenital, nonfamilial type, and the patient was operated on by my colleague, Dr. James I. Russell, to whom I am indebted for permission to include it in this report. Only a brief abstract of the history will be given, as the case was presented to the New York Surgical Society and reported in its *Proceedings*.

The patient was a man, 20 years of age, transferred from the medical service to the second surgical division on July 6, 1915 (history No. 6546).

He had been jaundiced since birth, the icterus increasing up to 5 years of age, after which time it was stationary. There was no history of jaundice in the family. He presented the following symptoms: Icterus of a fairly marked degree, nonobstructive in type, of a lemon yellow hue, secondary anemia of a mild type; 74 per cent. hemoglobin, 5,200,000 red cells; red cell fragility not increased, the minimum resistance being 0.45 per cent., and the maximum 0.30 per cent.,

remaining unchanged after operation; reticulated red cells, vital stain, 8 per cent.; splenomegaly of a marked degree, the spleen weighing 1,143 gm.

Splenectomy was performed on July 10, 1915, and was followed by complete disappearance of the jaundice and a prompt recovery.

In addition to the three cases cited, I have recently performed cholecystectomy for calculi with chronic cholecystitis in a typical case of congenital hemolytic jaundice of the familial type, with marked splenomegaly. Both the patient and her physician were unwilling to have splenectomy performed at that time, though recognizing the possible necessity of such a procedure in the future.

That hemolytic jaundice is not uncommon and that it can be cured by splenectomy are now well recognized, and recent contributions to the literature are emphasizing its importance and bringing it more and more to the attention of the profession.

INDICATIONS FOR SPLENECTOMY IN CERTAIN CHRONIC BLOOD DISORDERS

THE TECHNIC OF THE OPERATION *

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Splenectomy has already proved a curative measure in certain diseases associated with definite blood changes, and the operation has recently been advocated for other diseases which appear to be more or less closely related to those in which the spleen is now the known causative factor. The basis on which splenectomy has been suggested in these heretofore incurable conditions will be more clearly understood if we briefly review the development which has resulted in the present situation.

Splenic anemia offers the most familiar example of the therapeutic value of splenectomy. Sufficient time has now elapsed since the earlier operations for this disease to prove that the results of splenectomy in early or in moderately advanced cases are not only excellent, but permanent. The most interesting characteristic of the disease as concerns the purpose of this paper is its tendency to develop cirrhotic changes in the liver. In fact, Banti described the disease as it appeared in its later stages when it is associated with marked cirrhosis and with ascites. In such a stage, from a diagnostic standpoint, it is often difficult and sometimes impossible to determine in a given case whether the condition is the result of a true splenic anemia or of a primary liver cirrhosis associated with a large spleen. Experience has shown that in the very late stages of splenic anemia definite improvement following splenectomy cannot be expected, yet it is also true that a moderate cirrhosis, even associated with ascites, has been present in some cases in which excellent results have been obtained. This fact, therefore, with the probability that certain of the cases which have been classified as true splenic anemias and operation performed on that diagnosis, were in reality cases of primary cirrhosis, was responsible for the sugges-

* Read before the joint meeting of the Section on Practice of Medicine and the Section on Surgery, General and Abdominal, at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

tion that splenectomy might prove of value in arresting the progress of selected types of hepatic cirrhosis.

The interdependence of spleen and liver is not clearly understood, yet there is ample evidence to show that some of the most important functions of the liver, for example, its hemolytic power, are more or less controlled by the spleen. Certain pathologic conditions in the liver, therefore, are the result of overactivity, which may in turn be due to overstimulation by the spleen.

During the last two years, with this theory as a basis, selected patients with primary hepatic cirrhosis have been splenectomized. Two, at least, of four such cases of our own gave promise that the removal of the spleen might stop or retard the progress of the disease, but we are not yet in a position to state the value of such a procedure.

The success of splenectomy in splenic anemia, with associated splenomegaly and severe anemia, has led to splenectomy in other diseases in which splenomegaly and anemia are characteristics. One of the most interesting of these is the syphilitic spleen; we have seen good results follow splenectomy in three cases of this form of syphilis. The prominent clinical features of the cases in which we believed operation to be indicated were (1) splenomegaly, (2) a history of syphilis not responding to treatment, (3) positive Wassermanns, (4) anemia. It is important to note that previous to operation a negative Wassermann could be obtained under appropriate treatment, but the reaction became positive as soon as treatment was discontinued. All these patients had gummas in the liver, and in the spleens removed the spirochete could be demonstrated in large numbers. It was also a clinical observation that although the virulence of the infection could be more or less controlled by antisyphilitic treatment, it was not eradicated.

From the foregoing facts, the conclusion may be drawn that the spleen picks up the spirochetes and harbors them, and this conclusion is supported by the surgical observation that removal of the spleen, followed by antisyphilitic treatment, results in prompt and permanent relief.

The influence which the spleen exercises on the hemolytic function of the liver and spleen is most strikingly illustrated in the effect of splenectomy in hemolytic jaundice. Although this disease is a problem from an etiologic standpoint, the most important therapeutic fact is that splenectomy is followed by prompt, complete and permanent cure. The rapid disappearance of the icterus, which is the most obvious symptom of the disease, is an amazing clinical result; the anemia, which is sometimes severe, is also rapidly corrected.

The remarkable results following splenectomy in splenic anemia and hemolytic jaundice, particularly the latter, appear to have provided the basis on which Eppinger and others have suggested that similar surgical treatment might prove of value in pernicious anemia. It is important, therefore, that the relationship of splenectomy to these other diseases should be borne in mind. The argument becomes more forceful if it is possible to establish similarities between any one of these diseases for which splenectomy is curative, and pernicious anemia. Many of the features of hemolytic jaundice appear to have a counterpart in pernicious anemia, and, in fact, Eppinger believes that the chief, and possibly the only, difference between hemolytic jaundice and pernicious anemia is

that in the former the bone marrow is able to compensate for the increased blood destruction, whereas in pernicious anemia it soon loses this power, and the disease eventually is dependent on a bone marrow disability.

It would, therefore, appear as a logical sequence that since splenectomy has proved a specific in hemolytic jaundice, it would sooner or later be advocated in pernicious anemia. Although the first operations for this disease were performed, both abroad and in this country, about the same time (1913), to Eppinger must be given special credit for efforts to establish a scientific basis for the surgical treatment. While the surgical therapeutics of pernicious anemia can be considered as on trial, it presents features of much interest and promise, and splenectomy is now being performed with a frequency which should soon permit definite and decisive deductions.

It must, of course, be primarily recognized that any new therapeutics in a disease of the character of pernicious anemia must be subjected to a particularly thorough trial. The extreme chronicity of the disease in its usual course, and the fact that, with or without treatment, remissions occur, during which the patient is much improved and the blood may even revert to normal, stamps any conclusions based on the early results of operation as premature. This much, however, can be said, that immediate improvement follows splenectomy more consistently and promptly than any treatment heretofore used.

It is on the ultimate results, however, which are as yet insufficient, that the final decision as to the real efficiency of splenectomy in pernicious anemia must rest. There is at the present time, therefore, decided uncertainty as to any superior therapeutic value of a permanent character possessed by splenectomy. It is also true that pernicious anemia has thus far been an incurable disease, ranking in fatality with cancer and less amenable to successful treatment. The certainty of the ultimate prognosis has been the outstanding feature of our knowledge of the disease, and the doomed patient could hope only that the disease would be slowly progressive and not associated with great physical disability.

The pathologic picture which Eppinger has described as distinctive of the spleen in pernicious anemia is as follows: The pulp areas in the spleen, and only these, are gorged with blood. Eppinger explains this engorgement as a direct result of an abnormal condition of the central artery. It has been shown that the entire wall of this artery is greatly thickened, and that the greatest change takes place in the media. The theory is, briefly, that sufficient obstruction results to force the flow of blood through the capillaries into the pulp areas, where the erythrocytes are destroyed. If a constant pathology can be demonstrated in the spleen in pernicious anemia, it will be a great advance toward the rational treatment of the disease.

While it cannot be held that the basis on which Eppinger and his followers have endeavored to establish the surgical treatment of the disease has been confirmed or even well supported by others, it is not essential, nor is it good judgment, to postpone surgical treatment of the disease until an acceptable basis for such treatment is generally recognized.

The hemolytic nature of pernicious anemia is demonstrated by the increased amounts of urobilin and urobilinogen excreted. It has been assumed, and there is much clinical and experimental evidence to show,

that this hyperhemolysis is due to a hypersplenism, and interesting investigations are now being conducted, after the suggestion of Schneider, to determine the exact quantity of these hemolytic products by obtaining them immediately with a duodenal tube on their exit from the liver. Giffin has shown, by the records of the urobilin and urobilinogen estimation in a series of cases of pernicious anemia, that the values appeared to run more or less parallel to the degree of icterus, and that in some cases at least there was a marked fall in the value of the blood-derived pigments after splenectomy. It is possible that from this method information of at least prognostic value may be derived. Giffin has suggested the very interesting possibility that the relation of hemolysis, as shown by the estimation of the blood-derived pigments, and the bone marrow disability, as illustrated by the blood picture, may result in deductions of decided value.

The effect of splenectomy in other diseases being the primary basis for the operation in pernicious anemia, the further indications must be mainly based on operative results, and as early results only are as yet available, such indications are presented with reservation and will undoubtedly be subject to further modification.

INDICATIONS FOR OPERATION

Size of Spleen.—It would appear that the larger the spleen the better the prospects that splenectomy will prove of benefit. It may be assumed in this disease that oversize means overactivity, and it has certainly been true, in our own experience, that the most consistently promising results following splenectomy have occurred when the spleen showed the greatest enlargement. However, good immediate results have been obtained also when little or no enlargement was present. The palpability of the spleen, therefore, has been looked on as one of the first considerations in discussing the advisability of splenectomy. Exclusive of three cases in which the spleens were very large, the spleens in a series of thirty-seven of our cases averaged 400 gm., as compared with the normal of about 195 gm. It should be remembered that any estimation of the size of the spleen before it has become actually palpable is rather speculative. W. J. Mayo early pointed out that frequently in exploring the spleen in the course of abdominal operations, and comparing its actual size with that noted in the clinical records, it is found that clinical records are not consistently correct and as a rule are accurate only when the organ is palpable.

Icteric Types of the Disease.—The very intimate relationship between the spleen and the acholuric icterus as seen in pernicious anemia, hemolytic jaundice and in hypertrophic cirrhosis is proved both by operative results and experimental studies. The remarkably rapid, complete and permanent disappearance of the jaundice in hemolytic jaundice, for example, following splenectomy is sufficient evidence of the splenic factor. Experimentally, it is very difficult to produce toxic jaundice in spleenless dogs by those poisons which readily produce it in the normal dog. In spleenless dogs under the administration of such poisons (particularly toluylendiamin) the bile remains thin and green, while in nonsplenectomized dogs it becomes viscid. Stadelmann was the first to attribute such acholuric jaundice to this thickening of the bile, which delays, by very reason of its viscosity, its own passage through the finer bile capillaries. A marked icteric discoloration in the skin in pernicious anemia may be taken as an indication that the spleen

is to a large degree responsible for the abnormal blood destruction feature in the disease.

Response to Transfusion.—The transfusion of blood, particularly of small quantities at frequent intervals, has for some time been recognized as valuable treatment, though only of temporary character, in pernicious anemia. It has recently become evident, however, that transfusion is not only an excellent therapeutic expedient, but that in the immediate response following the procedure, it is of distinct prognostic value in foretelling the probable results of splenectomy. Definite improvement after transfusion is a strong indication for splenectomy, but when no benefit occurs from repeated transfusions, splenectomy will probably also prove futile, though the reverse of both these indications is occasionally true. Transfusion seems to serve a double purpose, as does the ligation of the blood supply in exophthalmic goiter, by (1) improving the condition of the patient, and by (2) predicting rather accurately the effect of the major operation on the disease.

Duration of the Disease.—Although in our own experience satisfactory results may be obtained when the disease has been of long standing, we believe the results are not as favorable as those in cases in which the disease has existed a short time.

Radical measures to interrupt the progress of the disease while it is yet in an early stage seem logical. Although there is little positive knowledge as to the reason for the permanent disability of the bone marrow, it is probable that it is constantly overstimulated in an effort to meet the abnormal demands made on it, and also suffering from the influence of the hemolytic agent or some other toxin.

In pernicious anemia, like exophthalmic goiter, the course of the disease tends to be interrupted by periods of comparatively good health and normal bodily functions. Each recurrence, however, further damages the organs which are affected by the toxin, and although with the interruption of the process in its early stages there may be complete restoration to health, sooner or later, regardless of the further course of the disease, permanent injury results.

The ability of man to develop other hematopoietic centers, when the normal source of the supply of blood corpuscles, the bone marrow, is under great stress, is well known. Such centers have been demonstrated in the spleen, the liver and lymph nodes. Whether in pernicious anemia the augmentation of the hematopoietic functions is simply compensatory by reason of the increased blood destruction of the disease, or whether the bone marrow, under the influence of some specific toxin, is primarily diseased, so that immature red cells are put into the circulation, is as yet problematic. It is more than possible that pernicious anemia could be cured in its inception, like cancer, if treated properly; when it is well established, a vicious circle is produced and a permanently disabled hematopoietic system is added to the primary etiologic factor or factors. The question of permanent cure in pernicious anemia, therefore, may ultimately depend, not only on interrupting the progress of the disease by removing what appears to be the primary factor, but also to a greater extent on our ability to restore the bone marrow and other hematopoietic structures to their normal physiologic functions. It is to be hoped that earlier recognition of pernicious anemia will result in earlier splenectomy.

Activity of the Disease.—The activity of the disease is an important consideration in discussing the advisability of operation. Splenectomy should be undertaken with hesitation in acute stages of pernicious anemia and especially with a falling blood picture. The operation cannot at the present time be advocated when cord changes and other permanent pathologic processes mark the terminal stages of the disease. Moreover, as already suggested, if it is not possible to tide a patient over the critical periods by transfusion, splenectomy is contraindicated. Definite statements based on the qualitative blood picture cannot be made, but if the hemoglobin is under 25 per cent. and cannot be raised, operative treatment is of considerable risk and has doubtful results.

The extent of the disability of the patient must of course be carefully considered. If a patient with every evidence of the disease is able to carry on his usual occupation, splenectomy cannot be strongly advocated, yet these may be the very patients in whom good results may be obtained. The operation may be urged more legitimately when the patient is unable to do his work or is a chronic invalid.

A positive diagnosis of pernicious anemia having been made and the advisability of splenectomy established, it is important that the patient and his family be correctly informed as to the purpose and the status of splenectomy.

Splenectomy we have found of less technical difficulty in pernicious anemia than in any other disease or condition. An incision toward the outer edge of the left rectus extending above to about one inch from the costal margin and below to the level of the umbilicus is satisfactory. An abdominal exploration should first be made, especially in view of the frequent complications of liver and gallbladder met with in those diseases for which splenectomy is advocated.

The dislocation of the spleen from its position against the diaphragm and against the left kidney is not, as a rule, complicated by formidable adhesions in pernicious anemia; nevertheless, the operation is facilitated and the minor oozing points are controlled by the introduction of a large abdominal pack against the newly exposed surface. In the actual removal of the spleen it must always be borne in mind that the stomach and pancreas are in close anatomic relationship. The fundus of the stomach is in such immediate apposition to the gastric surface of the spleen that its wall may be injured if the gastrosplenic omentum at this point is not divided with particular care.

The tail of the pancreas does not bear a constant relationship to the splenic pedicle. In some instances it lies in front; in others behind, and it may extend along the pedicle until its tip rests in the hilus of the spleen. It is quite evident, in certain cases, that the tip of the pancreas must be dislodged from its position if the pedicle is to be ligated without injury, although such a condition is relatively unusual in pernicious anemia. The pedicle is rarely of sufficient size to present any difficulties in its control. It is comparatively easy to isolate the artery and the veins and ligate them independently. Although it has been advised that the artery should be ligated first in order that the spleen may empty itself of its blood, and although I have done this in some cases, I have never been able to observe any difference in the convalescence or the effect of splenectomy on these patients, as compared with those in whom the artery and veins were ligated at the same time.

All bleeding points having been securely controlled, the pack is removed and the diaphragmatic surface inspected.

SUMMARY

We believe that splenectomy should be considered in every case of pernicious anemia in which the diagnosis has been established and all possible etiologic factors which might be independently remedied have been excluded. The failure of other means to combat the disease, the previous fatal prognosis, and the low operative mortality are strong arguments in favor of splenectomy. Contraindications must be positive and adequate. Granting this, however, we must be cautioned by our imperfect knowledge of the surgical indications. The conservative selection of cases is therefore advisable.

PERNICIOUS ANEMIA TREATED BY SPLENECTOMY AND SYSTEMATIC, OFTEN-REPEATED TRANSFUSION OF BLOOD

TRANSFUSION IN BENZOL POISONING *

ROY D. McCLURE, M.D.

DETROIT

Transfusion of blood in cases of pernicious anemia is perhaps the first remedy that suggests itself for the treatment of the malady. It probably was tried long before it is recorded in the literature. Since the newer ways of transfusion with syringes and the citrate method have so simplified the operation, it has been tried innumerable times, but with only indifferent success. The best it has accomplished has been to initiate a remission in the course of the disease. There are many reasons why these transfusions have not been of more value. Chief among these is the lack of systematic treatment. Usually about as much good is accomplished by a single transfusion as is accomplished by a single injection of mercury in the treatment of syphilis. Discredit has also been incurred by using blood which has not stood the proper tests and which is not only unsuitable but is often positively harmful and which may result in disaster.

The practice of transfusion of blood since it was first performed in man in 1666 by Jeane Baptise Denys, professor of philosophy and mathematics in the Royal University in Paris and physician to Louis XIV, and by his teacher Dr. Lower¹ in London, who had developed the method by his work with his experiments on animals in 1660, has passed through periods of great disrepute. At first it fell into disfavor because the blood of animals, dogs, sheep and calves was used and there were probably deaths from anaphylaxis. The road to safe transfusion was not made possible until Landois² in Greifswald in 1870 discovered that the blood of one man was not always compatible with the blood of others, though I believe he never explained it, yet he did show that the serum of one animal might dissolve the red blood cells of another animal. It remained for Moss³ in this coun-

* From the Surgical Clinic of Dr. W. S. Halsted, Johns Hopkins Hospital.

* Read before the joint meeting of the Section on Practice of Medicine and the Section on Surgery, General and Abdominal, at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, 1916.

1. Philosophical Transactions and Collections of Medical and Philological Papers, John Lowthrop, 1731.

2. Landois: Die Transfusion des Blutes, 1875.

3. Moss: Bull. Johns Hopkins Hosp., 1910, xxi, 63.

try and for Landsteiner⁴ and Jansky⁵ abroad to show that the blood from two individuals may not mix well, due to the following facts:

1. That the red corpuscles of one or of each may be clumped by the serum of the other.

2. That corpuscles clumped in this way may be hemolyzed as well.

3. That all human beings soon after birth may be grouped into four distinct classes, depending on the ability of their serum to agglutinate the red corpuscles of members of the other groups and on the sus-

TABLE 1.—RESULTS OF TRANSFUSIONS IN CASE OF SECONDARY ANEMIA FROM BENZOL POISONING (SUTURE METHOD)

No.	Date, 1914	Hemoglobin, per Cent.			Red Blood Cells		
		Before	After	Increase	Before	After	Increase
1	5/3	20	38	18	1,226,000	1,680,000	454,000
2*	5/17	28	48	20	1,117,000	1,971,000	854,000
3	5/23	20	40	20	910,000	1,856,000	946,000
4†	5/31	11	42	31	0	0	0
5	6/13	48	65	17	3,476,000	4,528,000	1,052,000

* Defibrinated blood.

† Patient bleeding, comatose.

ceptibility of their corpuscles to agglutination by the serum of members of the other groups.

In the selection of a donor little attention for a time was paid to the fact that the serum of an individual in one group hemolyzed and agglutinated the cells of a person in another group. Some men doing transfusions wrote as late as 1912 that the action of one blood on another was not necessarily the same in vitro as in vivo, and they rather scoffed at these tests. This attitude could only do harm to the reputation of transfusion as a therapeutic measure. I know that deaths have occurred as the result of transfusion when the tests were ignored or improperly performed. Even when the tests were properly performed and the bloods reported compatible, we have had one case of severe hemolysis. On returning to the laboratory tests we found that agglutination was present at the end of one hour, but we had accepted the report as favorable at the end of a half hour. Therefore, we concluded that the report of compatibility can not be safely made under an hour.

In an extended series Moss has found that the relative frequency of the groups is as follows: Group 1, 8 per cent.; Group 2, 36 per cent.; Group 3, 9 per cent.; and Group 4, 47 per cent. Gorham and Lissner⁶ found that the serums of the various groups differed in the rapidity with which they brought about agglutination of the corpuscles of the other groups. Thus Group 4 required five minutes or less, Group 2 often fifteen minutes to half an hour, and Group 3 still longer for positive identification.

The selection of a proper donor is therefore a very important matter, and often rather difficult if the patient belongs in one of the rarer groups, 1 or 3. It is also imperative that transmissible diseases be ruled out by history, blood examination, Wassermann, etc. I wish to report here for the first time the transmission of syphilis by transfusion in a case of pernicious anemia. The donor was a close relative of the patient and before giving his blood denied having syphilis and also denied exposure to infection. Less than six

weeks after this transfusion the patient returned with the most virulent syphilitic rash and mucous ulcers. At the same time the secondary eruption appeared in the donor. It then developed that the donor had a primary sore at the time he gave the blood. Malaria was transferred in one of the early cases by a transfusion of defibrinated blood. It was in the quiescent stage in the donor, but flared up in the recipient.

Transfusion has usually been carried on in cases of pernicious anemia in a very desultory or sporadic fashion, and as we have pointed out, often without proper donor being selected, consequently it was soon regarded as of little value in this disease.

Our attention was first drawn to the great value of repeated transfusions, in 1914, in the treatment of benzol poisoning.

On the service of Dr. L. F. Barker at Johns Hopkins Hospital in 1909 there were admitted the first of a series of cases of benzol poisoning. The patients were girls employed in a canning factory in Baltimore. Benzol (benzene, C_6H_6) was used in dissolving rubber and the fumes resulted in the poisoning of the workers. The symptoms are a severe purpura hemorrhagica with a severe anemia of the aplastic type. Several transfusions were performed among these cases, but as there was only temporary improvement, if any, the procedure was regarded as of little value. Several patients died soon after admission. The following case we report, as the result of each transfusion was so striking, one of the operations so plainly saving her from immediate death. Our previous results had been so discouraging, as the improvement of a single transfusion was so temporary, and we were ready to give up. The family of the patient, however, saw the enormous immediate benefit of each transfusion and insisted that we continue with this treatment. They produced the donors, so we always had suitable blood. Much to the surprise of all of us she soon ceased to require transfusion and made a complete recovery.

S. H., a woman, aged 31 years, worker in a canning factory, admitted to the hospital May 1, 1914, complained of bleeding from the nose and mouth. A diagnosis of benzol poisoning and secondary anemia was made. Her family history was unimportant. Her present illness began with an onset seven weeks before entrance (early part of April, 1914), with a feeling of weakness and bleeding from the nose. The hemorrhage

TABLE 2.—RESULT OF TRANSFUSIONS IN SEVENTEEN CASES OF PERNICIOUS ANEMIA, SIXTY-FOUR TRANSFUSIONS BEING MADE WITH NO DEATHS*

Result	Number	Per Cent.
Beneficial	34	53
No benefit	23	35
Harmful	7	10
Severe reactions	7	10
Slight reactions	12	19
Chill	7	10
Dilated heart 24 hr. after transfusion...	1	1½
Jaundiced	1	1½
Hemoglobinuria	3	4½
Temp. elevation over 101	12	19
Skin eruptions	7	10

* Splenectomy was performed in six cases.

usually lasted from one-half to two hours. Black and blue spots appeared over the body, followed by shortness of breath, bleeding from the gums and loss of appetite.

On examination the woman was found to be pale and obese. There was bleeding from the margins of the gums. There was no general glandular enlargement. The lungs were clear, the heart slightly enlarged. A systolic blow was perceptible at the base. Numerous purpuric spots were distributed over the body, and there was slight edema of the extremities.

On May 2, 1914, the red blood cell count was 1,460,000; white blood cell, 1,110; hemoglobin 25 per cent.; polymorpho-

4. Landsteiner: Wien. klin. Wchnschr., 1901, xiv, 1132.

5. Jansky: Klin. sborn., 1907, No. 2; abstr., Jahresb. f. Neurol. u. Psychol., 1907.

6. Gorham and Lissner: Am. Jour. Med. Sc., 1912, cxliv, 103.

nuclears, 40 per cent.; mononuclears, 37 per cent.; transitionals, 15 per cent.; no nucleated red blood cells; no myelocytes. Platelets were almost absent. Bleeding time fourteen and one-half minutes; normal time is one-half to two minutes.

Transfusions were done by the Carrel end-to-end method. The results are shown in Table 1.

After each of the first three transfusions she rapidly lost what she had gained and unfortunately another transfusion was not done until she had slipped back. The fourth transfusion was all but too late. A massive transfusion was done, probably 1,500 c.c. or more of blood being given, and there was a great rise in hemoglobin. (We were still using the end-to-

TABLE 3.—EFFECT OF TRANSFUSIONS ON THE PATIENT
T. A., CASE 1

No.	Date, 1915	Amt. C.c.	Hemoglobin, per Cent.			Red Blood Cells		
			Before	After	Change	Before	After	Change
1	3/ 9	700	25	33	8	1,428,000	1,920,000	492,000
2	3/26	750	54	67	13	2,128,000	2,440,000	312,000
3	7/ 3	650	29	40	11	840,000	1,656,000	816,000
4	7/10	675	32	41	9	1,296,000	2,128,000	832,000
5*	7/24	700	35	?	?	1,884,000*	?	?
6	8/ 8	700	29	45	16	?	?	?
7	8/27	700	40	60	20	1,888,000	3,220,000	1,332,000
8	9/ 1	652	50	60	10	1,960,000	3,088,000	1,128,000
9	9/ 3	675	60	70	10	3,088,000	3,144,000	56,000
10	9/ 9	675	60	65	5	2,424,000	?	?
11	9/11	880	65	75	10	2,424,000	3,688,000	1,264,000
12	9/23	770	80	85	5	3,632,000	4,432,000	800,000
13	10/ 7	675	80	90	10	4,928,000	5,280,000	352,000

* Splenectomy was performed following fifth transfusion.

nd suture method, so no measurement of the quantity of blood could be made.) Normoblasts and nucleated red cells made their appearance and after the next transfusion (donor a negro man) the patient made an uneventful recovery, and was discharged from the hospital July 26, 1914.

Jan. 17, 1916, the patient has remained well, the hemoglobin being 95 per cent.; red blood cells, 4,272,000.

This led us to believe that perhaps steady use of carefully planned transfusions persistently used to revert the anemia and its results might be of benefit in pernicious anemia. We advocate, too, splenectomy. Since Eppinger in May, 1913, first called attention to the very beneficial effect of splenectomy in pernicious anemia, it has been widely performed. American surgeons have reported often great improvement, but probably no cure. It is unnecessary to discuss it further after the papers of this symposium. Eppinger regards splenectomy as the most important measure in the treatment of pernicious anemia.

Table 2 shows a brief résumé of our transfusions in pernicious anemia. As will be seen, splenectomy was carried out in only six of these cases, three by Dr. Finney and three by myself.

The transfusions that resulted harmfully or were of no benefit we feel due to improper matching of the blood. This resulted in still greater care in the selection of donors. In the earlier cases, little benefit resulted from the fact that only a single transfusion was done. We will report only three cases here as there is not space for all.

CASE 1.—T. A., aged 38, was admitted to the hospital Feb. 1915, complaining of progressive weakness. A diagnosis of pernicious anemia and pyorrhea alveolaris was made. The family and personal history were unimportant. The present illness had its onset in June, 1914, with weakness, followed by loss of appetite, constipation, nausea and vomiting, and a loss of weight of 24 pounds. There was dyspnea but no nervous system symptoms.

Blood examination made Feb. 22, 1915, showed red blood cells, 1,584,000; white blood cells, 4,560; hemoglobin, 32 per cent. The color index was high; the differential count, 70 per cent. polymorphonuclears, mononuclears, 25 per cent., 1 nucleated red blood cell.

On Jan. 17, 1916, blood examination showed hemoglobin 93 per cent.; red blood cells 3,728,000; polymorphonuclears 77 per cent.; small mononuclears 10 per cent.

CASE 2.—J. B., a woman, aged 43, was admitted to the hospital, Sept. 10, 1915, complaining of weakness, shortness of breath, and pallor. A diagnosis of pernicious anemia was made. The family history was negative. The personal history of the patient showed that the bowels were regular, and that she had had two miscarriages. Otherwise the history was unimportant.

The patient had had cystitis for two years, appetite poor, with a burning sensation of tongue and mouth. The temperature was from 99 to 101. There had been some dizziness for six months. A roaring sensation in ears had been noticed for two months. There was slight edema.

On examination of the patient the mucous membranes were found pale; the blood pressure was 150 mm. of mercury systolic, 80 diastolic; the temperature was 100.4. There was an impaired percussion note at the apexes of the lungs, but no râles. The heart was slightly enlarged. A systolic murmur was heard at the apex. The liver was not enlarged and the spleen could not be felt. There was no general glandular enlargement. The reflexes were normal. The stools were negative.

Blood examination showed hemoglobin 27 per cent.; red blood cells 1,136,000; white blood cells 3,560; polymorphonuclears, 66 per cent.; eosinophils, 0.5 per cent.; basophils, 0.5 per cent.; small mononuclears, 27.5 per cent.; large mononuclears, 3 per cent.; transitionals, 1 per cent.; myelocytes, 1 per cent.; myeloblasts, 0.5 per cent.

On September 12 the hemoglobin was 29 per cent.; white blood cells, 2,000; red blood cells, 944,000. There were fresh hemorrhages in both eye grounds. The Wassermann was negative. Gastric analysis showed hydrochloric acid deficit 8 per cent.; total hydrochloric acid 2 per cent.

CASE 3.—H. P., a widow, white, aged 62, was admitted to the hospital Jan. 3, 1916, complaining of weakness and lack of blood. Her family and personal history were unimportant. Previous to her present illness she had always been healthy and strong. The onset occurred in January, 1914. There was increased frequency of urination. A few weeks later there was weakness of the knees, progressive shortness of breath, and for three weeks, pain over the heart. There had been no fainting or giddy spells; she had lost 37½ pounds in weight.

TABLE 4.—EFFECT OF TRANSFUSIONS ON THE PATIENT
J. B., CASE 2

No.	Date, 1915-16	Amt. C.c.	Hemoglobin, per Cent.			Red Blood Cells		
			Before	After	Change	Before	After	Change
1	9/25	800	20	35	15	680,000	1,520,000	840,000
2	9/30	900	35	45	10	1,664,000	2,048,000	384,000
3	10/ 9	900	55	76	21	2,240,000	3,520,000	1,280,000
4	10/16	900	76	85	9	2,432,000	4,176,000	1,744,000
5	10/24	20	85	52	33*	4,176,000	2,672,000	1,504,000*
6	10/30	900	47	62	15	3,624,000	4,000,000	376,000
7	12/11	788	22	40	18	648,000	2,158,000	1,510,000
8	12/14	900	42	55	13	2,450,000	3,158,000	708,000
9	12/18	800	?	?	?	?	?	?
10	12/21	280	53	48	5	3,000,000	?	?
11	12/30	550	53	48	5*	1,900,000	?	?
12	1/22	500	51	70	19	3,368,000	3,648,000	280,000
13	1/12	660	71	78	7	3,792,000	?	?
14	1/14	270	78	82	4	?	?	?

* Lost, due to hemolysis.

Examination showed a woman of large frame, with dyspnea on slight exertion. There was a lemon color to the skin, and evidence of recent loss of weight; no general glandular enlargement; teeth practically all gone; chest symmetrical; costal angle almost straight. No râles; region of cardiac dullness extended 4.5 cm. to the right and 11 cm. to the left of the midline. There was a systolic murmur at the base of the heart and a diastolic murmur over the vessels of the neck. The blood pressure was 118 mm. of mercury systolic, 60 diastolic. The liver was not enlarged, and the spleen could not be felt. The reflexes were difficult to obtain. There were no sensory

disturbances. Rectal examination was negative. Red blood cells were 936,000; white blood cells, 5,440; hemoglobin 26 per cent.; polymorphonuclears 50 per cent.; eosinophils, 0.4 per cent.; basophils, 0.4 per cent.; small mononuclears, 28.8 per cent.; large mononuclears, 2.8 per cent.; transitionals 0.8 per cent.; myelocytes 13.6 per cent.; unclassified, 3.2 per cent.; red blood cells January 7, 1,088,000; hemoglobin 25 per cent.; Gastric analysis showed no free hydrochlorates; stool exami-

TABLE 5.—EFFECT OF TRANSFUSIONS ON THE PATIENT
H. P., CASE 3

No.	Date, 1916	Amt. C.c.	Hemoglobin, per Cent.			Red Blood Cells		
			Before	After	Change	Before	After	Change
1	1/12	200	26	23	Loss 3	1,224,000	1,440,000	216,000
2	1/21	300	21	26	5	1,440,000	1,448,000	8,000
3	1/24	682	29	36	7	2,352,000	2,608,000	256,000
4	1/26	640	36	50	14	2,352,000	2,416,000	64,000
5	2/ 2	630	50	55	5	2,416,000	2,434,000	18,000
6	2/ 7	660	54	65	11	3,040,000	4,680,000	1,640,000
7	2/19*	450	65	?	?	2,482,000	2,726,000	244,000
8	2/26	360	63	?	?	3,072,000	?	?
9	3/ 6	500	70	76	6	3,752,000	3,824,000	72,000
10	3/13	450	71	86	15	3,584,000	4,736,000	1,152,000

* Splenectomy was performed February 12.

nation was negative; eye grounds normal except for pallor of the disks. January 10, red blood cells 1,288,000; hemoglobin 23 per cent.

The repeated systematic transfusion has been carried out only during the past year. The results, however, have been so encouraging that we feel that the life of a patient with pernicious anemia may be indefinitely prolonged if the spleen is removed as soon as the patient is in condition to stand the operation, and sometimes we have to transfuse several times before splenectomy.

After the spleen is removed if there is not a rapid improvement in the blood picture, we would advocate transfusion until the hemoglobin is as high as 90 per cent. or more, never allowing it to fall below 75 per cent. As remissions often last several months or a year, not many transfusions may be required. It is well known that anemia so reduces the resistance of the body to infections that it is often an easy prey. Thus can the usual secondary causes of death in pernicious anemia be avoided, and who can tell but that within a few years of persistent transfusions the primary cause, whatever it may be, of pernicious anemia may lose its force and perhaps the disease be cured.

Henry Ford Hospital.

ABSTRACT OF DISCUSSION.

ON PAPERS OF DRS. LEE, MINOT AND VINCENT, KRUMBHAAR, MILLER, PECK, BALFOUR AND MC CLURE

DR. FRANK SMITHIES, Chicago: During the past two and a half years in the clinics of Drs. Percy and Ochsner we have treated twenty-seven cases of pernicious anemia by multiple transfusion of whole blood and splenectomy. Our cases have strongly impressed on us the value of the observations of William Hunter with respect to the toxic or even the infectious nature of the ailment. Just what effect on the hematopoietic tissues may be produced by a periodically recurring low grade infection it is not at present possible to fully state. Of peculiar significance, in my opinion, is the fact that in practically all of our cases, infective foci were demonstrable. The removed spleen showed evidences of chronic splenitis and perisplenitis, indicating that a toxic or infective process had been chronically going on. It has not been possible to culture organisms from the blood or the tissues. It would seem that work similar to that which Rosenow has carried out in tissue culture will at some time demonstrate organisms which at present escape detection. The term "treatment

by splenectomy" is, I think, misleading and incomplete. The splenectomy is merely one part of the treatment and frequently a part of the treatment which may perhaps later on be proved to be the least essential. The routine of treatment which we have emphasized is: multiple, massive transfusions of whole blood, eradication of local foci of infection wherever such may exist, and lastly, laparotomy for removal of the spleen and other tissues evidencing chronic subinfection.

Multiple blood transfusions supply protective antibodies and enable the patient to get rid of the secondary changes which have been going on in the various organs. They improve the blood in quantity and quality. They thus bring the patient to his splenectomy as a fair to good operative risk. During the multiple blood transfusion the patient can be treated with regard to self-evident infection. The operative procedure then becomes relatively safe. Of the twenty-seven cases operated on by Dr. Percy there were but two operative deaths, and one other death within three months following splenectomy. I attribute this rather remarkable experience to the fact that the patients were carefully prepared for the major operation. I attribute many of the poor results following splenectomy in pernicious anemia to the patient's being rushed into splenectomy before he has been properly prepared as a surgical risk. Ninety per cent. of the cases which I observed showed subinfections in the gall-bladder or appendix and all showed evidences of chronic infection in the spleen.

The effects on the blood in the cases I have studied are: In cases that have run from four to twenty-seven months following our treatment there has been an average hemoglobin gain of 43 per cent.; an average gain of red cells of 3,322,000, and this gain has in general been well maintained. Study of blood smears shows an absence or diminution of nucleated red blood cells of 94 per cent. There was a decrease in the color index in 68 per cent. There was a permanent increase in the leukocytes in 88 per cent.; a decrease in coagulation time in 66 per cent.; a decrease in polychromatophilia in 56 per cent., and the establishment of a relative polymorphonuclear leukocytosis in 61 per cent.; a reduction, relatively, in lymphocytosis in 55 per cent., and a definitely demonstrable gain in blood platelets in 61 per cent. Patients frequently improved, clinically, out of all proportion to the apparent improvement in the blood picture. The permanence of these results no one can at present state. One patient treated twenty-seven months ago is in most excellent shape after having been a useless invalid for more than two years previously.

DR. BETH VINCENT, Boston: Transfusion is so often combined with splenectomy in the treatment of pernicious anemia that they may be considered together in discussing the effects of splenectomy. At the Massachusetts General Hospital we always test donor and recipient before transfusion in pernicious anemia and use as donor a person of the same blood group as the recipient. We transfuse on an average of 600 c.c. of blood in these cases and believe that a relapse which does not show a tendency to spontaneous remission is an indication for transfusion. Some of our patients were transfused before splenectomy and others received transfusions afterward in the relapses which eventually occur in these cases. Dr. Minot has called attention to the increased activity of the bone marrow which follows splenectomy and is shown by the appearance of Howell-Jolly bodies, a rise in the leukocyte count and an increase in the blood platelets and reticulated reds. A similar change may be observed after transfusion and appears on the fourth to tenth day. This furnishes the most favorable time to do a splenectomy in these cases which have been transfused in preparation for the operation. The mortality of splenectomy in pernicious anemia should be very low, provided the right stage of the disease is taken to do the operation. I feel that it is a mistake to remove the spleen in a relapse. Such a case should be transfused and not operated on until it has reached the stage of improvement. There is a type of pernicious anemia, one whose course is steadily downward without remissions which does not improve with transfusion and, in our experience, this type of case shows very little change after splenectomy. As to results, the figures in our series of 15 cases

agree with those given by Dr. Krumbhaar. The immediate effects of splenectomy are often strikingly favorable, but the longer the cases are followed the less encouraging they become.

Splenectomy is capable of bringing about a satisfactory remission of considerable duration. It may last six months and rarely lasts a year. After this period the disease resumes its normal course. Removal of the spleen does not prevent the recurrence of relapses or alter their severity. I doubt whether it prolongs the patient's life unless the case is followed to the end and transfused in the relapses. Transfusion is undoubtedly the best treatment for a relapse. It does not give such a permanent result as splenectomy but makes the patient more comfortable and probably prolongs his life. Therefore splenectomy and transfusion are palliative, not curative. Splenectomy diminishes blood destruction and both splenectomy and transfusion are followed by bone marrow activity which brings about a temporary symptomatic improvement. This benefit is temporary and not always certain but nevertheless transfusion and splenectomy are the most effective means we have at the present time for the treatment of pernicious anemia.

DR. HERBERT ZIEGLER GIFFIN, Rochester, Minn.: This symposium is very important at this time because it crystallizes our ideas in regard to the present status of splenectomy for pernicious anemia. I can only add our own experience to that which has been given. It is almost exactly in line with the results that have been reported. Thirty-nine cases have been operated on with an operative mortality of 3 (7.7 per cent.). There is apparently no reason why the operative mortality for pernicious anemia should be high. There have been four postoperative deaths, leaving thirty-two living patients. Five patients are at present in relapses, so of thirty-nine cases there are twenty-seven patients in good or fairly good condition. One patient lived as long as three years. The longest period during which patients have maintained a good condition is one year, which occurred in two instances. Preoperative transfusions have been given preparatory to operation to improve the general condition of the patient, to initiate if possible an upward curve and to improve the characteristics of the blood count. We can predict that four patients out of five will show a very marked gain after splenectomy and it would seem that they should be given the opportunity to have this gain without very strenuous postoperative treatment. We have given postoperative transfusions only in relapses. I wish to speak especially of the examination of the duodenal contents of pernicious anemia patients for the blood derived pigments. We have followed up the work of Schneider reported in January in the *Archives of Internal Medicine* in thirty-three cases of pernicious anemia and have obtained high values for urobilin and urobilinogen in the duodenal contents by the Albur and Addis spectroscopic test in all but three. In 12 cases examined a short time after splenectomy ten gave very high value. We have examined the duodenal contents for blood derived pigments in nineteen cases of a miscellaneous group with secondary anemia and have obtained low values. In four cases of hemolytic jaundice three have shown high values. This test may prove to be important in the study of patients with pernicious anemia. For instance, if a patient shows high hemolytic values in the duodenal contents and, in spite of active hemolysis, to maintain a good blood picture, he should be a favorable case for splenectomy: for splenectomy is followed by a reduction of the hemolytic values. With splenic anemia our experience is of thirty-three cases. The results are uniformly good. With hemolytic jaundice our experience is of ten cases with one death. In hemolytic jaundice there has been a very great improvement in the general condition of the patient, the jaundice and the anemia. We have one patient in excellent condition who was operated on eight years ago. One case of acquired hemolytic jaundice presented a pernicious anemia blood count. Cases of hemolytic jaundice in adults which show a pernicious anemia type of blood count are particularly interesting because of a possible close relationship between the two cases.

DR. W. S. THAYER, Baltimore: My first experience in which I had a splenectomy done in pernicious anemia dates from three years ago next November. That patient had already had distinct signs of spastic paraplegia. She made what appeared to be a complete recovery from the standpoint of her anemia and remained well for a year and a half. Her cord changes failed to progress. Then, in about two or three months, she rapidly went down hill with a relapse and died from a characteristic pernicious anemia. I felt that while we had only succeeded in producing a remission of the anemia that we had for the first time in my experience done something which arrested the progress of the cord changes and yet Dr. Krumbhaar is able to tell us that, as a rule, the cord changes have progressed without respect to the operation. Dr. Miller had an instance almost opposite to mine, that is, the anemia improved, but the cord changes grew rapidly worse. With splenectomy there is a temporary improvement in the majority of instances. The best figures show a considerable mortality from the operation. One is tempted to regard pernicious anemia as inevitably fatal and one is justified in seeking any remedy which may bring improvement. There are cases of long remissions—McPhedran's of sixteen years; others of shorter time. I myself saw one of five years and the patient died of another malady. We never need be utterly hopeless with regard to pernicious anemia and one must consider very carefully before advising splenectomy. We do in most cases accomplish a little something which we may not be able to accomplish under other circumstances, but it ought to be put very directly to the patient and it seems to me we should go very slowly in advising so serious a procedure. In regard to splenic anemia, particularly those with violent gastric hemorrhages, the results did not seem to be uniformly beneficial. My experience has been quite in accord with that of the other gentlemen who have spoken. In hemorrhagic jaundice the results appear to be almost uniformly beneficial, but there again one ought to consider very seriously the question of operation before advising definitely to have it done. If we are dealing with a case of congenital hemolytic jaundice, as a rule, the symptoms are not grave. I have three cases now under observation, in all of which the patient does not suffer much. There is a large spleen and a continued jaundice of greater or less degree quite endurable, so endurable that in none have I felt like advising splenectomy. One of these patients who underwent appendicitis associated with the removal of stone from the gallbladder withstood the operation as well as a healthy person and, indeed, three weeks after the operation the fragility of the blood was less than it was before. One should not urge an operation. The jaundice may be so serious and the anemia grave enough to justify it. In instances of acquired hemolytic jaundice it may be that the anemia is serious enough to make the operation almost imperative. These methods of transfusion have rendered the possibility of doing splenectomy in grave anemia a relatively simple matter where previously it would have been absolutely impossible. I remember an instance of splenic anemia, operated on by Dr. Finney, in a small boy, where he had waited six months that he might develop a good color. Finally, the boy's condition became so serious that he was transfused and taken to the operating room practically moribund and transfusion was done while operation was being carried out. By the end of the operation the arteries were spurting and the boy made a perfect recovery following the operation.

DR. G. A. FRIEDMAN, New York: I shall limit my remarks to hemolytic jaundice. It is the third case of Dr. Peck to which I refer. The patient stated that he was sick for eight months and on close questioning, no other illness could be elicited, except that when he was very young he had a fever which lasted for several days. There was undoubtedly no hereditary tendency in this case. When first seen, I would say that he was more icteric than sick, and, practically, he came to the clinic, not so much for his symptoms, as for his jaundice. One of my co-workers on first examination suggested catarrhal jaundice. It is very important, and especially so in cases of young people, that the first thought that should come to the mind should be catarrhal jaundice. But

an icterus which begins acutely with enlargement of the spleen should suggest hemolytic jaundice. We know well, however, that in a proportion of cases of catarrhal jaundice the spleen is enlarged and not the liver. But on considering more carefully the history in the case at hand, one must see that we are dealing with an entirely different condition. There was an absence of pruritus during the entire period of the illness—eight months. The absence of bile in the urine, and the presence of urobilin and urobilinogen, the presence of bilirubin in the blood, and the presence of bile in the stools, are aids in the diagnosis. The anemia here, however, was not marked. The resistance of the red blood cells to hypertonic salt solutions was only slightly diminished. It was between 0.35 to 0.45, but the percentage of the reticulated red cells was increased. The result of the operation was marked. Patient was practically free from jaundice on the fourth day after the splenectomy and on the eighth day there was no trace of it. I saw him at the end of last March. There was no jaundice and the patient was well. The medical treatment is absolutely without any benefit.

DR. SAMUEL J. MELTZER, New York: I wish to point to a possible factor which, as far as I know, has not been referred to either in the experimental or in the clinical work on the subject. We know that the red corpuscles run in the middle of the blood stream and are, therefore, as a rule, not exposed to any kind of shocks. Some forty years ago I saw a fragile red corpuscle riding on the ridge formed by two dividing arteries. The blood cell was finally broken into two fragments. It then occurred to me that the blood corpuscles while passing through the spleen must be subject to innumerable shocks. The blood, after leaving the renal artery, passes through a considerable amount of alveolar tissue, before it enters into the renal veins. The blood cells in their rapid run through these tissues must continually come in conflict with some jarring ridges. This gave me the notion that fragile red blood corpuscles may readily break down in the spleen or may be prepared to give up some of the hemoglobin, and that some of the nucleated cells may lose their nucleus there. I was also thinking that the mechanical shocks which the white corpuscles receive while passing through the irregular arrangement of the alveolar tissue may be affected; it may possibly hasten their natural division. These considerations were the starting point for many of the investigations on the effect of shaking on red cells, bacteria, ferments and toxins. The first investigation of this kind was carried out in 1884, together with Dr. Welch. In the course of the last year Dr. F. L. Gates studied in our laboratory at the Rockefeller Institute the effect of shaking on red cells of splenectomized dogs. I am not ready to report here his results. I merely wish to call the attention of those who are interested in this subject that the mechanical effect of the alveolar construction of the spleen may have a certain influence on the red blood corpuscles, at least in pathologic conditions of the blood, and may be, therefore, a potent factor in certain forms of anemias.

DR. ROGER I. LEE, Cambridge, Mass.: The ordinary course of pernicious anemia is very bizarre, although it is next to impossible to tell from a few cases whether the effect of a particular therapeutic agent is favorable or not. The blood picture in pernicious anemia may be said to correspond roughly to blood destruction and blood formation. The same thing holds true of hemolytic jaundice and splenic anemia. We have studied splenectomy and transfusion from the point of view of the effect of stimulating the bone marrow activity by the method that Dr. Minot outlined. We have used no particular method, but we have used those general comprehensive estimates of all these methods. We do not think, for example, that the reticulate cells alone are of very great value, but the qualitative changes in the reticulate cells, especially with the blood platelets and white corpuscles, give us good information in regard to the bone marrow. After splenectomy and after transfusion we always get a slight tendency toward stimulation of the bone marrow. That stimulation of the bone marrow varies a great deal. It is much more constant. It is much more constant and energetic after splenectomy than after any other therapeutic procedure. The

benefit of transfusion is to furnish bulk of blood which may then be destroyed very rapidly, but the main benefit of transfusion is to inaugurate a remission which means merely to stimulate the bone marrow and it is only by following the patients that we can tell whether they are benefited or not. We merely say that after splenectomy rather constantly and after transfusion occasionally one does see the signs of a stimulated bone marrow.

DR. E. B. KRUMBHAR, Philadelphia: It has been generally accepted not only that blood transfusions are a valuable prelude to splenectomy, but that in themselves they constitute an efficient method of combating pernicious anemia. In fact it remains to be proved whether or not equally good results would not be obtained by repeated transfusions in the absence of splenectomy, although the impression is prevalent that the improvement following splenectomy is more lasting. This is to be expected if it is borne in mind that whereas transfusion merely improves the condition of the blood, splenectomy removes the most apparent noxa. In connection with Dr. Thayer's remarks about the long periods of spontaneous remissions, I would call attention to Cabot's series of 1,200 cases in which only three patients were considered as "cured," in other words, did not develop symptoms during five years. May it not be that among the small number of splenectomized patients that we have thus far had opportunity to see, there is a group which will eventually give us a larger proportion of long surviving cases? I hesitate to use the word "cure," because we do not think of any of them as really cured. In regard to the use of the term "splenic anemia," I think most physicians would agree with Dr. Miller that it probably includes one or more clinical conditions of uncertain or varying etiology. But just as the hemolytic jaundices, and probably also von Taksch's disease have been separated from this group with profit, so also Gaucher's splenomegaly, with its unique pathology and well-defined symptom complex, should to my mind be considered an independent condition. Thus "splenic anemia" in the present state of our knowledge might profitably and feasibly either be discarded entirely, or considered as synonymous with Banti's disease, or with the two early stages of that disease.

DR. JOSEPH L. MILLER, Chicago: Not every patient with hemolytic icterus is inconvenienced by it. In fact, the majority of these patients suffer little or no inconvenience aside from discoloration of the skin. For this reason, Türck has referred to it as a cosmetic disturbance rather than a disease. It would seem, therefore, a question whether an operation with a mortality of at least 10 per cent. should be undertaken in these cases of hemolytic icterus, unless the person shows a definite disturbance or unless he should be willing to undertake the risk associated with the operation in order to be relieved of the icterus. There has recently been a report of three cases of hemolytic icterus cured, the result of Roentgen-ray treatment. In those cases in which splenectomy is not undertaken it might be well to try the effect of the Roentgen ray to see whether a cure might be effected.

Reduction of Mortality in Indian Armies.—The report of the sanitary commissioner, with the government of India, gives a table showing the remarkable improvement in the health of the native army since 1880. We will here summarize the table:

Year	Death Rate (Including Deaths of Absentees on Enrolled Strength)
1880.....	41.12 per mille
1885.....	16.09 per mille
1890.....	18.60 per mille
1895.....	15.71 per mille
1900.....	18.57 per mille
1905.....	9.50 per mille
1910.....	7.12 per mille
1911.....	6.78 per mille
1912.....	5.66 per mille
1913.....	4.55 per mille
1916.....	3.73 per mille

During the same period the death rate for British troops dropped from 24.8 to 4.3.—*Indian Medical Gazette*, July, 1916.

THE STATUS OF PHYSICAL THERAPEUTICS IN THE MEDICAL COLLEGE CURRICULUM OF TODAY*

E. L. EGGLESTON, M.D.

BATTLE CREEK, MICH.

The brevity of the time assigned and devoted to the study of nonmedical therapeutic agents in the present medical college curriculum was very forcibly brought to my notice when I was asked by the faculty of a Class A school to present in sixteen hours this entire field with the exception of electrotherapeutics. The results of the attempt were far from satisfactory to the students and to myself. It was possible in this space of time only to make brief mention of the physiologic effects and therapeutic uses of such measures; and there was no time for demonstrations and no opportunity for the students to become familiar with the technic which is so essential to the proper application of these therapeutic agents.

It occurred to me that it would be interesting to know what attention is given to these subjects in the medical schools of the United States, and the material gathered in the course of my subsequent investigation forms the basis of this paper. This information is presented with the earnest desire to encourage a more systematic teaching of these subjects, so that every graduate in medicine on entering practice may be prepared to make scientific and effective use of physiologic therapeutics. My information was obtained by sending to each of the medical colleges listed and classified by this Association an inquiry as to the number of hours devoted to the presentation of the subjects of hydrotherapeutics, electrotherapeutics, mechanotherapeutics, massage, medical gymnastics and dietetics. Replies were received from fifty-seven schools, forty-two of which are listed in Class A, nine in Class B, and five in Class C. The replies to my inquiry indicate a decided interest in the subject, and many express regret that time and suitably equipped laboratories are not available for proper presentation of the subjects.

In 1908 the American Medical Association, through its Council on Medical Education, prepared an outline for a model medical curriculum. Their report, which was issued in September, 1909, represented the work of a committee of 100 of the leading medical educators of the United States and Canada. In their schedule of hours devoted to the different subjects of the medical curriculum, an allowance of sixteen hours in the third year was made for nonpharmaceutical therapeutics, and in the fourth year fifteen hours were devoted to electrodiagnosis and therapeutics. There was no other definite time allotted to this class of therapeutic agents. Under the head of nonpharmaceutical therapeutics were listed hydrotherapy, climatology, dietetics, electrotherapeutics, psychotherapy and other physical and physiologic measures. The members of the committee considered this sufficient time for the theoretical discussion and demonstration of the above named subjects. Some members of the committee felt that more time should be devoted to this class of therapeutics, but the limited total number of hours at their disposal determined their final recommendation.

The same committee advised that 165 hours be devoted to pharmacology and toxicology. It is not my intention to criticize the committee's report, but I am certain that the time allotted to nonpharmaceutical therapeutics is entirely insufficient to give the student a degree of proficiency in his use of these methods equal to that which he is supposed to acquire in the use of medicinal agents. I have referred to this model curriculum at this time in order that comparison may be made between the standard schedule thus established and the average schedule of the investigated subjects in operation in the medical schools.

In summarizing the collected information, I found that the average time devoted to the nonpharmaceutical subjects exclusive of psychotherapy was sixty-two hours, or about four times that recommended in the model curriculum. In all but two or three of these schools special work was being given in one or more of the subjects of this group. In seventeen of the schools a special course was devoted to hydrotherapy; eleven other schools gave a course in which hydrotherapy was combined with one other subject of the nonpharmaceutical group. Dietetics was considered in a special course by twenty-two schools, the average number of hours devoted to this subject being thirty. The majority of schools are giving special courses in electrotherapeutics, a few considering the subject only in connection with other courses, such as neurology. That electrotherapy has a definite place in therapeutics cannot be questioned; and it is unfortunate that because of a lack of satisfactory information it is still so much in the hands of the "irregular practitioner" that many physicians hesitate to use it, fearing criticism from the profession. In twenty-three schools giving a special course in this subject, an average of twenty-three hours is devoted to the subject.

Very few of the schools were able to demonstrate the proper technic of the physical measures because of a lack of suitable equipment. A few schools, through their hospital connections, were able to demonstrate such procedure before their students, but very few of them required such work on the part of the student individually as would be required in a practical course in pharmacology. A few schools still give the greater part of this work incidentally in connection with the courses in general therapeutics or in clinical medicine.

The objection to these subjects being presented in this way is that the student has not familiarized himself with the proper application of such measures, nor is he so drilled in their physiologic action as to allow him to make use of these measures with the same precision with which he would employ medicinal agents. Until it is possible to teach them as laboratory subjects where the different forms of apparatus necessary to the application of such treatment is available, it will be of no practical use to the practitioner unless he takes some special work to obtain that proficiency which will enable him to determine the proper application of such remedial measures to the condition before him. Where a personal opinion has been expressed by those in charge of the department of therapeutics, the opinion is quite universal that a sufficient amount of time is not at their disposal, nor have they the equipment for properly teaching the use of nonpharmaceutical measures. It is to be hoped that the time is not far distant when medical schools will have more satisfactory means of imparting information concerning these subjects, and in my opinion this edu-

cation of the profession will very largely solve the problem of the irregular practitioner who attempts to commercialize an imperfect knowledge of these subjects to the great disadvantage of the patient.

As to the lack of time and proper facilities, the dean of one of the leading schools of the country expressed himself as follows:

We do not pretend that, as far as mechanical treatment is concerned, we are as efficient as we should like to be. The executive committee of the hospital has been attempting for some years to obtain endowment for a department of physical therapy, but so far we have been unsuccessful. We have the matter in mind, however, and meanwhile we are continually using many of the methods of physical therapy with the somewhat incomplete apparatus which is available to us.

Another answered as follows:

In reply to your recent letter would say that the status of physical therapeutics in this medical school is not at all satisfactory. Indeed, from my experience I would say that this form of therapeutics is very unsatisfactory in most all medical colleges and hospitals. In such work it is very difficult to differentiate between the honest, conscientious seeker for the truth, the therapeutic enthusiast who does not use critical methods of control for his work, and the unprincipled money-maker who uses such methods as a form of exploitation. Although I heartily approve of all forms of physical therapeutics, it seems wise to me, in the development of them, to proceed slowly. The only way to differentiate between the classes of workers above mentioned is, to my mind, the keeping of very careful records which may be critically analyzed as data by competent medical men, to have an adequate series of control cases, and to follow up the end-results of this form of work. It has been the tendency in most medical schools to discontinue special departments of therapeutics, the function of which has been taken over to a considerable degree by those responsible for the teaching of pharmacology and clinical medicine and the special branches.

The question has been raised by some as to the advisability of presenting the nonpharmaceutical subjects as individual courses, suggesting that they should be given consideration under the general head of therapeutics. I quite agree that this could be done, but unless the same careful attention is given the physiologic action and proper technic of the use of these measures, as is given to the use of medicinal preparations, the instruction will have been insufficient. The student must be given opportunity to obtain sufficient proficiency and information to know when such measures may be used with profit and to give definite directions as to how they should be used. It is as essential that this be done as that specific directions be given in regard to the proper dosage and frequency of administration of a drug. Would the physician be pardoned if he should direct the nurse on a case to administer the alkaloids or other potent drugs in any way she might think best? But this is just what is being done by many of the physicians who are attempting to make use of nonmedicinal agents. Undoubtedly, many patients are not only not benefited but are in many cases injured by such therapy.

The empiric use of hydrotherapeutic measures is fraught with grave danger in many organic diseases, and the same may be said with reference to the use of massage or other physical measures; but this should not condemn them as of no value. It is not desired to argue as to the beneficial effects of the nonmedicinal agents in disease. The fact that they have stood the test of time and are being used more and more in a

scientific way is sufficient proof of their value. That they have been used empirically and are today exploited by some in such a way as should be severely condemned is no more to their discredit than are the facts with reference to the "patent medicine" question. The opinion held by the profession with reference to the physiologic action and therapeutic value of the majority of the pharmacopoeial drugs has been completely changed as a result of information obtained by painstaking effort on the part of laboratory workers. When equal attention is directed to the other therapeutic measures, it will be found that in many situations they can be used to much greater advantage than the medicinal agents. Unless our profession is to be criticized as are those who refuse to acknowledge virtue in any line of treatment except that to which they are wedded, it will be necessary for us to give proper consideration to all valuable therapeutic measures, and in so doing we shall immeasurably increase our usefulness and have the confidence of the public to a much greater degree.

The one best qualified to prescribe the diet in diseased conditions should be the physician; but when he is ignorant of the simplest principles of dietetics and advises his patient "to eat whatever he likes, as much as he likes and whenever he likes," it is only to be expected that the patients will appeal to those who profess, under whatever name, to have sufficient knowledge of the subject to prescribe intelligently in specific conditions. Until within the past few years the subject of dietetics has not received attention in the medical curriculum as a specific subject; but, fortunately, conditions have now changed, and such a course is given in practically every school of the United States, and more time is devoted to it than was suggested by the committee on a model medical curriculum for the whole subject of nonpharmaceutical therapeutics, which comprised the subject of dietetics along with others. The work being done by Allen with reference to diabetes, the late researches as to the etiology of pellagra, and the study of anaphylactic phenomena after the ingestion of certain foods, and toxic conditions due to intestinal disturbances, with other considerations equally important, show the need of thorough instruction in this subject. It is not sufficient that the student hear the subject mentioned in a general way. He needs specific information. But we are told that the difficulty in accomplishing this is the lack of time. The curriculum is already overcrowded with apparently indispensable subjects. A possible solution of the matter might be found by those schools which require one or more years of college work for entrance by requiring that the premedical work shall have a specific relation to the regular medical course, and shall lessen the number of courses now crowded into the medical curriculum.

The modern hospital is very careful to install the best available equipment for the application of physical therapeutics, but unfortunately little use is made of it. This can in many cases be explained by the imperfect knowledge of the subject possessed by the medical staff. It is hardly to be expected that satisfactory use could be made of a therapeutic agent which the physician had never seen demonstrated and the physiologic action of which he had never observed. A complete pharmacy without a working knowledge of the drugs therein contained would be a comparable situation. Great effort is being made to determine exactly the physiologic actions of the drugs that are listed in the

pharmacopeia and that are being introduced in large number by chemical manufacturers; and certainly all due credit should be given the laudable efforts in this line. But of the hundreds of drugs that are at our service, how many are indispensable? The following quotation from a recent editorial¹ in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION relative to this subject is of interest in this connection:

Until very recently, we were compelled to acknowledge that little if any progress was being made in internal medicine so far as drug therapy was concerned. Everybody knows of the progress made in other branches—in bacteriology, in pathology, in biologic chemistry, in surgery, in etiology and in the application of technical methods to diagnosis. Recently, however, pharmacologic research and the application of scientific methods in the study of the physiologic action of drugs are resulting in definite, positive progress. An important lesson, incidentally learned through this scientific investigation, is the fallibility of the drug therapy described in textbooks. . . . Many drugs have been, and still are, vaunted in textbooks as valuable in a variety of conditions, whereas scientific investigation and controlled clinical observation have proved them to be totally worthless; others are proving to be of value in an extremely limited number of conditions. The sooner writers of textbooks realize this fact and enter into the spirit of the new era, the better for the public and for scientific medicine.

When an individual has learned by experience of the fallibility of drugs, he has not infrequently lost confidence in his physician and has been led to employ as his adviser some one professing to cure physical ills without resorting to drugs. The number of such individuals has become so large as to provide a considerable field for the drugless healers, and the influence of this class has been so great with our state legislatures that they have felt compelled to grant some form of recognition to these irregular practitioners. Because the medical profession in the past has ignored to so great an extent all other therapeutic measures than drugs, may it not be possible that the responsibility for the prosperity of osteopathy and similar therapies rests largely on their shoulders?

There is no doubt as to the value of suggestion in a large number of pathologic conditions; but because the regular physician has been imperfectly educated in psychology and has used it so little in his work, he has permitted large numbers to turn to Christian Science or New Thought for the relief of all their ills. And so neglect on the part of the profession to make proper use of physical therapeutic measures has made it possible for the irregular practitioner to recommend himself to the public through that measure of success which apparently attends his efforts in the application of these lines of treatment. That this condition of affairs is unfortunate is very apparent. The irregular practitioner, because of his imperfect education, is unable to make a careful and proper diagnosis, and his results in his attempting to use his particular method of treatment in cases where it is decidedly contraindicated and may cause needless sacrifice of human life. Instances of this are common knowledge. The treatment of the chronic invalid in the future will be more and more institutional, and if successful, must depend on a system which will include the non-medicinal form of therapeutics to a large degree. The question of proper diet can no longer be left wholly in the hands of the hospital authorities. The physician will be expected to prescribe this in a specific way in

each case. The proper application of massage cannot safely be turned over to some one bearing the brand, "trained in Sweden," but should be directed and supervised by the physician. The value of passive exercises in the treatment of certain conditions is inestimable. Tonic effects may be more satisfactorily obtained by hydropathic treatments than by the prolonged use of any so-called tonic agent of the pharmacopeia; and in hospital practice where proper facilities are provided, the value of hydrotherapy in a wide range of cases should be more generally appreciated. Similar remarks might be made about other nonmedicinal therapeutic measures. The day is past when, in medical cases, the patients will submit without protest to being confined in hospitals and treated solely by drugs. Patients are coming more and more to avail themselves of massage, exercise, hydrotherapy, and to insist on having the advantage of such measures in conjunction with medicinal therapeutics and a prescribed diet.

One reply, received from the dean of one of the university medical schools, was as follows:

I would state that the course in therapeutics devotes itself rather more than half the time to subjects not related to the use of drugs, and the emphasis throughout is laid on attending first of all to conditions of living, nursing, dieting, securing of favorable mental attitude on the part of patients, prophylaxis, etc. . . . From time to time students make reports on such subjects as x-ray therapy. Amphitheater demonstrations of certain simple hydrotherapeutic treatments, such as the typhoid bath are given, but, owing to lack of facilities, most of the work in physical therapeutics is confined to discussions.

And so it is with the majority of schools. While recognizing the value of such measures, they find it impossible to present them properly, owing to lack of time and proper facilities. This, then, seems to be one crying need in our schools. While the time devoted to these subjects is far greater than suggested in the model curriculum, it is yet far from sufficient to present these subjects in such a thorough manner as to fit the student to use them in a practical way. The more serious lack of properly equipped laboratories makes it impossible to present them in a scientific way, with the result that these measures are often prescribed in an empiric way, and, under the circumstances, recommend themselves neither to the physician nor to his patient.

The day is past when the public is willing to be treated by medication solely. Today, intelligent patients expect that their physician will be able, in addition to making a correct diagnosis, to prescribe that form of treatment that will most readily restore them to health. They expect him to tell them the cause of the trouble and how they can avoid it in the future; how and what and how much they should eat, how they should bathe, and what exercises would be to their advantage. A knowledge of drugs only will not permit the physician to do this. Is it necessary that the patient be compelled to consult, in addition to his physician, a food expert and a gymnasium director to find out what to eat and how to exercise, or to consult an osteopath or a professional masseur to obtain the benefit from manual movements? It is high time that the physician be able to direct in all the activities having to do with the well-being of his patient, and that he so minister to all his physical needs that never again will the patient think of him as a dispenser of drugs only.

¹ The Fallibility of Drug Therapy in Textbooks, editorial, THE JOURNAL A. M. A., May 27, 1916, p. 1708.

ABSTRACT OF DISCUSSION

DR. THOMAS F. REILLY, New York: Physical therapeutics is the one branch of medicine wherein those who become interested are exceedingly prone to run to extreme statements as to its therapeutic possibilities. No one denies that physical therapy has a place in the alleviation of symptoms and indirectly in the cure of disease; but it is by no means the panacea that its apostles would have us believe. Unless the curriculums of our medical schools are freed from some of the work necessary to successfully pass state board examinations, it is not possible to give more than a fraction of the time advocated in this paper to a study of these measures. Like the reader of the paper, each specialist cries out that the medical school does not go thoroughly enough into his particular specialty. After all, the medical school can furnish little more than the principles of medicine in the time allotted to study—the alphabet of the science, as it were. The words and sentences must be filled out in hospital practice. The application of the use of the physical measures as recommended are time consuming, and from an economic standpoint are not practical in everyday practice by the general practitioner himself, but must be done by nonprofessionals, just as the pharmacist must take up most of our preparations. Of course, the basic principles of such therapy must be taught. This applies with special emphasis to Roentgen-ray diagnosis and therapy, a specialty which must soon find a relatively large place in every curriculum.

DR. N. P. BARNES, Washington, D. C.: This condition might be ameliorated after the student has spent so much time in the laboratory by a little work in a gymnasium which should be connected with each college. I recommend to my students, especially those in the second year, finishing their anatomy, to go to a gymnasium to work out and study their muscles. Nearly every city supports one or more gymnasiums, which are always accessible to the properly minded medical student. I had a young man in my office who was very well developed on the right side, but not on the left, because he was a tennis player. I prescribed that he put his right arm in a sling and play with the left arm, and in the course of time he got some development on that side. We all prescribe massage and how many of us know anything about it? The student in the future should be able to direct this massage, and I feel that when I tell patients that they need massage that I like to supervise it because we get different results from different manipulations.

DR. WALTER E. SIMMONDS, Chicago: For the last two years I have been engaged in teaching this work. I have only sixteen hours for all the practical instruction in hydrotherapy, electrotherapy, phototherapy and mechanotherapy. A lecture course is given by the head of the department. He has worked for years to secure some kind of equipment for a laboratory in which to give this instruction, but was unable to secure an adequate appropriation for this purpose; all that could be obtained was \$75, and, of course, we could not procure a very complete equipment with this amount. I maintain that the same time should be given to laboratory instruction in physical therapeutics as is given to pharmacology. Our students have a two-hour period in pharmacology to one in nonpharmacal therapeutics. Dr. Reilly mentioned the difficulty of obtaining men trained in this branch. I see no reason for this. If you want a man in your hospital for Roentgen-ray work you send him to get this special training. Why should you not send a promising young physician for training in physical therapeutics? The superintendent of a large Chicago hospital told me that the reason their department for physical therapy was not more used was that the physicians who attended the hospital did not prescribe this form of therapy. Having obtained a man trained in this branch, and such men can be obtained if the salary is paid, an adequate department should be furnished him; do not handicap by less equipment than a second-rate bathhouse would have. Give him an equipment that would enable him to do the same kind of scientific work as is done in other branches of medicine. Men working along one particular line become enthusiasts, but with the close cooperation of those engaged in clinical work, as well as those teaching the fundamental sciences, you will find that he will do as good scientific work as in any other department. I protest against placing the nonpharmacal equipment

in the basement or other least desirable part of the college or hospital.

DR. B. FANTUS, Chicago: This paper brings out the important fact that we are properly teaching only one half of the therapeutics we should teach in our medical schools. When the practice of a hospital or of a successful physician is examined, it will be found that medicinal therapeutics constitutes only one half or less of treatment, and that the other half is made up of physical, psychic and dietetic measures; and this in spite of the fact that most of us never had adequate instruction in the measures. I believe the time has come and is here now, when it must be recognized that the doctor who knows nothing but drugs is as reprehensible as he who solely practices massage, electrotherapy, hydrotherapy, etc. I take issue with the idea brought out in the discussion that some of these measures are properly measures for specialists. They will never come to their own until every physician is competent to practice them. Take massage, for instance. Every doctor frequently meets cases that need massage; and, if he does not know how to apply it and in certain cases to teach the manipulations to the patient, the latter will generally not obtain the benefit of these manipulations at the time when they might do the most good. There are millions of joints in the United States that have become crippled because of the lack of massage at the time when it was needed. Medical gymnastics should be taught in the medical schools by giving the student the physical exercise he needs in the form of instruction in specialized gymnastics such as programs for patients with heart disease, constipation, scoliosis, etc. Electrotherapy, as well as hydrotherapy, should be in the hands of every medical practitioner to accomplish the most good for the people. Our ignorance of dietetics is the laughing stock of the world. It is high time to remove this stigma from the medical profession.

In all probability nothing will be done. Years will pass before a change will come, because the leaders of the medical profession are not conversant with these measures of treatment. If they know little or nothing about these measures how can they be expected to provide adequately for them? The very provision they have made for them in the standard curriculum—sixteen hours—shows how little they know about these various measures. It is not desirable to wait for a fifth year to be added to the curriculum before these subjects be taught adequately. If necessary, the time given to anatomy might be cut down somewhat to give the students a better training in these subjects.

DR. E. L. EGGLESTON, Battle Creek, Mich.: I trust you will not consider that I am bringing this subject before you in a critical way. It may be that the leaders in medical education have done the best they knew how to remedy the situation nevertheless, I feel that it is high time there was a change. I am in institutional work, and too many of the patients coming to me have for their medical advisers irregular practitioners. One of the reasons for this is the slight attention given to physical therapeutics, and I trust the day will soon come when there will be more attention given to this particular work. I appreciate the criticism which has been directed toward those using these measures empirically. Their value depends on their being used with the same degree of precision found necessary for the advantageous employment of the medicinal therapeutic agents.

Transmission of Disease by Insects.—Centuries ago there was suggested the possibility that insects were concerned with the spread of disease, and from time to time there have appeared keen suggestions and logical hypotheses along this line that lead us to marvel that the establishment of these truths should have been so long delayed. One of the earliest of these references is by the Italian physician, Mercurialis, who lived from 1530 to 1607, during a period when Europe was being ravaged by the dread "black death," or plague. Concerning its transmission he wrote: "There can be no doubt that flies feed on the internal secretions of the diseased and dying, then, flying away, they deposit their excretions on the food in neighboring dwellings, and persons who eat of it are thus infected."—Riley and Johannsen, *Handbook of Medical Entomology*.

REPORT OF TWO CASES OF SCOLIOSIS

ACCOMPANIED BY PRESSURE PARALYSIS OF THE
LOWER LIMBS *

JOHN RIDLON, M.D.

CHICAGO

The purpose of this paper is simply to report two cases presenting a condition which, in so far as I know, is unique, namely, a motor spastic paralysis of the lower limbs associated with and apparently depending on scoliosis.

The paralysis in both cases appeared to be in every respect the same as the paralysis we not infrequently see in cases of tuberculous spondylitis, and which we believe to be due to pressure on the anterior surface of the cord from the inflammatory process involving the vertebral bodies.

One of these patients was examined by two eminent neurologists. Their reports will presently appear in this paper. Both of these patients were treated on the convex gas-pipe frame. One was carefully nursed and the paralysis passed off by the end of four months; the other, less well nursed, had gained voluntary control of the movements of the limbs at the end of six months, but the tendon reflexes continued exaggerated.

CASE 1.—Girl, aged 11, was seen by me in June, 1913. She was large and well developed. The spinal curvature had been noticed for some time. There were marked round shoulders, a well marked lumbar curvature to the right with considerable rotation for the degree of lateral deviation, and a slight dorsal curvature to the left which on forward bending showed a marked rotation deformity. Roentgenograms showed a somewhat irregular fifth lumbar vertebra, with a slight lateral curve to the right starting from the deformed vertebra. In the dorsal region there was a short, sharp curve to the left with extreme wedging of the bones, one of which, the ninth, has an extra rib attached to the thicker side.

The patient was treated by daily exercises, and for nearly a year wore a leather corset made over a corrected plaster torso. The girl as a whole looked much straighter at the end of that time. On account of the extreme heat of the summer the corset was left off; but the exercises were continued. At the end of another eight months, the corset not having been resumed, the girl had grown rapidly and had become very stout. She looked straighter, but the roentgenogram showed that the curvature had really increased.

In July, 1915, two years after the first observation, it was reported that she had been walking "queerly" for about two weeks, and had fallen at least twice. For a month or more she had been "uncertain" in her bowel movements, but had had no bladder symptoms.

On examination, her walk showed spasticity, more noticeable in the right than in the left leg; the patellar and Achilles reflexes were exaggerated, and ankle clonus and the Babinski sign were present.

The Roentgen-ray plates read by Dr. Hollis Potter showed no material change (from former plates) in the anterior posterior view. Transverse view . . . showed wedging in front, but less than to the right side."

Dr. Archibald Church examined the patient and kindly provides the following report:

"About six months ago her mother noticed that she was getting a little clumsy on her feet. About two months ago she commenced to have difficulty in the action of the bowels with a slight sphincter relaxation. She would often feel an inclination to go to stool but experienced inability in defecation, and then perhaps in a few minutes or hours involuntary defecation would take place.

"She complained of no disturbance of sensation, though stating to her mother that her legs, especially the right leg, felt heavy and stiff. More recently she had encountered difficulty in mounting stairs and had fallen once or twice, and walks in an uncertain, rigid manner.

"Upon examination the patient presents a very well developed appearance for a girl of her age. Menstruation has been established and is regular. Her general appearance is one of robust health.

"The face is not symmetrical. The left eye is apparently larger than the right. The left side of the face is decidedly larger than the right, and she has a way of talking almost entirely on the right side of her mouth. But innervation is symmetrical on both sides of the face. There is no evidence of cranial nerve palsy of any kind. Upon extreme deviation of eyes to right or left, very slight nystagmoid movements may be induced. Eye grounds normal.

"The upper extremities show no variation of innervation either for motion, sensation, or the reflexes.

"The abdominal reflexes are elicited with difficulty, owing perhaps to the adipose deposit. The left umbilical reflex is very slight; the right cannot be elicited.

"The lower extremities present very greatly exaggerated knee jerks, and rectus clonus can be demonstrated on the left side. There is distinct ankle clonus also on the left side, somewhat slighter on the right side. Babinski reflex is present on both sides. The toes stand in a retracted hammer position, similar to the foot of Friedreich's ataxia.

"There are no vesical symptoms, although she is not quite sure about holding her urine as well as formerly.

"Sensation objectively tested seems to be normal in all its modes and tenses throughout the body and extremities.

"Thoracic, abdominal and pelvic organs normal. Blood and urine normal.

"Opinion: In my opinion there is pressure on the cord in the region of the sharp dorsal bend, showing itself in the spastic condition of the legs and the motor weakness and reduced voluntary control of the lower abdominal action, sphincter control, and locomotion.

"The condition is apparently congenital, but owing to the increasing weight of the body and the demands of growth, has probably induced cord symptoms during recent years."

The child was placed on a convex gas-pipe stretching frame and cared for continuously by a trained nurse. At the end of four months the reflexes appeared to me to have returned to the normal; and the spine was decidedly straighter. The treatment was continued after a consultation with Drs. J. D. Griffith, Francisco, Skoog and J. N. Jackson.

March 23, 1916, Dr. A. L. Skoog, who had seen and examined the patient very frequently, reported as follows:

"In the history I wish to call particular attention to the observation of both parents that . . . has always had an 'unusually peculiar gait.' My neurological examinations have been made every one to three weeks, the first being made on July 19, 1915.

"The mental state has always been perfectly normal. Her even, placid, uncomplaining and obedient disposition has been striking. The eyelids tightly closed show some tremor. The tongue was protruded mesially but had much incoordinate tremor. There were some nystagmoid movements when the eyeballs were turned to the extreme right or left. No other cranial nerve disturbances. Some tremor was seen in the outstretched fingers. Gait was greatly impaired, caused chiefly by disturbed coordination, left more than right. There was much spasticity at the ankles, less at the knees, and still less at the hips. The foot deformity was marked, having a moderate resemblance of the Friedreich's type, left greater than right. The various leg movements were decidedly ataxic. A mild dysdiadokokinesia was found, left slightly more than right. All deep reflexes were plus and much more so in the lower extremities. Prepatellar reflexes were pronounced. There was a tendency to right clonus, and a more marked unsustained one on the left. These clonic tendencies disappeared after three or four taps. There was a definite right positive Babinski and a more marked one on the left. A glossy or trophic skin was present in the lower extremities. No sensory disturbances could be elicited.

* Read before the Section on Orthopedic Surgery at the Sixty-seventh Annual Session of the American Medical Association, Detroit, June, 1916.

"Subsequent examinations have shown a slow but quite uniformly continuous improvement. At this time the reflexes are less pronounced. The spastic state is much improved. There is less ataxia in the lower extremities. The positive Babinski has changed to a negative one. The Friedreich's foot and nystagmoid movements continue.

"Conclusions: In my opinion the patient is suffering from some congenital or early developmental defect, involving especially some of the lower coordinating tracts. There has resulted a secondary cord compression from the dorsal vertebral deformity."

CASE 2.—Girl, aged 16, was first seen by me in October, 1914. Her father is a clergyman, and both he and the mother have had "nervous collapses." There is one younger child who is normal. The patient at birth had a spina bifida in the upper dorsal region. When about 9 weeks old she had, by Dr. Jepson of Sioux City, three iodine injections ten days apart into the tumor mass. She walked at 3 years. She was never a rugged child. When about 7 years old her mother noticed that the left shoulder was higher than the right. She was bright and quick in school. When about 14 years old her health began to fail, and she left school at the end of that year. The digestion was bad; she was fed on beef tea and malted milk; she lost weight and strength, but the loss of strength was mainly in the legs. During her fifteenth year Dr. Chase made Roentgen-ray pictures at the Battle Creek Sanitarium, and reported:

"There was a destruction of the bodies of several of the dorsal vertebrae, which I estimate to be the fourth to the seventh, inclusive, the destruction being the most marked between the fifth and sixth. There was a marked curvature of the spine to the left as well as anteroposteriorly. I was unable to demonstrate a perispinal exudate, such as is often seen in true Pott's disease." A "poroplastic cast" was applied and weight and pulley traction. The general health improved after two months. She was losing all motor power in her lower limbs, and after some three months was sent home. The limbs became utterly paralyzed. After another three months there was a slight return of motion in the right foot; after a while motion appeared in the other foot. By the following March (1914) she was able to sway the feet from side to side at will and flex the knees. By July she could move her feet in bed as she wished, but the limbs had not lost their rigid tension.

I first saw this patient the following October (1914). There remained from the spina bifida a mass the size of a small and shriveled peach at about the third dorsal vertebra. There was an extreme curvature of the upper two thirds of the dorsal spine to the left with an extreme degree of rotation deformity and the rib deformity characteristic of scoliosis. She sat in a wheel-chair; she could move her limbs at will, and stand and walk a few steps with help. The patellar and Achilles reflexes were greatly exaggerated.

Returning home after a few days, a distance of about 200 miles, she again lost the use of her limbs. She was put on a convex gas-pipe frame with instructions to remain there constantly. To illustrate the care she had, I will relate what I found when making an unexpected visit in January of this year. She was a block from home at the house of a neighbor, on her back on a soft couch. The wheel-chair and stretching-frame were in front of the house. She was wearing a large padded diaper into which she passed both urine and feces, for a "convenience," her mother said; but the girl said that she knew when she did it, and that she could control both her functions. She has had a daily "internal bath" since she was at the Battle Creek Sanitarium in 1913. Examination showed ankle clonus absent on the right side, and but slightly exhibited on the left side; the patellar reflexes were still greatly exaggerated; but she could move her feet and legs at will. In a word, there had been some considerable improvement, but she was far from recovered from her spastic condition.

I will not offer any theories as to these cases. The condition is new to me.

7 West Madison Street.

ABSTRACT OF DISCUSSION

DR. LEONARD W. ELY, San Francisco: I had a case, similar to the one Dr. Ridlon described, with spastic paralysis. The patient would not submit to jacket treatment and the paralysis was slowly increasing when he was last seen.

DR. J. D. GRIFFITH, Kansas City, Mo.: I would say to Dr. Ridlon that the case is still under treatment. We are pursuing it right along. The patient was a very fleshy woman, and very large. She weighed 165 to 170 pounds at the time of submitting to treatment. There was a positive von Pirquet, although this does not mean anything necessarily, I suppose. It is, however, corroborative. How much the therapy had to do with the restoration of the spastic condition it is impossible to tell. She is taking potassium iodid. The waist line was reduced 8 inches during the time she was on the frame, but that may have been due simply to the use of "Kissingen" salts, three times a day, in large doses. I reduced the protein and, to a great extent, the sugar. I could not cut out all the candy. The other treatment amounted to from 10 to 25 grains of potassium iodid three times a day. She has lost the spasticity and walks naturally in a corset with steel stays in it, keeping up continuous hyperextension. At night, she takes off the corset and goes on the frame; and in the morning she puts on the corset while still lying down.

DR. REGINALD H. SAYRE, New York: I should like to report a couple of cases—one referred to me by Dr. Spitzka, twenty odd years ago—that presented almost identical symptoms with this. I believed it was multiple sclerosis in a child that had lateral curvature; and on careful investigation, it was found that clumsiness in movements of the upper extremity had distinctly antedated the noticing of the lateral curvature in the spine by the mother. Later on, another similar case came under my observation, and five or six years ago, I reported a couple of cases, which I attributed to pressure on the cord by the lateral curvature. In these, however, the history obtained from the parents showed the presence of the incoordinate movements before the spine lesion was noted; and it is hard, I think, to see why a dorsal curvature would give incoordination in the upper extremities, the tremulous tongue and the symptoms mentioned, unless one is expecting a lesion of the upper cord as a consequence of the pressure at the point of twisting.

THE HEART AND ACTIVE SERVICE

TREATMENT OF CONVALESCENT SOLDIERS AT HEATON PARK *

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Membre fondateur de la société belge de radiologie et d'électricité
médicale et de la Société belge de physiothérapie

MANCHESTER, ENGLAND

In January last, at a meeting of the Royal Society of Medicine, Sir James MacKenzie opened a discussion on the "Soldier's Heart." His paper was interesting, as was the discussion which followed. A few weeks afterward, Dr. R. N. Wilson, his assistant, paid a visit to our command depot at Heaton Park. He examined a great number of our men affected by heart troubles.

After his visit, Major R. Tait McKenzie arranged for me to give electrical treatment to a selected group of those men. I took some sixty of the most serious cases of heart troubles. All of these men were at the same time given daily open air exercises by Major McKenzie's method, which included gymnastic training and route marches.

The physical training includes two divisions, the light and the full training. The first consists of slow

* This paper was forwarded by Dr. R. Tait McKenzie (of Philadelphia), who is now a major in the R. A. M. C. He says that "Dr. Seeuwen was a prominent practitioner in Ostend and with his family has been living in Manchester until I was fortunate enough to secure him for my staff here."

movements of limbs and trunk, and some deep breathing exercises; in the second division we find all the movements much more vigorous, much quicker, and also running and jumping. For the route marches we have the light one, which is only a walk at an easy pace for about 2 miles; the full route march is a sharp walk, in quick time, for from half an hour to an hour, usually with a band of music.

I made a daily application with the faradic current, the only form of medical electricity for the time being at our disposition.

The history of most of these men corresponds closely with those related in the articles of MacKenzie, Wilson and others. Wounds (20 per cent. were wounded), shell shock, excessive work, exhaustion and nervous strain are common factors. Debility following infection by sore throats, measles, dysentery, typhoid and malaria were found in about 25 per cent.

When I carefully scrutinized all those young men's pathologic history I could in more than 50 per cent. trace some old standing lesions, or some weakness, or at least a want of energy of the heart. Some of them had suffered years before they enlisted from palpitation, or breathlessness, after any strong effort, such as a run, or emotional disturbance. Others had been suffering from attacks of rheumatism (with or without heart troubles); others had hyperthyroidism, and others had suffered habitually, in winter, from cold hands and feet or other vasomotor disturbances. I asked all those men if they could play football or other exhausting games before they enlisted. Only five or six out of the sixty men were athletes.

Another very important factor is the probability of infections by bad teeth. Out of those sixty men, only eight presented a healthy denture. Is this not one way in which we must expect to find a very frequent cause not only of "soldier's heart," but also of rheumatism, or what is commonly called rheumatism, of dysentery, typhoid, goiter, and many other infections which find a well prepared soil in bodies which have had digestive troubles through defective teeth? In those cases the alimentary tract is the first affected, but afterward the central nervous system suffers, and all kinds of nervous symptoms may well be produced.

Dr. Wilson called my attention to the great number of big necks presented by the men he examined. The thyroid gland is often hypertrophied (25 per cent. presented a big neck). Is it due to infection and auto-intoxication? In a great number of cases, I think it is. During some ten months, with Dr. A. E. Barclay in the Roentgen-ray department at the Manchester Royal Infirmary, I saw a great number of simple and exophthalmic goiters, and we found very few of those patients — nearly all women — with a healthy denture.

What about spirits and tobacco, of which Dr. Poynton spoke? I think in a few cases they may be adjuncts, especially tobacco used in cigarets when smoke is inhaled. Some of these boys are smoking and drinking more than they did before they were soldiers. Nevertheless only five out of the sixty men were smoking over an average of ten cigarets a day, and most of them smoked only half that quantity.

Here are the results obtained after two months of the above mentioned treatment:

All the men were put as soon as possible on daily light physical training and the light route march. Most of them could stand completely or partially both those exercises, whose duration was half an hour each.

CASE 1.—Private J— had dysentery in Gallipoli. He was invalided, October 15, was in hospital for three and one-half months, and came in camp at the end of February. He was short winded; had palpitations—no valvular disease of the heart—pain over heart region; bad teeth; indigestion; pulse rate about 100. March 3, 1916, faradic treatment and light physical training were begun. The pulse rate was 92. March 24, he often had palpitation after physical training. April 5, the pulse rate was 80. April 13, the pulse rate was 76; the patient was still on light physical training. The general condition was good. He had had no palpitation for three weeks. April 25, the pulse rate was 76; it was decided to begin full physical training.

After four or six weeks when the man did not complain, and the heart trouble did not get worse, he was promoted to the full physical training and the full route march, whose duration is about the same as the light ones, except that the exercises are more severe and the march longer and faster.

All those men were examined very often during the exercises and also some hours afterward.

Ten per cent. of the patients could not stand the light exercises at all at first.

CASE 2.—Private H— was in France for eight months and was invalided July, 1915, with palpitation, tachycardia and headache, pulse rate 120. He had now and then palpitation before enlisting and during training. After a shell burst, he got worse and worse. Electrical treatment without physical training was begun March 2, 1916, pulse 110. March 10, the pulse was 84. March 15, the pulse was 78. March 17, light physical exercises were begun. March 24, the pulse was 88. April 12, the pulse was 100. The patient was uneasy, had palpitation, could not stand the exercises and was excused all duties. April 26, the pulse was 90, but the patient felt better. He will be recommended for discharge.

Fifty per cent. could stand the light exercises but not the full. The other 40 per cent., by daily treatment, improved more or less quickly and could soon stand the full course of gymnastics and marching.

Those men who could not stand the exercise complained of excessive fatigue, of palpitations, of pain over the left chest, of breathlessness, and most of them presented a high pulse rate, often 30 or 40 more beats persisting one or more days afterward.

Some men who could stand the light exercises without any trouble were submitted again and again to the full exercises and each time the different symptoms came back.

CASE 3.—Private G—, aged 23, had an enlarged thyroid for years, bad teeth, chronic throat catarrh and tachycardia (140 pulsations). He was at Gallipoli. The hot climate and very hard digging day and night made him weak. After a severe bomb attack he fell unconscious for an hour and felt the first palpitation. Feb. 9, 1916, he began his treatment, light exercises and faradization. After three weeks he felt much better; there was no palpitation, and the pulse rate was 90. March 2, he had full physical exercises, and March 6, his pulse rate was 120. March 9 it was still 115, and the man complained of uneasiness and some palpitation. March 10, he was again on light exercises. March 17, the pulse rate was 88. March 23, the pulse rate was 72. April 1, we tried him again on full physical training. April 7, the pulse was over 100, and again there was uneasiness. April 18, he was recommended for a medical board, and was passed for home service, for which he is quite well fitted.

CASE 4.—Lance Corporal W—, invalided May 15, 1915, was in hospital four months with crushed head. He was in France for three months and invalided for heart trouble. Before he enlisted he had a big neck but no heart or chest troubles. He felt the first palpitations after two shell shocks, and was unconscious for a few hours. There were stammering and tremor. He had good teeth. There was no constipation. The pulse rate was 68. February 23, electrical treatment and light physical training were begun. March 13, still

on light training, the patient was improved; speech was much better and there was no palpitation. March 16, full physical training was begun. March 22, the pulse was still normal, but the patient complained of dizziness, headaches and palpitations. March 30, the pulse was 80. There was uneasiness. April 19, the pulse was 82. There was pain over the heart region after physical training or a full route march. April 26, the patient was on light physical training and light route marching; he felt better, and the pulse rate was 72. The man is to be recommended for home service.

The electrical treatment consisted of a daily faradization with a light current — of long wired coil — over the thyroid gland and the heart. This treatment is often used on the continent for exophthalmic goiter. It consists in an application with two tampons for three or four minutes on the thyroid, followed by three or four minutes with one tampon over the heart region, the other in the neck. This kind of current has a marked sedative action, but is only local. The static current may do as well and probably better. The static current is a first class tonic on the general nervous system, and local applications over the heart region may also be given through the static effluve or breeze.

Deep applications of the Roentgen rays on the thyroid gland may also be very useful, especially on those men with hypertrophied thyroids (25 per cent. out of the total). Dr. Florence Stoney has described this treatment, and obtains good results. Roentgen rays are certainly one of the best treatments we have now for exophthalmic goiter. Tachycardia, excessive sweating, and nervous uneasiness are the symptoms which are the most quickly and completely removed.

As the result of an average of two months' treatment, out of the sixty men, fourteen were quite fit and have returned to their unit; four others are fit and will return in a few days; others are on full physical training and will be fit in a short time; over a third, or 35 per cent., will be able to return to the firing line. From 10 to 15 per cent. have to be discharged; the other 50 per cent. of the men have improved and may be able to do home service.

These first results are very encouraging, and in the summer months I think we can do better. Outdoor life is easier; gardening, open air games, like bowling, quoits, rowing and swimming, may hasten the cure, while treatment with the Roentgen ray, static electricity, and also hydrotherapy will greatly augment our percentage of recoveries.

Heaton Park.

Microscopic Differentiation of the Meningococcus.—Gaudin called attention in 1914 to the presence in meningococcus colonies of short black lines represented by fine crystals. They may be grouped like a picket fence or in the shape of stars, or may lie separate. These crystals were found constantly in the true meningococcus cultures in the experience of Gaudin and Papin at the bacteriologic Institute at Angers, France. They found meningococci in 152 of the 735 suspected specimens sent in for examination, and this characteristic *piqueté* was unmistakable in all the cultures which other tests demonstrated to be meningococci, and none were ever seen in the other cultures, although all the Petri dishes were examined very carefully for them. The crystals were found in twenty-five or forty-eight hours; in a very few cases they were not evident until the third day. They may increase in size and number with time. The culture medium generally used was gelose-ascites or gelose-white of egg, but the crystals were found, whatever the medium, except in fluid mediums. Their report was published in the *Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, 1916, xl, 1023. They say that the crystals can be seen with a comparatively low power microscope.

TRICHINOSIS

A STUDY OF FIFTEEN CASES *

W. T. CUMMINS, M.D.

AND

G. R. CARSON, M.D.

SAN FRANCISCO

Clinical and pathologic observations during the past several years furnish convincing evidence that trichinosis is a common disease. The number of epidemics and the number of reported and unreported single cases, as well as the number of individuals associated or unassociated with epidemics presenting somewhat obscure abdominal, general muscular and facial symptoms (without blood or muscle examination) attest to this statement. The percentage of trichina findings in those dead of various disorders is surprisingly high, and in several series of unselected necropsy cases the percentage has varied from 0.5 to 5.4, the latter figure having been reported by Williams¹ in this country.

The life history of the parasite in the rat, hog and human being, including the effect of gastric secretions, the habits of the parasites in the intestines, and their blood dissemination and muscle deposition, has been exhaustively studied since the discovery of the importance of its human habitat in 1860. The experimental study in the smaller laboratory animals has not been neglected. Examinations of the blood, spinal fluid, feces and urine from the parasitic, bacterial and chemical standpoints have revealed much of interest in demonstrating extensive tissue invasion and a well marked metabolic disorder, incidental wholly or in part to the presence of an alien protein of catabolic origin, or suggestively, as shown in experimental animals, to secondary invasion of the system by bacteria.

The incubation period shows a wide variation. Accurate data often are difficult to obtain, and one cannot be certain of the time of infection. A large series of cases has been collected by Kratz, who found the incubation period in ninety-eight cases to be from one to five days, in seventy-six cases from six to ten days, in sixty-seven cases from eleven to twenty days, and in thirty-three cases from twenty-one to thirty-three days—the longest forty-two days. Herrick and Janeway,² in 1909, demonstrated the parasites in the circulating blood. Since that time several investigators have made similar demonstrations. Frothingham³ has reported from the Boston City Hospital a case in which the parasites were found in the brain, liver, myocardium, mesenteric node, lung and pancreas. Van Cott and Lintz⁴ were the first to demonstrate the parasite in the cerebrospinal fluid. Other demonstrations have been made by Bloch⁵ (two), Elliott,⁶ Young, Lintz⁷ (three), and Cummins and Carson.⁸ The small percentage of positive find-

* From the Southern Pacific General Hospital, Harriman Laboratory.

* Presented before the San Francisco County Medical Society, May 9, 1916.

1. Williams: Jour. Med. Research, 1901, vi, 64.

2. Herrick, W. W., and Janeway, T. C.: Demonstration of the Trichinella Spiralis in the Circulating Blood in Man, Arch. Int. Med., April, 1909, p. 203.

3. Frothingham, Channing: Jour. Med. Research, 1906, xv, 483.

4. Van Cott, J. M., and Lintz, William: Trichinosis, THE JOURNAL A. M. A., Feb. 28, 1914, p. 680.

5. Bloch, Leon: Trichinosis, THE JOURNAL A. M. A., Dec. 18, 1915, p. 2140; Illinois Med. Jour., May, 1916.

6. Elliott, A. R.: Trichinosis, THE JOURNAL A. M. A., Feb. 12, 1916, p. 504.

7. Lintz, William: Trichinosis and the Cerebrospinal Fluid, THE JOURNAL A. M. A., June 10, 1916, p. 1856.

8. Cummins, W. T., and Carson, G. R.: A Case of Trichinosis with Embryo in the Spinal Fluid, THE JOURNAL A. M. A., June 10, 1916, p. 1856.

ings in the feces leads one to believe that in most cases the parasites suffer disintegrative changes in their passage through the intestinal tract. Schleip noted splenic enlargement in thirty-eight of forty-six cases, but recent American reports do not show nearly so high a percentage. Flury and Groll⁹ have shown experimentally that the urine presents evidences of disordered muscle metabolism with an early retention of nitrogenous products, followed by an abnormal excretion of ammonia, creatin, indican, lactic acid, fatty acids and purin bases. A positive diazo reaction is common. They ascribe the symptoms to two toxins, one which is elaborated by the parasite itself and the other which is produced by muscle disintegration, both acting on the muscular, nervous and vascular systems. Experimental observations would seem to suggest that bacterial invasion is responsible for fever and other evidences of disordered metabolism, but human trichinosis does not bear this out. A very few cases have shown on blood cultures an undoubted double infection, but a preponderance of negative results furnishes strong proof that the bacterenic theory cannot generally obtain. It is much more likely, according to Herrick,¹⁰ that the fever is produced by an alien protein of parasitic and muscular origin. He has presented

(Cases 12-14) were from the same gang but no data could be obtained in regard to a common infection. The last patient, an Italian, denied having eaten pork "for a long time."

Of the twelve cases with definite data, the average of the incubation periods was twenty and one half days. The temperature, total leukocytes and eosinophilia generally bore no relationship to the intensity of the affection as indexed by the degree of prostration, the degree and extent of muscular pains and duration of illness. The fatal case (Case 5) showed the highest temperature (105) and simultaneously the highest leukocytosis (28,800) late in the disease when thoracic symptoms were evident. The maximum leukocytosis and eosinophilia were about equally divided between the febrile period and that of convalescence. Two patients (Cases 2 and 14), in addition to the one who died, had for several days sanguineous sputum in which no parasites could be found. One sputum in Case 14 was loaded with eosinophils, when the blood eosinophilia was low; and when the bronchitis disappeared, the percentage increased about 10. This patient also showed subconjunctival hemorrhage in both eyes. The cough did not seem to be sufficiently severe to produce this condition. Splenic enlargement

SUMMARY OF CASES

Case	Period of Incubation, Days	Orbital Edema	Eruption	Bronchitis	Muscular Soreness	Temperature Maximum	White Blood Cells, Maximum	Eosinophilia, Maximum %	Trichina* in					Urine Albumin
									Muscle	Feces	Blood	Spinal Fluid	Urine	
1	26	—	—	—	Slight	104	13,600	20	0	— (3)	— (3)	0	0	0
2	20	+	—	+	Extreme	104.8	19,700	70	+	(4)	— (2)	— (2)	— (5)	—
3	17	+	—	—	Moderate	103	14,600	46	+	(4)	— (3)	— (3)	— (5)	—
4	20	+	+	—	Moderate	102.4	23,500	24	+	(6)	— (2)	— (2)	— (5)	—
5†	21	—	+	+	Extreme	105	28,800	61	+	(5)	— (2)	— (2)	— (5)	—
6	19	+	—	—	Moderate	103.4	17,800	28	0	— (3)	— (3)	0	0	+
7	30	+	—	—	Marked	104.4	21,600	46	+	(4)	— (1)	— (2)	— (2)	+++
8	20	—	—	—	Moderate	104.2	26,800	75	+	(4)	— (1)	— (1)	— (4)	Trace
9	17	+	+	—	Marked	104	25,600	33	+	(4)	— (2)	— (2)	— (4)	Trace
10	16	—	+	—	Moderate	103.8	12,500	33	—	(6)†	— (2)	— (2)	— (4)	—
11	18	+	—	—	Moderate	104	13,400	53	+	(4)	— (2)	— (2)	— (4)	Trace
12	22	+	—	—	Slight	100.4	19,300	52	0	—	— (2)	— (2)	— (2)	Trace
13	5?	+	—	—	Moderate	100.6	17,000	45	0	—	— (1)	— (1)	— (1)	Trace
14	?	—	—	+	Moderate	104	16,100	28	0	—	— (2)	— (2)	— (2)	Trace
15	?	+	—	—	Moderate	102	18,200	51	0	—	— (2)	— (2)	— (2)	+ Trace

* Figures in parenthesis indicate the week of the disease in which examinations were made.
† Fatal case.

‡ Interstitial myositis.

an excellent review of recent studies in trichinosis. One hundred and two case histories were reviewed by Minot and Rackemann¹¹ to determine the frequency of associated respiratory signs and symptoms. About one third showed abnormal physical signs in the lungs. The confusion of trichinosis with muscular rheumatism and typhoid fever is real.

PERSONAL OBSERVATIONS

Our fifteen cases, all of which were in laborers on the railroad, were admitted to the hospital within a period of two months. In most of our cases considerable difficulty was noted in eliciting information concerning pork. The first outbreak consisted of six cases (Cases 1-6) in members of an Italian section gang, 11 of whom, January 10, had eaten the same pork, which was admitted by the foreman to have looked diseased. One of these cases was fatal. The second outbreak consisted of five Greek section hands (Cases 7-11), all of whom, January 22, had eaten pork from animals killed by a train. Three Italian cases

was not noted in any case. Blood cultures (extract broth) were made in seven cases during the period of highest temperatures, and all were negative. Case 11, in which the trichina embryo was found in the spinal fluid,⁸ gave negative cellular and globulin findings. Case 10 gave a doubtful globulin reaction, and Case 2 showed 11 cells per cubic millimeter. The remaining nine cases showed negative spinal fluid. The urines in eleven cases were examined for parasites after the possibility of invasion of this tract, as well as the cerebrospinal axis, had been considered. All were negative. (Lintz⁷ has found that the embryos are unaffected by normal urine.)

Patient 5 ate pork, January 10. The usual abdominal symptoms were complained of, January 31, and three days later he was admitted to the hospital. Physical examination was negative except for slight abdominal tenderness. The temperature was 99.4, leukocytes 10,000, eosinophils 2 per cent. Albumin was present in the urine, but there were no casts. Moderate tenderness of the calves and flexor muscles of the arms developed, and the case progressed favorably for nineteen days, when the morning temperature reached normal. That evening cough with blood-tinged sputum appeared. There was slightly increased tactile fremitus over the left base posteriorly, and roughened breath sounds all over the thorax, but no râles. Blood disappeared from the sputum on the following day, to reappear and con-

9. Flury: Trichinosis, Deutsch. med. Wchnschr., 1913, xxxix, 1388; Beiträge zur Chemie und Toxikologie der Trichinen, Arch. f. exper. Path. u. Pharmakol., 1913, lxxiii, 164. Flury and Groll: Stoffwechseluntersuchungen an Trichinosen Tieren, Arch. f. exper. Path. u. Pharmakol., 1913, lxxiii, 214.
10. Herrick, W. W.: Review of Recent Studies in Trichiniasis, THE JOURNAL A. M. A., Nov. 27, 1915, p. 1870.
11. Minot and Rackemann: Am. Jour. Med. Sc., 1915, cl, 571.

tinue for several days, but the cough persisted and dyspnea progressively increased. The sputum showed a preponderance of pneumococci in four examinations. No parasites were found. Profuse sweats and extreme dyspnea were among the terminal symptoms. On the development of the thoracic symptoms the eosinophilia percentage progressively decreased from a maximum of 61 per cent. to 0, eight hours before death (a period of eleven days). Muscular soreness was well marked and generalized throughout the entire course of the disease, except for the last few days. Symptomatic therapy was carried out, including calomel, castor oil and salol.

Necropsy revealed an emaciated body. The anterior abdominal muscles were apparently normal. The peritoneum was congested and dry. The spleen was somewhat smaller than normal, and of soft consistency. The liver was enlarged and flabby, of typical nutmeg appearance, and the cut surface was yellowish. The gallbladder, stomach and intestines, including the appendix, were apparently normal. There was moderate congestion of the pancreas. Both kidneys were of normal size and of moderately increased cortical thickness. The right kidney was much congested, and near the inferior pole a triangularly shaped, yellowish, soft area was seen. The abdominal surface of the diaphragm showed several hemorrhagic areas. The left pleural sac contained 2,000 c.c. of purulent fluid. The lung was atelectatic. The right pleural sac showed no adhesions or fluid. The lung showed generalized edema except at the base, where there was consolidation. The visceral pleura showed numerous small hemorrhagic foci. There was moderate congestion of the parietal pericardium and moderate increase of clear yellow fluid in the sac. The heart was not opened. The mesenteric lymph nodes were not enlarged. The retroperitoneal group were somewhat enlarged, much congested and resembled hemolymph nodes. (The notes are condensed, as permission for only a partial necropsy was obtained.)

The pathologic diagnosis was: suppurative pleuritis; pulmonary atelectasis, edema, emphysema, hemorrhagic infiltration and hypostatic pneumonia; congestion of spleen; acute parenchymatous nephritis and anemic infarction; passive congestion and fatty degeneration of liver; congestion of pancreas; hemorrhagic infiltration and endothelial hyperplasia of retroperitoneal lymph nodes; hemorrhagic infiltration of diaphragm; *Trichina spiralis* in biceps, soleus, gastrocnemius and diaphragm. (No evidence of parasites in viscera or pleural fluid.)

SUMMARY

The average incubation period was three weeks. One third of the cases presented no orbital edema; three quarters, no eruption; four fifths, no bronchitis; none showed splenic enlargement. Eleven cases showed a disproportionately low pulse rate, to which little attention has been called. The maximum eosinophilia was 75 per cent. Of nine cases, eight showed trichinae in the muscles; of the fifteen cases, none were found in the blood or feces; of twelve cases, one showed an embryo in the cerebrospinal fluid; of eleven cases, none were found in the urine; of fourteen cases, ten showed albumin in the urine. The mortality was 6.6 per cent. The fatal case presented a hypostatic pneumonia and a large pleural effusion.

COMMENT

Evidently the parasites traverse the venous channels in very small numbers for mechanical reasons and probably none in some cases. It would appear that in many cases they suffer partial or complete disintegration in the intestinal tract. A routine spinal fluid examination may show that the nervous tissues are invaded in many instances; but it does not seem likely that this will serve as a useful diagnostic procedure in the study of the disease. If routine urinary examinations are made for parasites, it seems not improbable that invasion of this tract may be demonstrated.

New Instruments and Suggestions

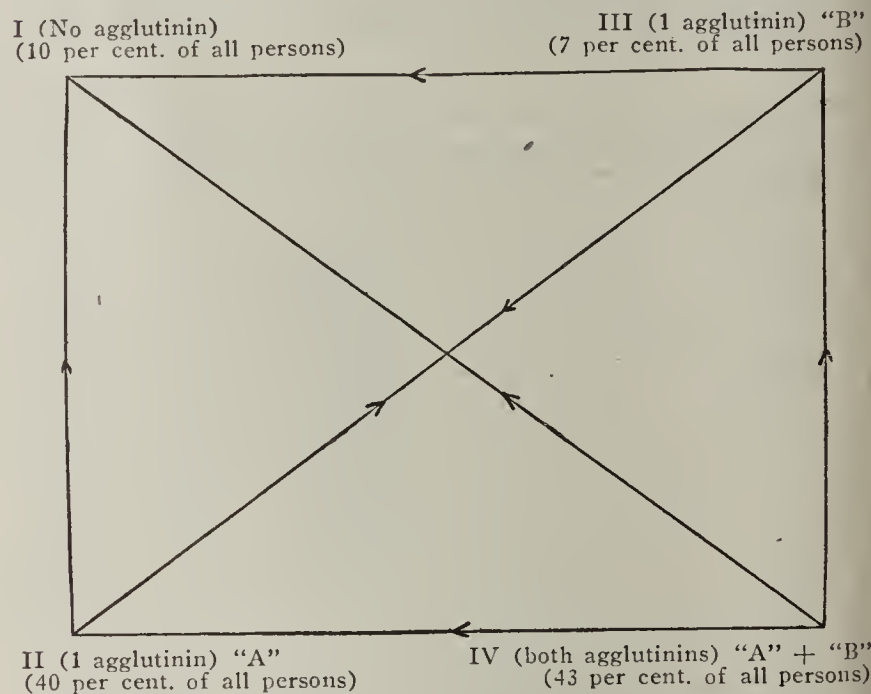
ISO-AGGLUTINATION GROUPS

A DIAGRAM SHOWING THEIR INTERRELATION *

A. H. SANFORD, M.D., ROCHESTER, MINN.

Recently Brem¹ has published a very comprehensive review of his results with his own practical application of Moss² principles. It would seem futile to try to add any information to that presented. Our own experience with Brem's microscopic method has proved its worth conclusively as a time-saving procedure in determining the suitability of donors for transfusion. However, in explaining the Moss agglutination groups to clinicians, we have found that some confusion arises regarding the relation of the four groups unless a careful study has been made of Moss' tables, but that the principles are readily grasped by referring to the accompanying diagram.

The diagram explains itself. Lansteiner's³ idea regarding the number of agglutinins is all that is necessary to explain the reaction, if we consider that the serum of Group II contains Agglutinin A and that of Group III contains agglutinin B, while Group IV contains both Agglutinin A and Agglutinin B. Group IV then agglutinates the corpuscles of Group II



Moss Agglutination groups: The corpuscles of the various groups are agglutinated by the serums of the groups from which the arrows lead.

by virtue of its Agglutinin B, and its Agglutinin A acts on the corpuscles of Group III.

Ottenberg's⁴ well known grouping can be applied to the same diagram by merely exchanging the numerals I and IV, as his Group I agglutinates all corpuscles, and there is no agglutinin in his Group IV.

It is preferable but not always necessary in transfusion that donor and recipient belong to the same group. The essential for safety is that the serum of the recipient should not agglutinate the corpuscles of the donor. The diagram tells at a glance to what group a person must belong in order to be a suitable donor for an individual of another group. If the arrow points toward the patient's group, and away from the group of the donor, the transfusion may be done without what Brem has called "anaphylactoid" reaction. It must always be remembered that on the diagonal connecting Groups II and III the arrows point in both directions, and that blood in these reciprocal groups should never be inter-

* From the Mayo Clinic.

1. Brem, W. V.: Blood Transfusion, With Special Reference to Group Tests, THE JOURNAL A. M. A., July 15, 1916, p. 190.

2. Moss, W. L.: Studies on Isoagglutinins and Isohemolysins, Bull. Johns Hopkins Hosp., 1910, xxi, 63.

3. Lansteiner, K.: Ueber Agglutinationserscheinungen normalen menschlichen Blutes, Wein. klin. Wchnschr., 1901, xiv, 1132.

4. Ottenberg, R.: Studies in Isoagglutination, Jour. Exper. Med., 1911, xiii, 425.

changed. It is evident, then, that 100 per cent. of persons can be used as donors for patients of Group I, 83 per cent. for those of Group II, and 50 per cent. for those of Group III. For those of Group IV, only 43 per cent. are available as donors, as a patient of this group must have a donor of the same group.

A SIMPLE METHOD FOR THE DETERMINATION
OF NITROGEN IN URINE *

R. B. H. GRADWOHL, M.D., AND A. J. BLAIVAS, ST. LOUIS

This is a slight modification of the method given by Myers and Fine, which, in turn, is a modification of the colorimetric method of Folin and Farmer.¹ The only difference in technic is that of adding hydrogen peroxid to hasten oxidation, which considerably shortens the time of making the test. In the method of Myers and Fine, fully fifteen to twenty minutes is required to complete the determination. As here described, the estimation may be completed in from five to ten minutes. In the method as described by Myers,² for the determination an amount of urine sufficient to contain between 0.35 and 0.75 mg. of nitrogen is required. This is usually obtained by a 1:25 dilution of urine, although sometimes a dilution of 1:10 is sufficient, as indicated by a low specific gravity. One

TABLE FOR THE ESTIMATION OF NITROGEN WITH THE
HELLIGE COLORIMETER

Colori- metric Reading	Nitrogen, Mg. per Dilu- tion of 100 c.c.	Colori- metric Reading	Nitrogen, Mg. per Dilu- tion of 100 c.c.	Colori- metric Reading	Nitrogen, Mg. per Dilu- tion of 100 c.c.
20	1.73	40	1.31	60	0.89
21	1.71	41	1.29	61	0.87
22	1.69	42	1.27	62	0.85
23	1.67	43	1.25	63	0.83
24	1.65	44	1.23	64	0.81
25	1.62	45	1.20	65	0.78
26	1.60	46	1.18	66	0.76
27	1.58	47	1.16	67	0.74
28	1.56	48	1.14	68	0.72
29	1.54	49	1.12	69	0.70
30	1.52	50	1.10	70	0.67
31	1.50	51	1.08	71	0.65
32	1.48	52	1.06	72	0.63
33	1.46	53	1.04	73	0.61
34	1.44	54	1.02	74	0.59
35	1.41	55	0.99	75	0.56
36	1.39	56	0.97	76	0.54
37	1.37	57	0.95	77	0.52
38	1.35	58	0.93	78	0.50
39	1.33	59	0.91	79	0.48

c.c. of urine is taken with an Oswald-Folin pipet and diluted to 25 c.c. with distilled water in a volumetric flask. After thorough mixing, 1 c.c. of this material is placed in a thin glass test tube, from 5 to 7 drops (0.1 c.c.) of concentrated sulphuric acid, from 50 to 100 mg. of potassium sulphate and a drop of copper sulphate (10 per cent.) added. The tube is now boiled by hand with continued shaking until the contents become dark brown, and then, while the tube is warm (not hot), a drop of hydrogen peroxid is added, and if not clear, it is heated about one minute until clear. It is this part of the technic that we have modified, namely, the addition of hydrogen peroxid. When digestion is completed, the tube is allowed to cool for a minute and then washed into a 50 c.c. volumetric flask or accurate 50 c.c. graduate (A) with about 35 c.c. of distilled water. Five c.c. of ammonium sulphate solution containing 1 mg. of nitrogen per 5 c.c. is pipetted with an Oswald-Folin pipet into a 50 c.c. volumetric flask (B); the Hellige colorimeter is to be employed and about 30 c.c. of distilled water added. Ten c.c. of the modified Nessler's solution are diluted with 40 c.c. of distilled water just previous to use, mixed, and the material in the second volumetric flask, standard, at once made up to volume with the diluted Nessler's solution. The solution in Flask A, unknown, is then made up to volume with the diluted Nessler's

solution as in Flask B, except that the Nessler's solution is added slowly at first while rotating the flask, until the alkali of the Nessler's has neutralized the sulphuric acid. A dry, glass-stoppered wedge for the Hellige colorimeter is filled with the standard solution and adjusted in the colorimeter. Slightly over 2 c.c. of the unknown solution are then next placed in the empty cup, inserted into the colorimeter and the colors matched, preferably with a north light. The amount of nitrogen in $\frac{1}{25}$ c.c. of urine may be ascertained in the accompanying table, from which the nitrogen content of the specimen of urine under examination may easily be computed. Since the figures in the table are given for a dilution of 100 c.c., and the dilution here employed is 50 c.c., the result obtained should be divided by 2.

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Therapeutics

HYPERTENSION

(Continued from page 745)

TREATMENT

In this rapid high tension age the physician should be as energetic in teaching prevention of arterial hypertension as he is in preventing contagion. As infectious diseases are reduced in frequency, more patients live to die of diseases later in life, and (as previously stated) diseases with hypertension are on the increase. It is therefore the duty of the physician to urge youths and adults to abstain from all kinds of excesses so common in this age. We live at such speed, even the children, that this caution is almost daily needed. We must caution against severe athletic competition, against personal "stunts," against recreation excesses, even golfing, automobiling and dancing, against excess in the use of tobacco, in eating, in late dinners, in coffee, tea and alcohol. We must take better care of patients during their convalescence from some serious illness lest they have circulatory debility by becoming strenuous too soon after their recovery. The pregnant woman must be more carefully watched, not only for her own sake, but also for the sake of her child. Intestinal indigestion, while not the cause of all disturbances that occur in man after 40, is still an important element in his deterioration and degeneration, and it should be prevented if possible.

The tendency for hypertension and arteriosclerosis to occur early in life in patients who have suffered some serious acute infection, whether blood poisoning, typhoid fever, or other, shows that in all probability in these acute illnesses the internal secretions are so disturbed that the suprarenal activity is greater than normal, while the thyroid activity may be less than normal, and hypertension is the consequence. Therefore, these infected patients who recover should probably have a longer convalescence in order for the more delicate structures of the body, such as the internal secreting glands, to have a better chance to recover and become normal.

The enumeration of these causes and the causes that have been mentioned before not only suggest, but also direct the treatment of hypertension after it has occurred. The most important of all treatment for hypertension is rest. That means for an individual, well except for his hypertension, a vacation, that is, a rest from physical and mental labor. For a patient who is in serious trouble from hypertension, bed rest is the most important element in the management. As has

* From the Chemical Laboratory of the Pasteur Institute of St. Louis.
1. Folin and Farmer: Jour. Biol. Chem., 1912, xi, 493.
2. Myers: Essentials of Pathological Chemistry, 1913.

been previously shown, good sleep lowers the blood pressure, and Brooks and Carroll⁵⁹ showed that the greatest drop in blood pressure occurs in the first part of the night's sleep. In other words, a patient who lies awake long loses the best part of his night's rest as far as his circulation is concerned. This is one more reason for abstinence from tea and coffee in the evening by those patients who are at all disturbed by the caffeine. On the other hand, patients who are not seriously ill should not remain for days in bed, as the blood pressure does not tend to continue to fall, although the heart may become weakened by such bed rest. This is especially true if the patient is nervous and irritable and objects to such confinement.

A systolic pressure much over 200 probably never goes down to normal, and if such a high systolic pressure goes down to below 170, we should consider the treatment successful.

Every active treatment of hypertension should begin with a thorough cleaning out of the intestinal canal by purgation, best with mercury in some form. Then the diet should be modified to meet the individual case and the person's activity. If the blood pressure is dangerously high, he should receive but little nourishment, best in the form of cereals and skimmed milk.

On the other hand, if he has edema or dropsy, or if the heart showed signs of weakness, large amounts of liquids should certainly not be given, and in such cases it is better that he receive small quantities of milk if that agrees, rather than large quantities of skimmed milk. The amount of water should also be fitted to the circulatory ability and the condition of the kidneys.

When more or less active treatment does not soon lower the hypertension, and especially a high diastolic pressure, the prognosis is bad. In a patient who is in more or less immediate danger from his hypertension, the food and liquid taken, the care of the bowels, and the measures used to cause secretions from the skin must all be governed by the condition of his other organs. There is no excuse for excessive, strenuous measures when the heart is failing or when the kidneys are becoming progressively insufficient. Strenuosity in treatment is as objectionable in these cases as is neglect of treatment in earlier stages of the trouble.

Bie⁶⁰ believes there is no direct connection between the blood pressure and the anatomic condition in the kidneys, although abnormal conditions in the two are almost invariably found parallel.

A patient with simple hypertension and otherwise well, which means that his diastolic pressure is at least no higher than 110, should have his diet, tobacco, coffee and tea regulated; should have recreation periods one or more times a week, and vacations not too infrequently; should take some brisk purgative once or twice a week, and may receive one or other of the physical treatments for the reduction of blood pressure, whether Turkish baths or electric light baths. If he does not sleep well, there is no hypnotic drug so valuable in his case as chloral. This should not be long given, but it will produce the purest kind of sleep and lowers the blood pressure.

If any other drug is needed, nitroglycerin is the best. If arteriosclerosis is present, sodium iodid in small doses, 3 grains two or three times a day, is valuable. Larger doses of sodium iodid are not needed, unless it is advisable to give such doses for a short period.

The value of iodid in these cases is best obtained by small doses long continued. If the patient is obese, small doses of thyroid extract long continued are of value, such as 2 or 3 grains once a day. If the thyroid extract causes the heart to become more rapid, it should be discontinued.

Whether the diet should be meat protein free, or whether meat may be allowed once a day, depends entirely on the individual and on his physical activities. It is frequently a mistake to take all meat out of his diet.

When there is obesity, the bulk of the food should be greatly diminished, and anything that tends to stimulate the patient's appetite should be withheld. This means all condiments, and at times even salt. Sugar should be greatly reduced, and starches greatly reduced, but he must have some. In other words, he should not be cut down to a diabetic diet. No more liquid should be taken with the meals than is essential to swallow the food. Water should be taken between meals. There is no question that almost every one today should have a very light breakfast, except perhaps those who labor hard physically and are exposed for hours, daily, to the inclemencies of the weather. Such patients probably need more food. It is also well, in hypertension cases, to have one day a week in which a very minimum amount of food is taken, whether that be milk, or skimmed milk, or a small amount of carbohydrate, without protein food.

If the foregoing management does not reduce hypertension, the kidneys are generally beginning to become involved in the sclerotic degeneration, whether the urine shows such a condition or not. On the other hand, there are exceptions to this rule.

As indican in the urine gives evidence of putrefactive changes in the intestines and the probability of the absorption of toxins from the intestines, although we have no real proof that these toxins are the direct cause of hypertension, our patient is undoubtedly physically better, and will have less arterial tension when this intestinal condition is removed. Therefore, our treatment of the individual is not a success as long as such fermentation and putrefaction persist. If such putrefaction cannot be removed by diet and laxatives and mental rest and the prevention of physical strenuosity, radical changes in diet are advisable, although it may not be necessary to continue such a diet more than a few days at a time. A rigid milk diet for a few days may change the flora of the intestine completely; then a vegetable diet may be given, with return to a mixed diet; or the various lactic acid bacilli may be given, or one of the various fermented milks may be the diet, the object being to change the flora in the intestine and thus modify the ferments. So-called bowel antiseptics, such as salol, for a short time may be of advantage. Colon washings may be of great advantage. Liquid petroleum may be advantageous.

Besides preventing the absorption of toxins from the intestine, we must prevent such absorption from any latent infection. The most frequent kind of such infection is pyorrhea alveolaris.

A simple method that sometimes is an efficient aid in lowering the blood pressure is complete muscular and mental relaxation. The patient lies down for a while in the middle of the day and relaxes every muscle of his body. With this he may take slow breathing exercises. He should be in a dark room, quiet if possible, and alone, and should teach his brain to be for a short time mentally inert.

59. Brooks, Harlow, and Carroll, J. H.: A Clinical Study of the Effects of Sleep and Rest on Blood Pressure, Arch. Int. Med., August, 1912, p. 97.

60. Bie: Ugesk. f. Læger, March 4, 1915.

The physical methods of lowering the blood pressure are hydrotherapeutic, whether by warm baths or more strenuously by Turkish baths, by hot air baths (body baking) which is occasionally very efficient, or, perhaps more now in vogue, by electric light baths. The duration of these baths, and the frequency, must be determined by the results. If the heart is made rapid, and the heart muscle shows signs of weakness, the duration of these baths must not be long, and they may be contraindicated. These baths are most efficient in lowering the blood pressure when the patient reclines for several hours after the bath. The amount of sweating that is advisable in these cases depends on the condition of the heart. If the heart muscle is insufficient, profuse sweating is inadvisable. Also if the kidneys are insufficient, profuse sweating is inadvisable as tending to concentrate the toxins in the blood. On the other hand, when the surface of the body tends to be cool, and there are internal congestions, the value of these baths is very great. Sometimes the electric light baths increase the tension instead of diminishing it, and when properly used they may be of benefit in some cases of hypotension. The frequency of the baths and the question of how many weeks they should be intermittently continued, depend on the individual case. After a course of such treatment sometimes patients have a diminished systolic blood pressure not only for weeks, but even for months, provided they do not break the rules laid down for them.

The Nauheim baths, while stated not to raise the blood pressure, are not much advocated in hypertension, and Brown,⁶¹ who made more than 500 observations of patients of all ages, found that the full strength Nauheim bath would raise the blood pressure in all feverish and circulatory conditions. He also found that a fifteen minute sodium chlorid bath, 7 pounds to 40 gallons, at a temperature of from 94 to 98 F., lowered the pressure from 10 to 15 mm. This is not different from the effect obtained from a fifteen minute warm bath at from 94 to 98 F., or a fifteen minute mustard bath of the same temperature. In other words, the slight irritation of mustard or of salt in a warm bath made no special difference in the amount of lowering of the blood pressure. On the other hand, he found that a fifteen minute calcium chlorid bath, 1½ pounds to 40 gallons, at 94 F., raised the blood pressure 15 mm.

The autocondensation treatment to lower the blood pressure is not so satisfactory as it was hoped to be. The blood pressure can thus be lowered, but it soon again rises, and probably generally more rapidly than after the bath treatments, and in some persons causes considerable depression. Van Rensselaer⁶² has reviewed this subject of high frequency treatment, and recalls the fact that Nicola Tesla demonstrated, in 1891, the form of electricity which we now term high frequency. High frequency means more than 10,000 cycles per second, at which frequency muscles do not contract and pain is not felt, whereas in medicine the frequency of the currents used runs up into the hundreds of thousands, or even into the millions. The French investigator, d'Arsonval, studied the physiologic action of these high frequency currents and found that the respiration and heart are made more rapid and the blood pressure is reduced, while the intake of oxygen is increased and the carbon dioxid

excretion is increased. The temperature may rise. The excretion of the urinary solids is mostly increased. Perspiration may be caused, and he believes the glandular activities are increased. In a word, metabolic changes in the body are made more active and the blood pressure is lowered.

Besides the effect of altitude on blood pressure, as previously declared, patients with dangerously high blood pressure should, if possible, not be subjected to intense cold. In other words, a person with hypertension, if financially able, should not remain in a cold climate during the winter. On the other hand, even if he is stout and feels sufficiently warm with light clothing during the winter, his skin becoming chilled adds to his tension. Therefore he should be clothed as warmly as he will tolerate.

After a period which may be termed the normal period of hypertension in normal life, as age advances the systolic tension may lower, provided there is no kidney lesion. This is due to the slowly developing chronic myocarditis and a lessening of the tension and therefore lessening of the resistance to the heart. This may be nature's method of lengthening the life of the individual. In other words, as the arteries grow older the force of the heart slightly lessens, the blood pressure lowers, and the individual is safer. This frequently occurs in otherwise perfectly normal individuals, without treatment.

When the blood pressure is suddenly excessively high from any cause, venesection may be life saving, and should perhaps be more frequently done than it is. It may save a heart that is in agony from tension, and may prevent an apoplexy. It is of little value except temporarily in uremic conditions, but at other times it may, at the time, save life and allow other methods of reducing the dangerous tension to become effective. A chronic high tension patient may be repeatedly bled, although such treatment will not long save life, as the blood pressure in many such cases soon returns to its previous height.

Some very high tension cases, especially in women at the menopause, and where there is no kidney involvement, have the blood pressure reduced successfully only by large doses of thyroid, sometimes well combined with bromids, especially if the thyroid causes excitation. Such treatment persisted in for a time may cause months of improvement, and even years.

(To be continued)

Eclampsia in Porto Rico.—J. S. Belaval reported recently to the Porto Rico Medical Association that he had found albuminuria in 20.3 per cent. of the 462 obstetric cases during the last thirty months at the San Juan Maternity. Eclampsia developed in 7.3 per cent. of the 462 obstetric patients. He cites figures from other countries showing that the proportion of eclampsia cases averages from 0.5 to 0.75 per cent. elsewhere. In the entire city of San Juan there were only six other cases of eclampsia known during the same period, and throughout the island the proportion was only 1 to 1,044 deliveries. In San Juan it averaged 1 to 420, but the patients were almost exclusively of the poorer classes, lacking medical care until the convulsion developed. In the maternity the mortality was 29.4 per cent., but outside of it, 60 per cent. He is an advocate of prompt delivery when eclampsia develops, but this occurred spontaneously in all his cases. (*Boletín de la Asociación Médica de Puerto Rico*, 1916, xiii, 68). He agrees with those who accept a fetal origin for the eclampsia, because it generally improves after expulsion of the fetus, is most common during the later months of a pregnancy, and because it is proportionately more common in twin pregnancies and in cases of hydrannion.

61. Brown: California State Jour. Med., November, 1907, p. 279.

62. Van Rensselaer: Month. Cycl. and Med. Bull., November, 1912, p. 643.

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THE ORIGIN OF THE BILE PIGMENTS

Evidence has recently accumulated which places certain features of the origin and functions of the bile in a new light. Inevitably one associates the production of the characteristic biliary constituents—the pigments and the bile salts—with the activity of the liver. This organ has been looked on as the chief place of disintegration of hemoglobin in the body; or at any rate hemoglobin formed by dissolution of erythrocytes is believed to be brought to the liver, there to be converted into the iron-free bile pigments, bilirubin and biliverdin. Many observations seem to speak in favor of this. Injection of hemoglobin into the circulation, for example, causes increased secretion of bile pigment.

There are accumulating evidences, however, that the biliary pigments may be formed in the body elsewhere than in the liver. The most recent indications in this direction are the observations of Whipple and Hooper.¹ Thus they have noted that after intravenous injections of hemoglobin solutions in the form of hemolyzed erythrocytes, the transformation of the blood pigment into bile pigment occurred quite as well in animals in which the circulation of the liver was largely sidetracked by means of an Eck fistula as it did in normal subjects. The formation of bile pigment also occurred on removal of the liver, spleen and abdomen from the circulation, as well as by circulation of blood through the head and thorax. To account for this the experimenters suggest the possibility that the endothelial cells are here active, so that the transformation of hemoglobin can take place even without the medium of the hepatic tissue. Hooper and Whipple² have further found that the pleural and peritoneal cavities can rapidly transform hemoglobin into bile pigment. They believe, indeed, that this extrahepatic transformation of the blood pigment into its biliary derivative may be more important than is generally supposed, particularly in diseased conditions associated with icterus or hemoglobinuria.

One might now be inclined to inquire, in view of all the facts presented, whether the bile pigments are only eliminated by the liver, or whether they are also formed in it. But, further than this, recent researches have given justification for the question whether the production of bile pigments as a rule is not in part due to the functional activity of the liver and not solely dependent, as is so generally taught, on the breaking down of red corpuscles. In an exceptionally careful and extensive series of experiments at the George Williams Hooper Foundation for Medical Research at the University of California Medical School, Whipple and Hooper³ have observed that variations in the character of the diet provoke unexpected changes in the output of biliary pigment in the bile. Thus a large dose of sugar by mouth will give a constant reaction in a healthy dog with a bile fistula. It will cause a definite increase in bile pigment excretion over a period of several hours. The same rise in the curve of bile pigment elimination follows intravenous injection of dextrose. A mixed diet in a healthy bile fistula dog is associated with a fairly constant mean bile pigment elimination. A change to a meat diet will give a depression of this average bile pigment elimination. A change to a diet rich in carbohydrates will give a sharp rise in bile pigment output—often from 30 to 100 per cent. increase. Such modifications of bile pigment elimination may be carried on indefinitely with a healthy animal.

Do not such facts contradict the current hypothesis concerning the exclusive origin of the bile pigments from hemoglobin liberated by the disintegration of red blood cells? As Whipple and Hooper put it: Can one assume that a carbohydrate diet will cause the dissolution of a small army of red blood cells to explain the fact that the output of bile pigment may be almost doubled in a sharp transition from a meat diet to a diet rich in carbohydrates? This seems improbable, to say the least. The fact that carbohydrates stimulate the excretion of bile pigments in bile fistula dogs makes it seem possible that the bile has some constructive ability in pigment formation which can be modified by diet. Whether it is also concerned in the synthesis of other pigments than bilirubin—for example, hemoglobin—need merely be suggested without an attempt at an answer at present.

The statement has been made at various times that bile secretion is not essential to health in man. The newest investigations of Whipple and Hooper³ suggest caution if not actual skepticism in relation to such pronouncements. In their large experience it has been found that it must be very unusual for a dog to be able to survive on any ordinary diet if the bile is completely excluded from the intestine. If such exclu-

1. Whipple, G. H., and Hooper, C. W.: Jour. Exper. Med., 1913, xvii, 612. McNee: Jour. Path. and Bacteriol., 1913-1914, xviii, 325.
2. Hooper, C. W., and Whipple, G. H.: Jour. Exper. Med., 1916, xxiii, 137.

3. Hooper, C. W., and Whipple, G. H.: Bile Pigment Metabolism, I, Bile Pigment Output and Diet Studies, Am. Jour. Physiol., 1916, xl, 332. Whipple, G. H., and Hooper, C. W.: Bile Pigment Metabolism, II, Bile Pigment Output Influenced by Diet, Am. Jour. Physiol., 1916, xl, 349.

sion is accomplished, the animal loses ground steadily, shows intestinal disorders accompanied by blood in the feces, and usually within a month dies with peculiar symptoms of intoxication. Feeding of fresh bile seems to afford little amelioration of the disaster; but cooked liver added to the mixed diet seems to be so beneficial that the question of its possible use in certain clinical cases is at once suggested. A more extended investigation may throw some light on the chemical character of the liver component responsible for this corrective influence on the abnormal metabolism of animals carrying a biliary fistula.

PROTOPLASM AND MITOCHONDRIA

Living matter differs from artificial mixtures of various compounds, such as proteins, fats, carbohydrates, salts and water, which it is known to contain, in particular by the peculiarity of having a definite physical structure. A complete destruction of this morphologic make-up means the cessation of life phenomena. A group of cells ground to a pulp may still be able to exhibit certain chemical reactions, such as the enzymic responses characteristic of the original tissues which they compose; but the significant biologic functions of the disintegrated cells can no longer be performed. To quote Jacques Loeb, "Living matter seen through the microscope invariably offers the same characteristic appearance which has caused biologists to designate it with one general term, namely, protoplasm."

What the actual detailed physical features of this structural basis of life, the protoplasm, are still remains largely a matter of conjecture. Some authors have looked on it as a network of fine fibers. To this the objection has been raised that the intracellular structures of various kinds, networks, alveoli, etc., can be produced by the fixing reagents which histologists are wont to use. According to such an interpretation, these structures have no resemblance to the living condition. They must be produced from cell constituents already present, so that certain conclusions are admissible from the examination of fixed cells. Protoplasm in the living state, the physiologist Bayliss writes, has the properties of a liquid system, containing, however, particles of solids and droplets of immiscible liquids in a freely movable state. The protoplasm itself in the narrower sense is structureless to the highest powers of the microscope, with ordinary forms of illumination. It is not homogeneous like water; for, under the intense oblique illumination of the ultramicroscope, protoplasm presents the characteristics of a colloidal system.

Schultze long ago defined protoplasm as a glasslike, semifluid material in which granules are embedded. Attention has been directed of late to a class of granulations which are believed to be more or less distinct chemically, morphologically and physiologically, and

which occur in almost all protoplasm. They have been termed "mitochondria."¹ These structures are not fixed, in their morphologic characteristics. They vary in form from granules (of from 0.2 to 2 microns) to rods and filaments, which may be straight, curved or even forked. Sometimes they are ring-shaped or pear-shaped, and possess bleblike swellings. Networks rarely occur. To M. R. and W. H. Lewis² of the Johns Hopkins University is credited the observation of changes in form in individual mitochondria by observations of living cells in tissue cultures. Filamentous mitochondria have been seen changing to granular ones; they can move rapidly and freely from place to place in the cytoplasm.

Mitochondria have been defined provisionally by Cowdry¹ of the Anatomical Laboratory of the Johns Hopkins University as "substances which occur in the form of granules, rods and filaments in almost all living cells, which react positively to janus green and which, by their solubilities and staining reactions resemble phospholipins and, to a lesser extent, albumins." From this description it becomes clearer why, despite the enormous amount of detailed attention which has been devoted to the study of cell structure for many years, so little has been heard of these supposedly important and conspicuous components. One reason apparently lies in the fact that, being lipoidal in nature, the mitochondria are disintegrated by the more common organic histologic reagents. Furthermore, we are reminded that the cell nucleus with its significant chromatin has remained the center of investigation for a long time, particularly since it has been designated as the most important structural feature of the cell.

The wide occurrence of these lipid-protein cytoplasmic components, their apparent quantitative variations in different types of cells and under varying functional states, and their alleged metamorphoses of form in the course of cellular life suggest that the mitochondria participate in some way in cellular metabolism. The possible bearing on cellular pathology of these particles representing complexes of substances in various states of aggregation, associated perhaps by forces of surface tension, electric charge, etc., and shifting with chemical changes in their environment, is indicated by a quotation from Cowdry:

It is impossible to predict whither this mitochondrial work will lead us in pathology; certainly, however, toward a truer appreciation of the importance of the behavior of protoplasm in pathological conditions, because now we have a cytoplasmic criterion of cell activity as well as a nuclear one.¹

At any rate, such enthusiasm may contribute to the revival of interest in protoplasm, already evident in the more recent investigation of the survival of isolated tissue cells.

1. The essential facts in regard to mitochondria are taken from the paper by Cowdry, E. V.: *The General Functional Significance of Mitochondria*, *Am. Jour. Anat.*, 1916, xix, 423.

2. Lewis, M. R., and Lewis, W. H.: *Mitochondria in Tissue Cultures*, *Am. Jour. Anat.*, 1915, xvii, 339.

DIET, ALCOHOL AND ACIDOSIS

The phenomena of acidosis have been studied, as a rule, either in animals subjected to experimental conditions which evoke the desired symptoms, or in human patients in whom they are present as the result of disease. This has been true notably in diabetes, a condition which, of course, cannot be temporarily reproduced at will in man. The presence of severe acidosis with manifestations of ketonuria is not entirely devoid of discomfort to the subject, thus furnishing an additional reason for the lack of extensive data on the controlled production of the disorder. Ketonuria characterized by the elimination of acetone and aceto-acetic acid has long been recognized as a symptom of inanition. Complete abstinence from food is not necessary for the production of this condition. It is generally admitted that in man the exclusion of carbohydrates from the food or a marked diminution of their intake or utilization may lead to more or less increased elimination of ketone substances with a consequent acidosis. Inasmuch as this outcome is promptly stopped by the administration and assimilation of carbohydrate food, the carbohydrates are properly regarded as "antiketoplastic" or "antiketogenic" compounds. Other substances, including alcohol and compounds believed to be converted into sugar in the body, are said to act in the same way.

There has been much confusion in the literature regarding the detailed manifestations of the form of acidosis just described, in part owing to its usual association with metabolic disease, and in part as the result of apparent experimental contradictions obtained with animals of different species. For this reason it is most advantageous to have a new series of carefully conducted investigations on normal men under conditions of rigorous scientific control. Combining the facilities of the nutrition laboratory of the Carnegie Institution in Boston with the medical clinic of the Peter Bent Brigham Hospital, Higgins, Peabody and Fitz¹ have studied the production of acidosis induced in normal persons by carbohydrate starvation, as exemplified on a diet of eggs, butter, meat, fish and sugar-free cream fed in abundance. The high content of fat in the carbohydrate-free ration was selected with the idea of provoking a high degree of acidosis. For the present the fats are considered as the most important sources of the ketone substances of an acid character.

What criteria, it will at once be asked, were employed to demonstrate the actual occurrence and the degree of acidosis? The best single index at the present time presumably is the carbon dioxid tension of the alveolar air. This gives a clue to the amount of acid in the blood at any given time, and is independent of its excretion. In the cases under considera-

tion, in which the carbohydrate diet was continued several days, the acidosis was clearly shown by a lowered carbon dioxid tension. There was likewise an increased urinary excretion of ammonia, another factor conspicuous in the neutrality regulation of the organism. Furthermore, along with the increased excretion of ketone substances, that is, ketonuria, there was a parallel excretion of acid as measured by the titratable acidity of the urine.

The foregoing facts may be taken to establish the character of the acidosis developed by carbohydrate starvation on an otherwise adequate diet. It was attended by subjective effects, among which "loss of appetite, lack of energy, heaviness of the head and a peculiar feeling of malaise" were the most prominent symptoms. Increased oxygen consumption, a negative nitrogen balance, increased pulse rate and increased pulmonary ventilation were further observed.

Contrary to the expectations from some of the published investigations, alcohol, given to the subjects on the carbohydrate-free diet, in dosage comparable to that used for clinical purposes, failed to stop the progress of the acidosis or show any antiketogenic action. The Boston investigators agree in finding that coincident with the administration of alcohol there was further increase in the oxygen consumption and in the disagreeable subjective symptoms. It was thus without apparent effect, at any rate, on the acidosis induced in normal subjects by taking a carbohydrate-free diet. All the symptoms were promptly alleviated, and the subjects began to feel much better immediately after the first carbohydrate meal was again eaten. The contrast was most striking, and is not without interest in relation to the much discussed food value of alcohol.

THE FOOD CONSUMPTION OF
ADOLESCENT BOYS

Statistics of the food consumption of normal adults are available in large numbers, particularly since the modern era, in which a profound interest in the problems of human nutrition has begun to engross the attention of physiologists. The recent trend of interest in the subject of infant feeding has also brought with it illuminating data regarding the needs of the human individual in the early periods of life. Pediatric literature is not devoid of well established facts respecting the caloric requirement of the infant; but there is a singular dearth of statistics pertaining to the actual food intake and consequent dietary habits of young boys and girls. Indeed, both the physiology and pathology of the adolescent period offer abundant opportunity for the extension of knowledge.

Somehow it is difficult and unusual to collect the basic facts regarding the functional needs and performances in this period of youth. Du Bois has shown, by accurate measurements in the respiration calorimeter at the

1. Higgins, H. L.; Peabody, F. W., and Fitz, R.: A Study of Acidosis in Three Normal Subjects with Incidental Observations on the Action of Alcohol as an Antiketogenic Agent, Jour. Med. Research, 1916, xxxiv, 263.

Russell Sage Institute of Pathology, that the basal requirement of boys in metabolism is 25 per cent. above that of the adult. A recent investigation by Gephart of the same laboratory¹ affords an insight into the actual amounts of nourishment taken by more than 300 boys in one of the largest private boarding schools in the United States. The total animal supply for such an institution containing 355 boys was computed as follows, in metric tons:²

	Protein	Fat	Carbohydrate
Food supply	20.5	25.6	60.5
Waste	3.8	5.4	4.2
Food fuel	16.7	20.2	56.3

The quantity of food, computed on the basis of the individual meal served, appears as follows:

	Pounds	Grams	Calories	Calories (Per Cent.)
Protein	0.1107	50.2	206	14*
Fat	0.1332	60.4	562	39
Carbohydrates	0.3717	168.8	692	47
			1,460	100

* Seventy per cent. of this was in animal protein.

The food was of the best quality, and included 193 separate varieties. The cost per meal was 20 cents, or 13.8 cents per thousand calories. This is twice what the poor man in New York City pays for his food. But these growing athletic boys were not satisfied with the conventional 3,000 calories per day. The investigator of their dietary ascertained that beside the 4,350 calories which they consumed daily at the table, they bought 650 additional calories in food at a neighboring store, the principal item being chocolate.

Lusk¹ has called attention to the fact that the 5,000 calories thus contained in the daily diet of active American boys of school age are half again as much as a farmer at work is believed to require. This salient statistical discovery, based on a liberal series of observations rather than on a few scattered data, deserves emphasis to medical men, who are often called on to advise in matters of diet during childhood and adolescence. The total fuel intake of the boarding school boys was three times that of the basal level of from 700 to 1,800 calories, which is the heat production of boys from 13 to 16 years of age when resting or sleeping. Such findings explain the ravenous appetite of boys. Lack of appreciation of this factor, says Lusk, and lack of provision for it, are the probable causes of much of the undernutrition seen in children of school age.

A liberal and adequate dietary does not necessarily draw heavily on many sources of food. In the selections for the school referred to, twelve dietary items yielded 75 per cent. of the requisite fuel value, the remaining 25 per cent. being distributed among the other varieties of food. It is surely not without significance that bread, butter, milk and sugar together furnished half of the food fuel. They form an exceptionally wholesome combination.

PUBLIC DECENCY AND PUBLIC HEALTH

Hygienists are beginning to recognize that some of the public expenditures which are the outcome of modern demands for improved sanitation are not always directly justifiable on the plea of a menace to public health. Municipal baths, for example, embody elements of comfort and personal luxury as well as factors which contribute indirectly to health. Certain aspects of the complex problems of garbage collection, such as the transportation of decaying organic matter through public thoroughfares, are often objected to on the plea of danger to the health of the community, whereas it is usually the senses of sight and smell that are offended rather than the general physical well-being of the persons concerned.

It is important, where so many demands are continually being made on the public purse as well as on philanthropic resources, to analyze public needs thoroughly and locate them exactly. In the long run it does not pay to secure alleged benefits on a specious pretext. For this reason it is a sign of progress to see that some of the demands which a hasty consideration might ask health authorities to satisfy are henceforth to be charged to the needs of public decency. The distinction has been clearly exposed by the director of the Department of Social Welfare of the New York Association for Improving the Condition of the Poor.¹ He has pointed out that many communities provide the means for the cleansing of human bodies. It is just as essential to health and decency that public facilities, where private ones are lacking, should be provided for the cleanliness of the garments, the condition of which must otherwise lower the tone of decency of the people of the community. Decency is emphasized by Armstrong, because it is essential that health workers should realize more and more that it is impossible to justify most of our expenditures in certain directions, if we consider these expenditures to be inductive to health alone. It is difficult, he reminds us, to ascribe ill health to dirty streets, unsightly back yards, and such undesirable elements in our physical environment for the elimination of which we spend thousands yearly, not in reality to maintain public health, but, as a matter of fact, to establish public decency.

Among the mass of the poorly housed tenement population of the large American cities, the facilities for washing and drying clothes are decidedly meager. A statistical inquiry among families representing more than 200,000 people on the east and west sides of New York City showed that the percentage of families without equipment was as follows: without bath, 92 per cent.; without wash tubs in the home, 40 per cent.; without hot water, 87 per cent. In this country there are as yet few places in which people who have very inadequate home facilities may go and wash their

1. Lusk, Graham: Food Economics, Jour. Washington Acad. Sc., 6, vi, 390.
2. One metric ton equals 2,200 pounds.

1. Armstrong, D. B.: The Municipal Laundry Problem, Jour. Home Economics, 1916, viii, 422.

clothes under decent and sanitary conditions for a small cost and with a minimum of time expenditure. Public laundries or wash houses have long been in use in foreign cities. With thirty-five such institutions in the city of London alone, patronized by nearly a million washers, may be contrasted eighteen in the entire United States, of which five are in Baltimore.

Experiments now under way by the New York Association for Improving the Condition of the Poor indicate that mechanically equipped wet wash laundries, even when run under quasipublic auspices, are likely to prove successful and fill a need in the community. The necessary capital investment is by no means prohibitive of further investigation in this direction. Public and private health and decency demand some provision of this sort in many places, even if the scheme adopted is only palliative and the plan not final.

Dr. Armstrong maintains that suitable municipal washing facilities have an educational value in addition to the purely utilitarian advantages. He summarizes his argument as follows: The public wash house, like the public bath, finds its chief justification in the fact that it gives to people an opportunity to learn how to be clean, and makes it possible for them to appreciate the value to health and decency of being physically clean. Physical cleanliness enhances our moral and spiritual tone. The people will recognize more acutely their housing and municipal defects, and will demand even more energetically than at present that equipment for clean bodies and clean clothes, whether within or outside the home, which they will have learned to use and value, and the importance of which, for the preservation of health and the maintenance of decency, they will have been educated to appreciate.

INTRATRACHEAL INJECTION IN THERAPY

"A common cause of disappointment," the "Pharmacology of Useful Drugs," states, "is the want of exact knowledge concerning the absorption of drugs. It is often asserted, and accepted without question, that because a given substance is very soluble in water, it must necessarily be absorbed readily from the alimentary canal. Disregarding the relatively slow absorption of soluble purgative salts, we may call attention to the fact that for some unknown reason, some of the very soluble glucosids are absorbed slowly and irregularly from the gastro-intestinal tract; also that certain glucosids or resins which are wholly insoluble in water are absorbed fairly rapidly from the gastro-intestinal tract. In other words, we must recognize the fact that every drug is a law unto itself in regard to its rates of absorption and elimination." In recent years drug therapy has aimed to make more certain the dosage of active substances and their efficient and prompt introduction into the region in which

it is desired to have their potency manifest itself. For this reason subcutaneous, and latterly intravenous and intramuscular medication have supplanted oral administration of many drugs. Absorption is usually better assured, and speedy responses are more likely to follow.

The respiratory tract has been widely employed as a path of introduction for volatile substances, of which illustrations are afforded by the general anesthetics chloroform and ether. Less volatile substances are sometimes inhaled into the lungs for their local action, and even nonvolatile substances may be thrown into the respiratory passages suspended in a spray of vapor. Whether in the latter case the products actually penetrate into the alveoli has been seriously questioned. In any event, aside from the use of volatile anesthetics, the production of general in contrast with local effects has rarely been attempted through the channel of the respiratory tract.

Recent researches by Auer and Gates¹ have shown that intratracheal injections of potent drugs may be followed by prompt absorption even under disadvantageous conditions, so that the method may prove to be of value therapeutically. Experimenting on animals at the Rockefeller Institute for Medical Research, they have found that a simple intratracheal injection of a solution of epinephrin penetrates in a few seconds to the alveoli, chiefly those of the left lower lobe; that absorption is rapid and well maintained, and that the procedure may be repeated effectively a number of times even with a substance, like epinephrin, which decreases absorption.

The rapidity with which an intratracheal injection of epinephrin may promote a rise of blood pressure indicates that the absorption of the drug presumably occurs through the capillaries leading to the pulmonary veins. It has been demonstrated experimentally that absorption from the lung could be obtained at a time when double the dose of epinephrin given intramuscularly exerted no pressor effect whatever. Even after the development of pulmonary edema with the resultant diminution of the absorptive field, the drug was still taken up quite effectively.

The intratracheal incorporation of drugs requires a technic which is inconvenient in comparison with the usual clinical procedures. The desirability of its application to human subjects remains to be considered, since as far as is known no data are yet available. Auer and Gates maintain that the procedure ought to be simple. Tracheotomy ought not to be necessary. They suggest that a free hypodermic needle could be inserted into the tracheal lumen immediately below the cricoid cartilage and connected with a short length of rubber tubing with a syringe. To insure its reaching the alveoli promptly, the amount of solution should not be too small; probably from 3 to 5 c.c.

1. Auer, J., and Gates, F. L.: The Absorption of Adrenalin after Intratracheal Injection, *Jour. Exper. Med.*, 1916, xxiii, 757.

would suffice. The puncture of the isthmus of the thyroid is not considered as significant under circumstances in which grave conditions, such as are encountered in impending cardiac failure, demand prompt attention even at some incidental risk.

It may be asked what advantage such a plan is likely to offer over current heroic measures in human therapy. In the first place the intratracheal method could probably be carried out with greater ease than the intravenous injection, particularly in such cases as cardiac weakness, in which the surface veins cannot always be entered promptly and with certainty. Moreover, Auer and Gates suggest that it is legitimate to expect some absorption from the lung alveoli as long as the heart-lung circulation persists, no matter how feebly. Thus the drug presumably will reach the heart to act on its failing structure more promptly than through introduction by the route of surface veins. A serious consideration of the plan in its application to clinical medicine seems justified by the preliminary investigations.

Current Comment

THE COMPARATIVE PHYSIOLOGY OF UREA FORMATION

Comparative physiology—the contrast of the way which related functions are performed in different types of organisms—has now and then thrown light on the obscurities of human physiology and pathology. Sometimes it has pointed to fallacious ideas in our conceptions of the working of the bodily mechanism. An illustration of the confusion which has arisen from the apparently conflicting data of comparative physiology is found in the study of the end-products of protein metabolism in different species. Whereas, in the case of the higher vertebrates, urea has long been recognized as the preeminent final stage in the disintegration of nitrogenous substances ingested, in birds and reptiles its place is taken by uric acid, a compound of far more complex chemical structure. Is urea a stage in the production of this uric acid, that is, is it an intermediary product of protein metabolism in uric acid-secreting species? When the amino acid digestion products of proteins are introduced into the organism of mammals, urea production manifests itself. Urea itself, introduced into the circulation of such animals, is rapidly distributed approximately equally in all the tissues except the fatty tissue, kidneys and urinary tract. The latter have a higher content, owing to saturation with urea in the process of excretion from the body. The fat, with its low content of water, can absorb much less urea than other tissues. In contrast with this, Karr and Lewis¹ of the University of Illinois have found that the urea content of the hen, a species secreting uric acid in place of urea, is low. The con-

tent of the kidneys is uniform with that in other tissues, in conformity with the fact that urea is not an end-product of prime importance in the nitrogenous metabolism of this animal. This is further substantiated by the results of injections of a typical amino acid, alanin. This likewise leads to no increment in the urea content of the blood or tissues. The analogies with the organism of man and the other higher vertebrates thus fail.

THE NATURE OF BENCE-JONES PROTEIN

The excretion of a protein of somewhat unusual properties in the urine, as it has long been described under the caption of Bence-Jones proteinuria, can no longer be regarded as an extreme rarity in clinical medicine.¹ Nevertheless, as the albuminous substance eliminated in this interesting and still unexplained anomaly differs notably from more familiar proteins of either urine or blood, and since it was first described by Bence-Jones as an "albumose," some confusion, not to say uncertainty, regarding its identity and characteristic properties still exists. The unusual behavior of the Bence-Jones protein in the urine toward heat—a diagnostic phenomenon which serves to call attention to the anomaly—has contributed to raise the pertinent question whether or not it is a disintegration product of some normal tissue protein, representing (as do the true proteoses) some abnormal breaking down of body structure or pathologic alteration of circulating proteins by some unusual enzyme. A recent investigation at the University of Pennsylvania² of the typical protein obtained from a patient excreting from 23 to 30 gm. of Bence-Jones protein per day indicates that the protein is capable of causing anaphylaxis. Introduced in large quantities into the circulation of animals it failed to give the slightest indication of toxic action. The normal clotting of the blood spoke strongly against the presence of proteoses which would have been in sufficient concentration to interfere with coagulation. This is quite in accord with the anaphylactic activity already described. Such indications now confirm the belief that we are dealing with a higher protein of individual biologic stamp and not with a degradation stage in the hydrolysis of any body protein. Taylor and Miller have found that this protein in the circulation of the patient is, like the plasma proteins, protected from digestion; but the isolated substance, evidently undenatured, is readily attacked by either pepsin or trypsin. This leads them to the comment that if the Bence-Jones protein is to be regarded as foreign to the tissues of the subject, we should by the Abderhalden hypothesis expect that a special ferment would soon be aroused to destroy it in the body; and certainly there would seem to be nothing in the nature of the substance itself to resist such a fate. Yet instead of being digested, large quantities of it are excreted in its native condition, apparently free from any hydrolysis; and this can continue indefi-

¹ Karr, W. G., and Lewis, H. B.: A Comparative Study of the Distribution of Urea in the Blood and Tissues of Certain Vertebrates. Special Reference to the Hen, Jour. Am. Chem. Soc., 1916, lxxviii, 1615.

² 1. The Origin of Bence-Jones Protein in the Urine, editorial, THE JOURNAL A. M. A., Oct. 24, 1914, p. 1481; A Crystallizable Urine Protein, Current Comment, Feb. 20, 1915, p. 669.

2. Taylor, A. E., and Miller, C. W.: Studies in Bence-Jones Proteinuria, Jour. Biol. Chem., 1916, xxv, 281.

nately. Under such circumstances, the Philadelphia biochemists conclude, we must dismiss the idea of a protective ferment. From every point of view it is clear that this substance in their case as in others is a higher protein, a human product closely related to the normal blood proteins.

THE CIRCLE NARROWS

Some of the leading advertisers in America have formed an "Association of National Advertisers." These advertisers are spending enormous sums every year in bringing their products before the public through the instrumentality of printers' ink. Should the public lose faith in their printed word, the members of this organization would find their business seriously crippled. Being reputable concerns and having meritorious products, honestly and truthfully advertised, these advertisers desire that advertising shall stand for a hundred-cents-to-the-dollar in the eyes of the public. When the Association of National Advertisers met last spring it adopted a declaration of principles. It went on record as being opposed to advertising of the following kinds:

All advertising that is "fraudulent or questionable."

All advertising that is "indecent, vulgar or suggestive."

All advertising that is "ambiguous in wording and calculated to mislead."

All advertising that makes "false, unwarranted or exaggerated claims."

All advertising to laymen of "products containing habit-forming or dangerous drugs."

All advertising that makes "remedial, relief or curative claims either directly or by inference that are not justified by the facts or common experience."

All advertising that may "cause injury in health or loss of confidence in reputable advertising and honorable business."

One might almost be excused for thinking that the Association of National Advertisers had the "patent medicine" business specifically in mind when it drew up its declaration of principles. Certain it is that practically all "patent medicine" advertising must be declared guilty on one or all counts in the Association's indictment. It is impossible to escape the belief that the Association of National Advertisers hasn't much use for the nostrum fraternity. But the Association did not stop with the mere declaration of principles. It backed up its words by declaring that its members, so far as they were able, would "direct their advertising to those mediums which made the observance of these principles their rule and practice." No wonder the "patent medicine" interests are loudly proclaiming their willingness to be good. "The devil was sick, the devil a monk would be; the devil was well, the devil a monk was he!" At present the nostrum industry is far from healthy.

Teaching Massage to Blinded Soldiers.—An exchange states that two schools have been organized in France for this purpose. One is in charge of Dr. Guilbert, who has long been blind himself. A good knowledge of anatomy is a prerequisite, and a set of relief charts have been made by eminent sculptors to aid in teaching anatomy to the blind. The men work alternately as masseurs and as subjects. Our exchange remarks further that the use of the metal casques has materially reduced the proportion of cases of injury of the eyes.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

DISTRICT OF COLUMBIA

Poliomyelitis in the District.—During the week ended September 2, three new cases of poliomyelitis were reported, one of which was apparently the result of infection in New Jersey. There were no deaths. The total number of cases reported since July 1 is twenty-six, of which eight represent imported infection. The deaths to date number four.

Poliomyelitis Regulations too Drastic.—The health officer of the District recommended to the commissioners of the District the promulgation of certain regulations for the prevention of poliomyelitis which were based on the minimum requirements laid down by the recent conference of state and territorial health authorities, as noted in THE JOURNAL, August 26. They did not, however, recognize the noninfectivity of persons over 16 years of age to the same extent as does the text of the standard minimum requirements, and they placed on persons bringing into the District from infected areas children under 16 years of age the duty of giving the health officer notice of the arrival of such children.

The health officer's recommendation for the promulgation of these regulations was based solely on the fact that they represented the consensus of opinion of the Conference of State and Territorial Health Officers with the United States Public Health Service and had the endorsement of representative bodies of local physicians. The health officer withheld his personal approval of the regulations which he submitted, pointing out that their very severity would tend to prevent reporting, at least in doubtful cases; that the limit placed on the supposed duration of infectivity, six weeks, was without sufficient basis in experiment or clinical observation; that any recognition of a lesser infectivity among persons over 16 years of age than among those of the younger group was without adequate foundation; that neither clinical observation nor efforts experimentally to convey poliomyelitis by natural means from monkey to monkey justified the popular conception of the disease as one that was easily spread by personal contact or that could be effectively checked by any efforts made to isolate persons exposed to the patient, and that the rigorous regulations adopted in New York, Newark, N. J., and Philadelphia had seemed to have no effect in checking the spread of the disease. The regulations as submitted by the health officer were submitted by the commissioners to the corporation counsel for consideration and have just been returned by him with the statement that because of their severity they would probably not be sustained by the courts unless a grave public emergency existed, and that evidence now available did not show any such emergency.

ILLINOIS

State Charities Meeting.—The twenty-first annual state conference of Charities and Correction will be held in Alton, October 20 to 22. In connection with this conference the Illinois Association for the Prevention of Tuberculosis, the State Association of County Home Superintendents and the State Association of Probation Officers will hold meetings.

Addition to Sanatorium.—A ten-foot sleeping porch is being erected which is to stand entirely around the new Rock Island Sanatorium. Ten new tents have also been ordered by the new hospital commission. Mrs. Carolin W. Juhl has been appointed head nurse of the hospital.—Drs. Joseph De Silva and Louis Ostrom, Jr., have been appointed on the building and grounds committee and Drs. Bernard J. Lachner and Cyrus T. Foster on the supplies committee of the sanatorium commission.

State Board Rules Regarding Poliomyelitis.—Owing to the prevalence of infantile paralysis, the state board of health, August 29, laid down special rules for two sections of the state. The first of the restricted areas takes in Macon and Piatt counties, Dora, Lovington and Lowe townships in Moultrie County, and Tunbridge, Texas, Creek and Nixon townships in De Witt County. The other comprises all of LaSalle County, Clarion, Westfield and Hall townships in Bureau County, and Evans and Bennington townships in

Marshall County. Postponement of the opening of schools is ordered in these localities, and it is provided that no child under 16 years of age shall travel within or out of the restricted area unless in possession of a health certificate.

Chicago

Bardeen Lectures at Graduate School.—August 31, Dr. Charles R. Bardeen, professor of anatomy and dean of the Medical School of the University of Wisconsin, Madison, delivered an address before the Graduate School of Medical Sciences of the University of Illinois on "Study of the Anatomy of the Heart in the Living by the Use of the Roentgen Ray."

Department of Health Items.—August 25, the health commissioner requested the harbor master to intern five boats for violation of the ordinance which provides that boats shall not discharge sewage within 8 miles of the shore. The corporation counsel issued an opinion that the city had no power to intern offensive vessels. The health commissioner thereupon initiated legal proceedings to enforce the ordinance against lake pollution.

Health Certificates for Schoolchildren.—The board of education, on recommendation of the commissioner of health, requires this year that all pupils admitted to the public schools on their opening be required to present a health certificate to be furnished by a licensed physician showing that the pupil has no contagious or infectious disease; that there has been no contagious or infectious disease in the home or place of abode of the pupil, and that the pupil has not been exposed to any such disease within two weeks from the date of application for admission to the school.

MARYLAND

Standard Entrance Examinations.—Standard entrance examinations for professional study, which are held yearly, will take place September 18 to 23 at Baltimore. Credits earned in these examinations are intended primarily for students of medicine. They afford also an opportunity for men who have not been able to pursue a high school course to secure a standing equivalent to a high school diploma, which will be of service to him in other professions. These examinations are given under the authority of the Board of Medical Examiners of Maryland by their entrance examiner, assisted by a corps of specialists in different subjects. Full recognition is accorded these examinations by the New York State Education Department, placing them on an equality with their own examinations.

The Infantile Paralysis Situation.—The board of estimates of Baltimore has authorized the city health department to enter into a contract with the Children's Hospital School for the treatment of infantile paralysis cases, as the Harriet Lane Home at Johns Hopkins Hospital, and Sydenham Hospital, the city hospital for contagious diseases, can take no more cases of this character. The hospital directors have offered the city thirty beds for \$800 a month, the city to contract to pay for the beds for three months. In addition, the city is to pay \$1 a day for each patient over 30, to reimburse the hospital for any property that has to be destroyed, and to bear the expense of fumigating the hospital when the city's occupancy expires. The city must also pay for the removal of all the present patients to the Union Protestant Infirmary and for their care at that hospital.—Dr. Gilbert W. Rosenthal, of the Harriet Lane Home, Johns Hopkins Hospital, an expert on diseases of children, has been selected by Health Commissioner Blake as assistant resident physician at the Child's Hospital School, to take charge of the children suffering from infantile paralysis. Drs. William S. Baer and George E. Bennett will continue as visiting physicians in charge of the institution. Other physicians now there and the regular staff of nurses will remain. Dr. John F. Hogan, superintendent of Sydenham Hospital, and Dr. William T. Howard, Jr., assistant commissioner of health, will visit the hospital at frequent intervals.—In order to prevent the spread of the disease, thirteen physicians have been appointed to assist in the fight against the disease by watching railroad stations and steamboat wharves for arrivals from Philadelphia, New York and New Jersey, and all children under 16 years thus arriving will be kept under surveillance for fourteen days or longer. Arrangements are being made to have all automobile roads throughout Maryland watched in like manner.

The United States Public Health Service does not regard the situation in Baltimore as sufficiently serious to require official assistance. Asst. Surg.-Gen. William Colby

Rucker has consented to detail a physician to assist the city and state authorities in establishing its quarantine.

MICHIGAN

Fees for Contagious Disease Reports.—Checks varying in amount from 10 cents to \$14 and totaling \$195.30 have been sent, by the secretary of the board of health of Grand Rapids, to physicians of the city for reports of cases of contagious disease made to the health department.

Personal.—Dr. Philip G. Sanderson, Detroit, is a candidate for coroner of Wayne County on the Republican ticket.—Dr. Frank P. Bohn, Newberry, is a candidate for the Republican nomination for lieutenant-governor.—Dr. John A. Sperry, Lansing, has returned after a service of several months with the American Red Cross in the war zone and is visiting in Jacksonville, Fla.

Upper Peninsula Physicians Meet.—At the annual meeting of the Upper Peninsula Medical Society, held in Houghton, August 16, Escanaba was selected as the next place of meeting and the following officers were elected: president, Dr. Robert Bennie, Sault Ste. Marie, and vice presidents, Drs. Robert A. Walker, Menominee, and John MacRae, Calumet. The secretary-treasurer will be chosen by the Delta County Medical Society.

State Society Meeting.—The Michigan State Medical Society held its fifty-first annual meeting at Houghton, August 15 to 17, under the presidency of Dr. Alfred W. Hornbogen, Marquette. The following officers were elected: president, Dr. Andrew Porter Biddle, Detroit; vice presidents, Drs. James G. Turner, Houghton; John J. Mersen, Holland; Arthur O. Hart, St. Johns, and George S. Ney, Port Huron; delegates to the American Medical Association, Drs. Jacob D. Brook, Grandville, and Guy L. Connor, Detroit, and alternates, Drs. Carl F. Moll, Kenton, and Charles F. Kuhn, Detroit. The society adopted resolutions advocating universal military training and the passage of a law compelling all persons about to be married in the state to undergo physical examination, and providing drastic punishment for those who contract or assist in marriages in violation of the law. The subject of the presidential address was "A Review of Medicine and Surgery, with Especial Reference to the European War."

NEW YORK

Hospital for Infantile Paralysis.—At a recent meeting of the Hempstead Town Board of Health, Health Officer Dr. Howard M. Phipps was authorized to inspect and report on the suitability of the hospital connected with the town almshouse at East Hempstead for the reception of infantile paralysis patients.

Inoculation of Milk Peddlers.—At the meeting of the common council of Rochester, August 22, R. A. Hamilton, commissioner of public safety, on the recommendation of Health Officer Dr. George W. Goler requested the council to pass an ordinance requiring all persons peddling milk in the city to be inoculated against typhoid fever. The communication was referred to the law and public safety committees.

Special Course in Public Health.—Eighteen health officers have already been enrolled to take a special course of study approved by the Public Health Council. After a reading course of one month, a course of lectures and quizzes began, September 8, at the Medical College of Syracuse University. This course will continue until November 25, when an examination will be held, after which certificates will be issued to the successful candidates. Another course will be given in the winter.

Personal.—Dr. LeRoy B. Vail, Flushing, is reported to be ill with anterior poliomyelitis and is said to be doing well.—Dr. Robert Lount, health officer of Hempstead, suffered a cerebral hemorrhage, August 26, and is reported to be in serious condition.—Dr. Edward E. Hummel, Darien Center, coroner of Genesee County since 1901, announces that he will not be a candidate for reelection. Dr. William J. Ryan, Oakfield, has announced his intention to be a candidate for the office.

Infantile Paralysis in the State.—There were forty cases of infantile paralysis reported to the state health department, September 1, with three deaths. The total number for the state thus far, exclusive of New York City, is 2,086, and the deaths, 227. The August *Bulletin* of the state department of health states that there were 336 cases reported during the month of July, up to the 29th. These cases were located in

130 municipalities, but for the most part in the counties adjoining New York City and along the Hudson River. There are sixty-nine cases in patients who came from New York City a few days previous to the onset. An analysis of 121 cases in which special data has been received shows that sixty-nine patients were males and fifty-two females. About one half of the children were of American parentage. Data respecting the sanitary conditions of the homes indicate that conditions were bad in thirty-five instances; fair in thirty; good in thirty, and excellent in twenty-four.

New York City

Money for City Hospitals.—Commissioner Kingsbury of the City Charities Department has announced the completion of the plans for new buildings and remodeling old buildings at the Seaview Hospital for Tuberculosis Patients on Staten Island and the Children's Hospital and schools for mentally defective children on Randall's Island. For these purposes \$1,400,000 has been appropriated by the board of estimates. The new plans will double the capacity of the Seaview Hospital, so that it will accommodate 2,000 patients, and will consist of twenty-one open cottages, each containing forty-eight beds. There will also be a group building for men, with a dispensary, large dining hall, industrial rooms, billiard and recreations rooms and a general lounging room.

Mosquito Extermination Effective.—It is reported that recently the health commissioner took a party of 100 newspaper men and civic workers over the marsh lands adjoining Jamaica Bay for the purpose of refuting certain newspaper stories that mosquitoes thrive and multiply under present methods of extermination. The work that is being conducted was explained and it was made evident that the new crop of mosquitoes will be a failure. The city appropriated \$150,000 for this drainage work, \$60,000 of which is to be expended along Jamaica Bay and the remainder along Flushing Bay. Many Long Island towns have taken up the work of extermination. Since the work on mosquitoes was begun in 1907, 23,000 acres of marsh have been drained, for which the city has paid \$164,893. It is stated that when the work of the present season is completed the quantity of undrained marsh land in the vicinity of New York will be negligible.

Infantile Paralysis.—Up to September 2 there had been reported 8,148 cases of infantile paralysis in Greater New York, with 1,968 deaths. September 1 there were sixty-eight new cases with seventeen deaths, and this number was slightly higher than for the preceding days of the week. For the week ending July 8 there were 557 cases, while for the first six days of the current week there were 416 cases. In the meantime the number of cases reported for one week mounted as high as 1,210 cases for the week ending August 12. This would indicate that the epidemic is very definitely on the decline. As a result quarantine regulations for those going out of the city have been somewhat relaxed. Special attention is now being directed to the aftercare of the victims of infantile paralysis. With the termination of quarantine at home or with the discharge of a patient from the hospital, the following printed notification is given to the parents:

Your child is about to be discharged from the immediate care of the department of health, there being no longer any danger of his (or her) spreading the disease. While in the hospital, much has been done to lessen the deformities. There remain, however, weakness of.....

..... With proper care, this deformity will be greatly lessened. With neglect, it will tend to increase. You are strongly advised to consult your family physician, if he is skilled in the care of deformities, or visit the nearest one of the orthopedic dispensaries in the city given on the enclosed list. In any case, place your child under proper supervision for at least a year, as this tends to lessen permanent disability; neglect may increase deformity.

The brace fund of \$25,000, asked for by the health commissioner, now totals about \$23,000. Among the contributions of the last few days have been two checks of \$1,000 from Edward S. Harkness and Mrs. Stephen V. Harkness.

NORTH CAROLINA

Inspection of Hotels.—The inspection of hotels in the state by the state board of health began August 7. The inspectors assigned to this duty were Drs. Watson S. Rankin, George M. Cooper and James R. Gordon, all of Raleigh.

Intensive Health Work.—Dr. E. B. Washburne, late director of the International Health Commission on duty at Trinidad, British West Indies, will, September 1, inaugurate and personally conduct for the ensuing year a scientific study

of intensive health work in Wilson County, under the joint direction of the International Health Commission and the North Carolina State Board of Health.

Antituberculosis Campaign.—Dr. James E. Malone, Louisville, health officer of Franklin County, has just closed a three months' antituberculosis campaign, lecturing to the people throughout the county, diagnosing cases and suggesting care and treatment as occasion offered.

PENNSYLVANIA

Philadelphia

Personals.—Dr. Daniel J. McCarthy, who has been in Europe as a representative of the United States government investigating prison camps, returned home, September 1.—Dr. Dudley J. Morton, who for four months has been connected with the American Ambulance Hospital in Paris, returned home, September 2.

Infantile Paralysis.—No sign of abatement in the epidemic of infantile paralysis has been shown during the past week. New cases have been reported every day excepting Thursday, and the largest number recorded excepting on one previous day was twenty-five. Human serum is being used in the treatment of the disease at the Municipal Hospital, but no results have been given out. The serum on hand in the Municipal Hospital has been practically exhausted and appeals have been made for persons who have recovered from the disease to supply blood to the health department. Twenty-five persons have thus far responded to this appeal. During the last two days blood was taken from five immunes at the Orthopedic Hospital and on September 1, several immunes from a Philadelphia institution gave their blood while at a shore resort. As stated before no definite report as to the value of the serum has been issued but the authorities are encouraged by the influence they have observed in the use of the immune serum. The public schools throughout the city will not be opened before October 2, excepting the Girls' Normal School and the School of Pedagogy. September 1, sixty-five additional men were added to the quarantine guard, and this has increased the number to 300. One hundred and twenty-five more are to be added to the roll, September 5. Since July 1, 850 cases of the disease have been reported to the state health department and 499 of these have occurred in the city of Philadelphia. The total number of deaths since July 1 was 214. Seventeen new cases were reported from different sections of the state on September 1.

CANADA

Personal.—Dr. Edward Ryan, who went to England with the Ontario Government Hospital, last April, and who has had charge of the psychopathic ward in that institution at Orpington, Kent, is returning to Kingston, Ont., on two months' furlough. The department with which he was connected has so little to do that it looks after surgical cases. —Maj. Lewis E. W. Irving, D. S. O., Toronto, is now in command of the Canadian Division at the Woodcote Park Convalescent Hospital, near Epsom.—Capt. John Arthur Cullum, C. A. M. C., Regina, Sask., medical officer of the Twenty-Eighth Battalion, Canada, has been awarded the military cross.

University News.—The Faculty of Medicine of the University of Toronto, which suffered from the enlisting of professors and students sixteen months ago for overseas service in connection with the University Base Hospital, will be strengthened by the return of Dr. John J. MacKenzie, professor of pathology and bacteriology, and Dr. Benjamin P. Watson, professor of obstetrics and gynecology. Lieut.-Col. Alexander Primrose, Toronto, who returned from Saloniki some weeks ago, will also remain, as his services are required both at the university and the Toronto General Hospital.

GENERAL

Bequests and Donations.—The following bequests and donations have recently been announced:

Home of the Good Shepherd, Peoria, and St. Joseph's Home for the Aged, Peoria, each \$5,000; St. Francis Hospital, Peoria, \$2,000, by the will of Archbishop Spaulding.

For the construction of a children's building in connection with the Fayette County Tuberculosis Sanatorium, a donation of \$10,000, by Miss Magdalen McDowell, Lexington, Ky., in memory of Dr. William Adair McDowell.

Confederation of County Societies to Meet.—The newly organized Confederation of County Medical Societies of Northern Illinois and Southern Wisconsin associated with Eastern Iowa announces that its first annual convention will

be held at Freeport, Ill., September 26 and 27. Clinics are to be held in the Freeport hospitals on the mornings of both days and in the afternoons and evenings scientific papers will be read and discussions held.

Child Labor Bill Becomes a Law.—The National Child Labor Bill became a law, September 1, when it was signed by the president. It aims to limit child labor within the states by prohibiting the transportation in interstate or foreign commerce of any product of any mine, quarry, cannery, mill, workshop, factory, or manufacturing establishment in which child labor is employed. A synopsis of the bill appeared in *THE JOURNAL*, August 19.

Infantile Paralysis Conference.—At a meeting of health officials of Rhode Island, Maine, New Hampshire and Massachusetts at the State House, Boston, August 23, a form of identification certificate in connection with infantile paralysis was decided on, and it was agreed that, for the convenience of travelers, the local boards of health should be instructed to issue certificates in due form, to persons who intend to go to states which require such certificates, provided a clean bill of health be obtained.

Mississippi Valley Physicians to Meet.—The forty-second annual meeting of the Mississippi Valley Medical Association will be held in Indianapolis, October 10, 11 and 12, with headquarters at the Claypool Hotel, under the presidency of Dr. Willard J. Stone, Toledo, Ohio. In addition to the usual papers of the meeting, there will be symposiums on fractures and on syphilis. There will also be a scientific exhibit which has been arranged by Dr. Frank B. Wynn, Indianapolis. Dr. Albert E. Sterne, Indianapolis, is chairman of the committee of arrangements.

Health of Indians.—Earnest efforts have been made to afford recently better hospital facilities for Indians, the number of such hospitals having been increased from 53 in 1912, with a capacity of 1,256, to 74 in 1915, with a capacity of 2,045. In view of the widespread prevalence of trachoma, and tuberculosis as reported by the investigation of the Public Health Service, ophthalmologists have been increased in number from 3 to 7, and the number of regular agency physicians increased from 89 to 130, and contract physicians from 53 to 76. The appropriation for relief of distress has been increased from \$200,000 to \$350,000, the amount covered by the present bill. Seven traveling dentists have been employed. A baby-saving campaign has also been instituted.

Tuberculosis Conferences.—The Mississippi Valley Conference on tuberculosis will be held at the Seelbach Hotel, Louisville, Ky., October 4 to 6, under the presidency of Walter D. Thurber, Chicago. The object of the conference is to bring about a closer relationship between antituberculosis agencies in the Mississippi Valley, to provide for the interchange of ideals and experiences, to strengthen and extend the work of the national association, to arouse the people of the Mississippi Valley to the needs of concerted action and to effect closer relations between the antituberculosis societies and other health agencies. Dr. Dunning S. Wilson, Louisville, Ky., is secretary-treasurer of the conference. The third Southern conference on tuberculosis will be held at Jackson, Miss., October 30 and 31. The states comprised in this conference are North Carolina, South Carolina, Tennessee, Georgia, Florida, Alabama, Mississippi and Louisiana.

Measures Against Malaria.—The International Health Board has taken up the consideration of the subject of malaria under the phases of geographic distribution and district of infection. Two sets of experiments to test the practicability of malaria control are being carried out; one, the detection of the carriers and freeing them of the parasites, and the other a combination of control measures. The first experiment is being carried out in Bolivar County, Miss., under the administration of the Mississippi Department of Health, with Dr. Walter S. Leathers, University, as administering director and Dr. Charles C. Bass, New Orleans, as scientific director. The field force and microscopists have received their technical training in the laboratory of Tulane University. The second series of experiments is being carried out in Arkansas in cooperation with the United States Public Health Service, under the charge of Surg. Rudolph H. von Ezdorf.

Tuberculosis Week.—The National Association for the Study and Prevention of Tuberculosis announces that tuberculosis week will be observed from Dec. 3 to 10, 1916. Especial attention is directed to three days in this week; namely, Medical Examination Day, December 6; Children's Crusade Day, December 8, and Tuberculosis Sunday, December 10. The National Medical Examination Day compre-

hends the securing of the interests of at least three distinct groups of individuals: physicians, employers of labor and working men. Physicians are urged to make examinations on this day without charge. Efforts will be made to interest medical societies and labor unions in the work of this day and advertisements inserted in the newspapers. The association also gives a list of the available literature for tuberculosis week, which includes a tuberculosis week circular, some talking points about tuberculosis, tuberculosis day prayer, talks for schoolchildren and circulars on the periodical medical examination and indifference to tuberculosis.

American Chemical Society Meeting.—The annual meeting of the American Chemical Society will be held in New York, September 25 to 30. One of the principal features of the occasion will be a symposium on occupational diseases presided over by Prof. Charles Baskerville, head of the Department of Chemistry of the College of the City of New York. This symposium will consider the chemical trades—prophylaxis in chemical industry diseases, incidental to work in anilin and other coal tar products, cedar lumber, mines and explosives. The opening address of the meeting will be delivered by Dr. Charles H. Herty, the president, on "The History of Chemistry and the Chemical Industries of This Country and Outlining Developments Since the Outbreak of War in Europe." On Wednesday and Thursday mornings there will be a general symposium on colloids, theoretical considerations being discussed on the first day and the industrial applications of colloid chemistry on the second morning.

Appropriations for Medical Department and Hospitals.—In the act passed by the present Congress, which makes appropriations for sundry civil expenses for the fiscal year ending June 30, 1917, the following sums are appropriated:

For furnishing artificial limbs and apparatus or commutation therefor, and necessary transportation, \$65,000.

For furnishing surgical appliances to persons disabled in the military or naval services of the United States, and not entitled to artificial limbs or trusses for the same disabilities, \$1,000.

For trusses for persons entitled thereto, \$2,500.

For the support and medical treatment of medical and surgical patients who are destitute, in the city of Washington, under a contract to be made with the Providence Hospital by the Surgeon-General of the Army, \$19,000, of which one half shall be paid from revenues of the District of Columbia.

For maintenance, to enable it to provide medical and surgical treatment to persons unable to pay therefor, under a contract to be made with the board of charities of the District of Columbia, \$19,000, of which one half shall be paid from the revenues of the District of Columbia.

For necessary improvements, repairs and equipment for isolation building for minor contagious diseases, \$5,500, of which one half shall be paid from the revenues of the District of Columbia.

Hospital of the National Home for Disabled Volunteer Soldiers, Dayton, Ohio., \$72,000 for pay, services for care of the sick, burial of the dead, supplies and repairs.

Hospital of Northwestern Branch, Milwaukee, \$45,000 for same purposes.

Hospital of Eastern Branch, Togus, Me., \$38,000 for same purposes.

Hospital of Southern Branch, Hampton, Va., \$43,000 for same purposes.

Hospital of Western Branch, Leavenworth, Kan., \$52,000 for same purposes.

Hospital of Pacific Branch, Santa Monica, Calif., \$53,000 for same purposes.

Hospital of Marion (Ind.) Branch, \$40,000 for same purposes.

Hospital of Danville (Ill.) Branch, \$42,000 for same purposes.

Hospital of Mountain Branch, Johnson City, Tenn., \$35,000 for same purposes.

Hospital of Battle Mountain Sanitarium, Hot Springs, S. D., \$35,000 for same purposes.

For the publication of bulletins prepared under the direction of the Surgeon-General of the Army for the instruction of medical officers, \$3,000, or as much thereof as may be necessary.

For sanitation, quarantine, hospitals and medical aid of the insane and of lepers, and aid and support of indigent persons legally within the Canal Zone, including expenses of their deportation when practicable, \$700,000.

FOREIGN

Letter from Berlin.—V. Scheel is editor of the *Ugeskrift for Læger* at Copenhagen and he recently went to Berlin with four other Danish civilian and military physicians to study the methods in vogue there for treating the wounded and mitigating the ills of all kinds which the war has brought. We give a literal translation of a letter from him in the *Ugeskrift* for August 3 as follows:

CHANGES IN THE CITY

"Those who visit Berlin these days find the city changed in several respects. The lack of rubber has limited the number of automobiles and bicycles on the streets to the minimum, and the decrepit nags in the cabs shows that the war has taken all the capable horses. The absence of the male population is noticeable by the extent to which women are serving in men's positions, as conductors, as motormen on the electric tramways, as letter carriers, street sweepers and even in heavy paving work.

THE FOOD SUPPLY

"Germany, especially the large cities and the regions where there is not much cultivated land, as in Saxony, is contending with important difficulties in regard to food (*kaemper jo ved betydelige Ernæringsvanskeligheder*) which just now, immediately before the gathering of the new harvest, is greater than at any time previously. Everything for the present is scarce; potatoes, which had been counted on, were backward on account of the cold spring, and as a consequence there is a lack of potatoes; the bread ration is 200 gm. a day; meat only 200 gm. a week—Tuesday and Friday are meat-free days—butter ration is 90 gm. a week; cream is as good as never seen at all; eggs are very expensive, and it is being considered whether to reduce the ration to two eggs a week per individual; sugar is also scanty which is an inconvenience now that the new fruit is to be put up; the many 'substitute' preparations for foodstuffs are no improvement of the nourishment.

"The stranger sees this, but does not himself note any lack as the ration permitted can be made up with green vegetables, fruit and poultry for which no maximal amount has been established. It makes a peculiar impression, of course, when one, for instance, wants to buy a sandwich, to be obliged to establish his right to the sandwich by presenting coupons for butter and meat from his bread and meat cards. To what extent the populace is or is not suffering from the scarcity of provisions it is of course difficult for one on a brief visit to determine. One sees always in a large city many undernourished and pale persons, but apparently there are no more now than usual. The poor women and children waiting patiently by the hour in front of the stores where provisions are sold, so that they can be sure of what they are permitted to buy, speaks its own language; the right to the different articles of food is restricted to being on the spot.

ORGANIZATION

"In the meanwhile—Germany is the land of organization, and the state has taken hold with a firm hand to come to the aid of the populace. The children are fed in the school, and round about in Berlin public kitchens have been established where the people can go for their midday meal or eat it on the spot. The food is tolerably good; it is catable, in any event. Nursing women, young infants and the sick can get extra rations on a physician's order, entitling them to cards to enable them to buy milk or more bread and meat, of course at moderate prices. The sick who require special diets can obtain them from the hospital kitchens. It is believed that by these arrangements the difficulties have been mastered, and it is certain also that, so far as one can see, it is possible in this way to feed the people, in any event so that Germany need not on this ground suffer loss. (*i alt Fald saaledes, at Tyskland ikke af den Grund behøver at give tabt.*)

"The question how far this scarcity of provisions has had an influence on the public health is difficult to answer, as it may well have suffered without this becoming appreciably apparent in the morbidity and mortality statistics. I had opportunity to examine the mortality curves of different diseases since the beginning of the war, at the office of Stadtmedizinalrat Weber. The figures show no increase in the mortality. Infant mortality has kept at the same level as before the war, and in absolute figures has declined, as there are fewer young infants. There has been no increase in the mortality from epidemic diseases except that tuberculosis has shown some increase in the last months.

EFFICIENT TREATMENT OF THE WOUNDED

"The treatment of the wounded and the solving of all the questions connected therewith, into the smallest details, was stamped on the whole of the Germans' preparedness and efficiency (*Tyskernes hele Forudseenhed og Dygtighed*). The hospitals for the wounded are so numerous at Berlin that the beds have never all been occupied at one time. Some are in new barracks, erected and well equipped for the purpose, others in schools and other buildings. The trains from the battlefields run to the doors of the barracks hospital. We saw one train that had arrived an hour before from the western seat of war, and it was empty. All the wounded had already been installed in their beds. At the beginning of the war the wounded were transported on litters which were suspended from springs to overcome the movements of the train. But it was found that the vibrations of the springs kept the men from resting while the litters were carried off with the wounded, and the train sometimes had none left. For these among other reasons, it was found better to have

beds built into the car, with a spring bottom. They are arranged in a double row, one above the other, lengthwise of the car. The train had its kitchen, pharmacy and operating room, but as few operations as possible are done on the way. The chief of the lazaret is a military surgeon but he attends almost exclusively to the administration; the physicians in the different barracks work independently. Every effort is made to keep the convalescents interested; lessons are given in languages and in practical trades. All the barracks hospitals have grounds where the men raise chickens and rabbits, and there is much emulation between the men. The meals were good. In all the hospitals I visited, both civilian and military, I was impressed with the fact that any scarcity of provisions was not allowed to affect the diet of the sick. The hospital food everywhere was above reproach.

SPECIAL HOSPITALS

"Besides these general hospitals to which all the wounded and the sick are referred, there have been organized a series of specialist departments for special affections. Thus the College of Sculpture at Charlottenburg, which also has been taken for a hospital, is devoted mainly to lesions of the jaws. Some of them are horror-inspiring when they arrive, the lower part of the face and the greater part of the jaws shot away. It is wonderful to see how nearly human such faces can be made after a few months of treatment. The principle is to remove as little tissue as possible. Comminuted fractures may heal and new bone proliferate from scraps of periosteum. Only when it is seen to what extent Nature can be counted on in the repair, is aid afforded by transplantation of a piece from the tibia, fat tissue from the abdomen, skin from the arm, and thus gradually a new face is built up, and supplied when necessary with prostheses for all the teeth and palate. The whole is really worthy of the institution in which it is housed, an actual College for the Plastic Arts. Dentists as a rule are in charge and do the work, as it was assumed that it would be easier for a dentist to supplement his special skill by learning to do transplantations, etc., than for an ordinary surgeon to acquire skill in constructing, modeling and applying prostheses for the teeth and palate.

"Another special hospital I saw had been arranged on Prof. H. Strauss' initiative to treat gastro-intestinal affections and diabetes. The intestinal affections are to some extent the consequence of dysentery, which has been quite prevalent in the field, but the majority were cases of aggravation of preceding gastro-intestinal troubles, especially stomach troubles. Diabetics were few; only one case was known that had developed in the field. The importance of such special hospitals lies not only in the better facilities for dietetic measures, in comparison to the general hospitals, but also in the fact that the men's capacity for further service in the field can be estimated better here.

ARTIFICIAL LIMBS

"A question which has interested medical men particularly in this war has been that of artificial limbs and training in their use. The impression has been that there was a very large proportion of injuries of the arm entailing paresis, especially radial paralysis, or more or less crippling amputation. An exposition of artificial limbs was held which demonstrated the way in which the construction of these prostheses had attained simplicity and efficiency. In the Brandenburg lazaret we had opportunity to see them applied and in use. This lazaret was installed in an insane asylum which was complete at the outbreak of the war but had not been used. There was a farm connected with the institution, and those who had been farmers before their injury are being trained in the use of their prosthesis. The superintendent of the farm department is a man who lost his right arm in childhood and who many years has been a successful farmer with his prosthesis. It is clear that the example of such a man is most inspiring to the men with their new prostheses. We saw this man mow a field of rye and bind up the grain and do it as skillfully as any one could do with both hands. In addition to this department there are training schools for all kinds of work where the disabled maimed are trained.

A PRISONERS' CAMP

"In Brandenburg we had further opportunity to visit a prisoners' camp. It housed 10,000 prisoners but most of them were away at the time, working in the field or factories. Work is not compulsory, but most of the men are glad of the opportunity for something to do, and they prefer the food they get from the farmers to that in the prison camp. The prisoners in this camp were mainly Russian. They sleep on wooden beds in two tiers in large barracks. The camp is

separated into districts, each with quarters for 1,000 men. These districts are enclosed in a barbed wire fence, so that if epidemic disease breaks out in one district it can be isolated by merely stationing a guard at the single gate. The food supply is in the hands of the military authorities here as elsewhere; unpleasant experiences having shown the folly of farming it out to private parties. The food rations are calculated according to the calories—2,500 calories a day; this is a little scanty, but scarcely scantier than most of the Germans just at present are living on, and judging from the people's aspect the nourishment was sufficient. The quality of the food seems to be stamped somewhat with the scarcity of foodstuffs, but of course we cannot set up our palates as judges of taste here. Among the prisoners were some Russian physicians who treated the sick in a special barracks fitted up as a hospital, although with Spartan simplicity; they were not very happy in their monotonous existence and had but one wish: to be exchanged."

CONQUERING TYPHUS

In conclusion Scheel describes the way in which typhus has been conquered as one of the most interesting sections of the medical side of the war. He says: "Although it has always been endemic in Russia and yearly claims not a few victims, no one had ever had a clear idea as to how it was transmitted and how it could be combated. The French bacteriologist Nicolle suggested that it might be transmitted by the louse, but no serious attempts were made to confirm the soundness of this hypothesis or apply its consequences in practice. When the disease invaded Germany, important research on it was undertaken at once. The conclusion was soon drawn that body lice were probably responsible for the transmission, and organized efforts to 'unlouse' the men were at once undertaken. From the moment when it became possible to obtain the mastery over lice, the disease was rooted out of Germany; single cases may be imported as the incubation period is fourteen days, but when no lice are to be found the disease cannot spread. A typhus patient can sleep with other patients without infecting them. Every soldier is 'unloused,' before he is allowed to leave the front, and in every railroad station in Germany there stands a reservist soldier and he demands from every military person—generals as well as privates—who comes from the front, to produce his *Entlausungsschein*, his card certifying that he has been 'unloused,' before he is allowed to leave the depot. In the prisoners' camp the unlousing was done with very simple means. The lice are killed with steam and dry heat applied in a wooden building lined throughout with roofing pasteboard. The steam is developed in a locomotive which is run close to the barracks. The men enter a room and deposit their watch and other valuables in a locker in the outer wall. The clothing is marked with a number and hung up on a hook and carried into the sterilizing room where it hangs in rows as in a wardrobe. A tube brings the steam from the locomotive. It enters with a force of twelve atmospheres, a wooden screen preventing the steam from blowing the clothing off the hooks. Maximal thermometers are suspended among the clothes and a thermometer and manometer are arranged so they can be read from outside. In the course of half an hour the temperature in the room is brought to 110 C., which is more than enough to kill lice. Leather goods are sterilized with dry heat in another room heated by the steam sent through pipes. In the meanwhile the men have passed into a room where the hair and beard are cut, the hair on the bodies being also shaved. They pass then into the room where there are large tubs and douches and the men are soaped and scrubbed. They then pass into another room, located on the other side of the sterilizing room, and their clothing is handed to them, well dried after the sterilization. They can then leave the establishment, getting their valuables by unlocking the lockers from outside the building. A thousand men can thus be 'unloused' in an hour's time. That is not merely lice but all bacteria are killed at the same time is self-evident. The barracks themselves can also be disinfected by the steam from the locomotive at any time; formaldehyd disinfection does not kill lice.

MEDICAL RESEARCH

"The mode of transmission and prophylaxis of typhus are by no means the only subject for scientific research during the war. We had opportunity to see a collection of pathologic-anatomic preparations which have been collected mostly by Schöff, and which are exhibited in the Kaiser-Wilhelms Akademie at Berlin. The future will not lack material to study the action of projectiles from modern weapons; there

are also on exhibition lungs showing the lesions from asphyxiating gases. It is too early to draw up the balance sheet of the war; at the moment the evil predominates, but as many technical improvements which will prove of importance in the days of peace have resulted from the demand which the war has entailed, so will medicine in different fields experience new impulses and new life from the war, and indirectly it will thus have an important influence on the general progress of civilization."

LONDON LETTER

LONDON, July 19, 1916.

The War

THE ARMY MEDICAL SERVICE

Nearly half of the civilian physicians have now abandoned their ordinary work for military service, and yet the medical work of the country goes on apparently smoothly and efficiently, though with some difficulty. Various readjustments have, of course, been made. Physicians retired from practice but not too old for work have come back. Women physicians have been made use of in increasing numbers. Refugee Belgian physicians are employed in general practice and in institutions, and American physicians have been employed in the hospitals both at home and in France. The whole British medical profession, from the consultants to the general practitioners, readily responded to the call of their country, and many of the former, who were earning large incomes, are now wearing khaki for pay which hardly covers the rent and taxes on their houses. Public bodies and wealthy persons with large houses have freely given up buildings for the treatment of the wounded. The result is that military hospitals, large and small, have sprung up in every direction. In London at present there are no fewer than 186. Of these, thirty-nine, which are the largest, are army hospitals proper; the rest consist of private buildings and local institutions, all of course under the control of the war office. The immense number of wounded has enabled specialism to be organized on an unusual scale. Thus one hospital is devoted to injuries of the jaw. Conservative surgery is the order of the day; amputations are avoided as much as possible. At the Herbert Hospital, out of over 3,000 operations, only twenty-five have been primary amputations. Following the example set by our ally in the treatment of those crippled by wounds, at the Grand Palais in Paris, attention is being directed to physical therapy. Electricity, hydrotherapy, radiant heat, massage, passive exercises, mechano-therapy, progressive physical training are all being employed. For men who have lost a limb or other portion of the body there is a special hospital at Roehampton where the latest developments of prosthesis are placed at their service. There are actually both British and American firms on the spot engaged in the manufacture of artificial limbs. Another hospital is devoted to prosthesis for the ghastly disfigurements of the face which so often are produced by high explosives. The work is done under the supervision of a famous sculptor, Mr. Francis Derwent Wood. Metal masks are largely used, together with artificial eyes. The masks are of copper silvered over, made to correspond exactly with the injury, and then tinted a flesh color. The designer derives great assistance from a photograph of the injured man taken before he was wounded. In one case a man had lost an eye, in the place of which there was a deep cavity; his nose was gone and his upper lip disfigured. A mask was made to resemble the missing part as shown by an old photograph, an artificial eye was obtained that exactly resembled the other eye, and an artificial mustache was attached to the part of the mask that represented the upper lip. So successful was the result that at the distance of an ordinary sitting room the substitution was not perceptible. Only on close inspection could the dividing line between the skin and the mask be seen. The mask is fixed either by specially constructed spectacles or by spirit gum. The latter is somewhat irritating, and therefore is used only to fix small metal plates to conceal minor cavities.

SPHAGNUM MOSS AS A SURGICAL DRESSING

The immense demands of the war for surgical dressings have rendered gauze and cotton wool expensive and difficult to obtain and have directed attention to sphagnum moss, which grows abundantly in several parts of the country. It is inexpensive and makes a most satisfactory dressing. Sir Alexander Ogston, professor of surgery in the University of Aberdeen, who is an advocate of this dressing, estimates that in the next eight months of the war some thirty millions of

combatants will be exposed to the risk of accidents, disease and wounds. On the basis of the statistics of previous wars he concludes that 20 per cent. of the wounded will be killed and 80 per cent. require surgical attention, and that both categories will amount to from 12 to 15 per cent. of the men engaged. Applying these figures, he takes it that of the thirty millions engaged, fifteen will be in the firing line, and of the latter a minimum of 10 per cent. will be wounded and need surgical assistance. Considering the vast quantity of dressings required, he thinks that the common sphagnum moss will fulfil all requirements. It is soft and pliable, and grows in inexhaustible abundance. It was first employed in the Franco-Prussian War of 1870, but disappeared from use as other materials were easily obtainable. It can easily be sterilized or impregnated with a disinfectant.

Precautions Against the Spread of Infantile Paralysis

The severe epidemic of infantile paralysis in New York has attracted considerable attention in this country, and our health authorities are giving anxious consideration to the prevention of the spread of the disease to this country. The medical correspondent of the *Times* has suggested that quarantine regulations should be enforced on passengers from New York and other infected areas, and that thorough disinfection be carried out in all cases of the least doubt. The local government board, however, regards quarantine as obsolete and useless in the case of any acute infectious disease, and considers that attempts to enforce it in the case of poliomyelitis would be impracticable, if not actually mischievous. Every possible precaution is being taken to prevent the disease spreading to this country. The board receives notification every day of the sporadic cases which occur in this country. So far the numbers are not exceptional. During the present year the cases may be reckoned as isolated units in the country as a whole, but thirty-nine cases have occurred in the city of Aberdeen.

Bubonic Plague at Bristol

Three cases of bubonic plague have occurred at Bristol, but the patients are progressing favorably. As no fresh cases have been reported for eleven days, the position is regarded as favorable, the period of incubation being from five to seven days. Careful precautions have been taken for dealing with material liable to prove dangerous and for dealing with rats. One rat which was caught had the disease, and it seems probable that the three cases arose from it.

PARIS LETTER

PARIS, Aug. 10, 1916.

The War

CARDIAC FATIGUE IN SOLDIERS

Although the more serious results of overtaxed heart are exceptional in the present phase of the war, it is by no means rare to find less grave cardiac troubles resulting from fatigue. Dr. Lian has made a report on this subject to the Réunion médicale de la IV-e Armée. This report deals with the conditions found in soldiers who complain of palpitation, dyspnea and precordial pain and oppression while on the march fully accoutred or during gymnastic running exercises or during digging. Unless they stop for a few moments every now and then in the course of hard work, they are apt to suffer from a sudden sensation of weakness with vertigo. The result of physical examination is almost or entirely negative when practiced on the patient lying down; but on change being made to a standing posture, there occurs an immediate acceleration of the pulse to 100 or 120 beats per minute. Under the effect of the slightest effort, the heart beat raises to 140, returning eventually to the original rate, but much more slowly than in a healthy subject. Sometimes a few extrasystoles occur, when the effort of the dyspnea is more marked than usual. These observations correspond to those which have been made on British and American soldiers in the condition which has received the name of "soldier's irritable heart." They may be the result of overwork in a heart suffering from latent myocarditis consecutive to some infectious disease or, in common with the rest of the organism, affected by general depression as the result of a toxification; but the irritable heart of the soldier may also be the result of true cardiac fatigue. In these last cases, it will be found that the patients, since their childhood, experienced difficulty in keeping up with their comrades in playing and running. It is easy to understand that in subjects predisposed by constitutional circulatory debility, cardiac fatigue may easily be produced as a result of the violent efforts, of the

emotions and commotions caused by the state of war. Dr. Lian recommends rest and the administration of strychnin. After several days in bed, the patients may be allowed to get up and help the staff of the ambulance. It is not desirable to prolong absolute rest too much, for these patients have only too much tendency to allow their cardiac troubles to dominate them, as Mackenzie used to say. After several weeks in the ambulance, they can as a rule rejoin their corps, but it is generally necessary to note them for exemption from the harder physical work.

THE EXTRACTION OF INTRACEREBRAL FOREIGN BODIES

At the same meeting, Dr. Tanton read a note on extraction of intracerebral foreign bodies. The presence of projectiles in the brain does not count in the immediate prognosis, as far as life is concerned. On the other hand, it is a point of capital importance in the genesis of septic complications, early, secondary or late. Heretofore, it has been the practice to limit the disinfection of penetrating wounds of the brain to the orifice and the first centimeter or two of the track, abandoning systematically any attempt to search for the foreign body. The practice, however, has been tending for some time toward a more complete primitive operation with extraction of projectiles. The removal of intracerebral foreign bodies should be systematic and immediate, with the two conditions, nevertheless, that it shall be materially possible, and that it shall not itself add a new element of gravity to the condition of the patient. This last restriction applies particularly to foreign bodies of small volume, in size below that of a lentil. In these cases, primitive tolerance is the rule, and definitive tolerance is a probability. Extraction should be performed to avoid septic accidents. Moreover, the utilization by the forceps of the track already dug in the cerebral substance by the projectile avoids the necessity of further disorganization of the cerebral substance. Secondary extraction is reserved for cases in which certain clinical indications give rise to fear of septic accidents. Late extraction is almost invariably a side issue of an intervention whose main object is the evacuation and drainage of an intracerebral abscess. Local or regional anesthesia is essential. Before operating, unless the condition of the wound shows clearly that one has to deal with a tangential track, one should examine the patient by roentgenoscopy to determine whether or not there exists a foreign body. The operation is divided into two parts, but it must be completed at one sitting. The first stage consists of the disinfection of the foreign body with the aid of the screen. The manipulations for the extraction of foreign bodies are by no means always easy or innocuous. After contact has been established with the bullet by means of the forceps, it will sometimes be impossible to seize it. For these reasons, the use of the electromagnet controlled by screen observations is to be preferred, as it suppresses the delicate operation of seizing the projectile, and shortens the manipulations. Drainage of the intracerebral cavity is in all cases indispensable.

INJECTION OF EPINEPHRIN FOR COLLAPSE AFTER ANTI-TYPHOID AND ANTIPARATYPHOID VACCINATION

Dr. Lian has reported to the Réunion médicale de la IV-e Armée two accidents resulting from mixed antityphoid and antiparatyphoid vaccination. There was a general syndrome of an acute suprarenal insufficiency, namely, fever, headache, vomiting, profound depression, vertigo, faintness, very low arterial pressure, the "white line" of Sergeant, and in the graver one, hiccup, epigastric and lumbar pain, oliguria and albuminuria. These troubles disappeared in four days in one patient, and in twelve in another. Although the appearance of this intolerance is difficult to explain in these two patients (there being no contraindication and no marked reaction in other subjects treated with the same vaccine), the clinical character of these manifestations is not surprising. It is a rule to see typhoid and paratyphoid infection accompanied by profound depression and very marked arterial hypotension. One can, therefore, understand that in case of intolerance of injection of sterilized cultures of typhoid and paratyphoid bacilli, there should occur a syndrome of acute suprarenal insufficiency. For these reasons, Lian is inclined to believe that in this exceptional reaction of intolerance to typhoid and antityphoid vaccines, there is a great fall of arterial pressure, and he recommends in such cases, if the pulse is small and easily obliterated, the subcutaneous injection of epinephrin chlorid solution (from two to four injections of 0.5 mg. in twenty-four hours). It is to be hoped that this treatment will give as good results in such cases as in the analogous but more serious and more

frequent accidents accompanying the intravenous injection of salvarsan and neosalvarsan.

Dr. Levy stated that he had observed in a man, aged 35, as the result of an injection of antiparatyphoid vaccine, threatening collapse, a temperature of 40.2 C. (104.4 F.) pulse uncountable and cyanosis of the extremities. In this case, the administration of epinephrin gave the happiest results. Nevertheless, Dr. Levy is of the opinion that to attribute these symptoms entirely to suprarenal insufficiency is going a little too far.

HEMERALOPIA

The frequency of hemeralopia, extremely low in time of peace (1 in 12,000 in France, according to Walter), undergoes an augmentation in wartime. At Verdun, Dr. Bourdier found 8.78 per cent. in ocular examinations during the winter of 1914-1915. At the same period, there occurred in the German army a grave epidemic of this condition. More recently, Vejers has observed it in proportion of 10.2 per cent. This high figure depends on many causes, some peculiar to the present war, which presents conditions different from those which have prevailed, in the past, such, for example, as the higher mean age of the combatants. The hemeralopia in the present war differs from those which have been described in previous wars in two respects: In the first place, there has been no epidemic, and, the revictualing of the army being satisfactory, there have been no crises of hemeralopia due to privation and physiologic misery. By reason of selection, symptomatic hemeralopia is rarely found more in military than in civil life. In most cases it seems related to some vice of refraction and principally to myopia. The condition has been observed among volunteers in the early months of the war, among officers of the regular army and medical officers, and because of these facts and others contained in the reports of the commanding officers and because of the isolated character of each case, it is evident that, in the present war, hemeralopia is a symptom rarely invoked by malingerers. Except for those cases traceable to general diseases (of liver and kidneys) or to ocular fatigue or disease, there seems to be no satisfactory treatment for the condition.

With regard to military employment of patients suffering from hemeralopia, the requirements of the command must be taken into consideration, and it is necessary to point out to commanding officers, whose complaints have been occasionally rather pointed, that the condition appears to be scarcely if at all curable; that those affected by it should be distributed at the front among the day working parties. In examining men for their aptitude for different special services, the experience of the present war has shown that in the future it will be necessary to control not only the visual acuity and the visual field, but also the power of adaptation to varying degrees of illumination. This is especially true of candidates for the posts of aviator and automobilist. Ametropia constitutes an inferiority not only because of the loss of visual acuity but also because of the hemeralopia which accompanies it. ["Hemeralopia" means, strictly, day-blindness, but is also used for night-blindness, more usually termed "nyctalopia." Our correspondent seems to be using it in the latter sense.—Ed.]

THE WAR AND COLD STORAGE MEAT

On all sides a very marked movement has shown itself in favor of the importation of cold storage meat. Recently, the Conseil général du département de la Seine voted an annual subsidy of 100,000 francs (\$19,300) toward the organization of the sale of cold storage meat by the cooperatives. An important question which has been raised is that of the lowering of the price at the port of delivery. It is well known that the great demands of the allied armies have caused a very considerable rise in the price of meat. This increase is particularly felt in France because these prices are quoted in sterling, and, therefore, we have to bear the loss on exchange. It is true that our colonies, Senegal and Madagascar, are already contributing to the revictualing of France in meat, but the quantities imported from these colonies are very small as compared with those which we receive from South America and especially from Uruguay. This is owing to the fact that the frigorific industry was in its infancy in this country at the moment of the outbreak of the war, but it is also due to the insufficiency of the means of transportation between our colonies and France. For more than a year the government and Parliament have been studying the means of endowing France with a frigorific fleet to facilitate the importation of chilled meat. The

problem has been solved in a very satisfactory manner as regards transportation between South America and France. The French navigation companies, as the result of long negotiations, have decided to establish a line of ships for this purpose with a total capacity of about 80,000 tons.

The Treatment of Wounds by Sugar

At one of the recent sittings of the Société de pathologie comparée, Dr. Lhoste drew attention to the fact that he had on several occasions availed himself, in veterinary surgery, of the cicatrizing properties of sugar by powdering the wounds with this substance after washing them with salt water. In a few days, the wound takes on a healthy appearance and heals rapidly. Dr. Grollet expressed the hope that this method of treatment would be tried in human surgery, in which it might hold its place in the treatment of septic wounds. It should be noted that the antiseptic properties of sugar have been long known, and in popular medicine this substance has always been considered to possess cicatrizing properties. At one time sugar alone or associated with naphthalene or iodoform was recommended as an antiseptic. Three years ago, Dr. G. Magnus of Marburg, as the result of experiments made in the service of Professor Koenig, recommended sugar as a practical and inexpensive dressing for wounds.

New Treatment for Chancroid

Dr. Goubeau has worked out a method of treatment for chancroid, based on the Czerny method, of which the following is the technic: The surface of each chancroid is cleaned by means of swabs of cotton soaked in ether, all traces of pus being removed. The clean surface of each chancroid is then swabbed with the following solution (with a small brush or with a rod around which a cotton swab is wrapped):

Sodium arsenate	1 gm.
Alcohol, 95°	50 gm.

The alcohol is evaporated by a current of air, leaving a fine film of sodium arsenate deposited on the surface and in the cavities of the chancroid. One chancroid is now swabbed a second time, the alcohol evaporated, and the chancroid dressed with aseptic gauze. This swabbing is repeated every day. It is rarely necessary to continue the treatment over more than three or four days. At the end of this time the chancroid is transformed into a small healthy red wound with a tendency to rapidly cicatrize. At this stage, one practices every day sponging with ether followed by dusting with iodoform. This method gives far more rapid results than any other. Healing is generally complete at the end of eight or ten days. When a bubo develops, Goubeau injects into the gland 1 c.c. of a 1 per cent. aqueous solution of sodium arsenate. This should be repeated, if necessary, every two days. If pus has already formed, it should be evacuated by a small trochar, and the solution of sodium arsenate injected immediately afterward. The cure of the bubo is obtained with great rapidity.

Marriages

RALSTON IRVING LEWIS, M.D., Glen Ellyn, Ill., to Miss Virginia Folkes, at Western Springs, Ill., about August 30.

CLOYD FRANKS WARTON, M.D., Akron, Ohio, to Miss Florence Elizabeth Mitchell of Ashland Ohio, August 23.

GROVER FRANCIS POWERS, M.D., Baltimore, to Miss Beatrice Farnsworth of South Lincoln, Mass., August 21.

ARTHUR N. FOSTER, M.D., Dorchester, Boston, to Miss Amy M. Wentworth of Brookline, Mass., August 15.

JACOB HENRY MATTHAL, M.D., Newberry, Mich., to Miss Emina Direxa Purcell of Chicago, August 9.

ALEXANDER AARON GOLDSMITH, M.D., to Miss Corinne Rosenfeld, both of Chicago, September 5.

FRANK A. ANDERSON, M.D., Austin, Chicago, to Miss Florence Steiner of Chicago, August 19.

LEO WILLIAMS BORTREE, M.D., to Miss Nellie Cheley, both of Colorado Springs, Colo., August 22.

JOHN THOMAS SAMPLE, M.D., to Miss Gladys M. Humphrey, both of Saginaw, Mich., August 8.

RICHARD ASBURY WALKER, M.D., to Miss Gertrude Hemstead, both of St. Louis, recently.

Deaths

Ernest Watson Cushing, M.D., Boston; College of Physicians and Surgeons in the City of New York, 1871; aged 69; formerly a Fellow of the American Medical Association; a member of the Massachusetts Medical Society, and American Gynecological Society; professor of abdominal surgery and gynecology in Tufts Medical School, Boston, from 1895 to 1913, and thereafter emeritus professor; editor of the *Annals of Gynecology and Pediatrics* from 1887 to 1903; a member of the board of directors of the Robert Bent Brigham Hospital, Boston; a founder of and for more than twenty years surgeon to the Massachusetts Women's Hospital; founder of the Cushing Hospital, Roxbury, Boston; died in that institution, August 27.

Wilbur Boileau Marple, M.D., New York; Starling Medical College, Columbus, Ohio; 1881; aged 60; a Fellow of the American Medical Association; American Ophthalmological Society and New York Academy of Medicine; and a member of the American Therapeutic Association; ophthalmic surgeon of the New York Eye and Ear Infirmary; visiting ophthalmic surgeon to the Almshouse and Workhouse hospitals, Blackwell's Island, and consulting ophthalmic surgeon to the Babies' Hospital, New York; one of the best known ophthalmologists of the United States; died suddenly on the golf links at Kennebunkport, Me., August 30, from cerebral hemorrhage.

Edgar J. Spratling, M.D., Atlanta, Ga.; College of Physicians and Surgeons, Baltimore, 1891; a member of the Medical Association of Georgia; a member of the staff of the State Hospital for Epileptics, Palmer, Mass., from 1898 to 1900, and of the staff of the Matteawan State Hospital, Matteawan, N. Y., from 1904 to 1908; medical director of the Empire Life Insurance Company, Atlanta; captain of "F" Company, Fifth Infantry, Georgia N. G.; was shot and killed by a woman at the state mobilization camp, Macon, Ga., August 25.

Gabriel Archibald Elston, M.D., Corry, Pa.; New York University, New York City, 1880; aged 63; a member of the Medical Society of the State of Pennsylvania; and formerly president of the Erie County Medical Society; local surgeon of the Pennsylvania System; surgeon of the Corry Hospital; for several years a member of the local board of education; while hurrying to make a professional call, died at the Corry Station, from cerebral hemorrhage.

Morris J. Alexander, M.D., Tunica, Miss.; Louisville, Ky., Medical College, 1881; a Fellow of the American Medical Association; formerly president of the Clarksdale and Six Counties Medical Society, and a member of the Mississippi State Board of Health; died at his home, August 20, from the effects of a gunshot wound, self inflicted, it is believed, with suicidal intent while despondent on account of ill health.

William Henry Baker, M.D., Lynn, Mass.; Hahnemann Medical College, Philadelphia, 1880; aged 72; a veteran of the Civil War, in which he served both in the army and navy; a trustee of the State Colony for the Insane, Gardner, and of the Eliza Hahn Home for Aged Couples, Lynn; formerly surgeon-general of the Department of Massachusetts G. A. R.; died at his home, August 22.

Raymond W. Smith, M.D., Springvalley, O.; Louisville (Ky.) Medical College, 1893; aged 53; formerly a Fellow of the American Medical Association; while returning from an automobile trip through Vermont, jumped from his car near Newark, August 18, sustaining a fracture of the base of the skull, from which he died an hour later at the Newark City Hospital.

Ezra Bradway Sharp, M.D., Camden and Pitman Grove, N. J.; University of Maryland, Baltimore, 1888; aged 55; formerly a member of the Medical Society of New Jersey; formerly an instructor at the Polyclinic Hospital, Philadelphia; who recently underwent operation at a hospital in Philadelphia; died at the home of his sister, in Camden, August 24.

George F. Clark, M.D., Winchester, Ky.; Medical College of Ohio, Cincinnati, 1895; aged 47; a specialist on diseases of the eye, ear, nose and throat; formerly a Fellow of the American Medical Association, and a member of the Kentucky State Medical Association; died at his home, August 20, from carcinoma of the throat.

John A. Mitchell, M.D., Newark, Ohio; Homeopathic Hospital College, Cleveland, 1880; aged 63; a Fellow of the American Medical Association; one of the founders of the

Newark City Hospital, and a prominent practitioner of Newark; died suddenly at the Triton Club, fifty miles north of Quebec, August 19.

Charles M. Stoute, M.D., Middletown, Ind.; Physio-Medical College of Indiana, Indianapolis, 1891; aged 52; a member of the Indiana State Medical Association; Past Grand Sacham of the Improved Order of Red Men; was instantly killed by the overturning of his automobile, near Emporium, Ind., August 21.

Nevin Heckart Wireback, M.D., Pittsburgh; Memphis Hospital Medical College, Memphis, Tenn., 1906; a member of the State Medical Association of Texas; and for several years a practitioner of Wharton and Iago, Texas; died at his home, August 20, from nephritis.

Ernest B. C. Hanington, M.D., Victoria, B. C.; McGill University, Montreal, 1875; aged 65; local surgeon for the Canadian Pacific System from 1880 to 1885; once president of the Medical Council of British Columbia; died at his home, May 11, from heart disease.

Willis Gilbert Eaton, M.D., Lowell, Mass.; Harvard Medical School, 1879; aged 62; formerly a Fellow of the American Medical Association; a member of the Massachusetts Medical Society; died at his home, June 26, from coronary sclerosis.

Edward L. Eastbrook, M.D., Minneapolis, Minn.; aged 70; Long Island College Hospital, Brooklyn, 1878; a midshipman in the navy and a lieutenant in the army during the Civil War; died in the Corey Hill Hospital, Brookline, Mass., August 20.

William Francis Waldron, M.D., Brooklyn; New York University, New York, 1898; aged 44; formerly a member of the Medical Society of the State of New York; died at his home in Greenpoint section of Brooklyn, August 24, from nephritis.

John P. Gilligan, M.D., Wilkes Barre, Pa.; Medico-Chirurgical College of Pennsylvania, Philadelphia, 1899; aged 44; a specialist on diseases of the eye, ear, nose and throat; died in Mercy Hospital, Wilkes Barre, August 11.

J. W. Knox, M.D., Lewisport, Ky.; Louisville, Ky., Medical College, 1876; aged 59; a member of the Kentucky State Medical Association; a member of the Kentucky Legislature in 1903; died at his home, May 31, from mastoiditis.

Thomas Powell, M.D., Los Angeles; New York Medical College, New York, 1858; aged 78; founder, president and medical director of the Powell Sanatorium, and author of many monographs; died at his home, August 16.

John Selby Pierce, M.D., Red Key, Ind.; Curtis Physio-Medical Institute, Marion, Ind.; 1894; aged 52; president of the bank of Red Key; died in St. Vincent's Hospital, Indianapolis, August 16; after a surgical operation.

John D. Burch, M.D., Louisville; Kentucky School of Medicine, Louisville, 1876; aged 64; for many years a practitioner of Mead County, Ky.; died at the home of his daughter, in Louisville, August 12.

Edward E. Flagg, M.D., Mooreland, Okla.; (license, Oklahoma, 1908); aged 42; a practitioner since 1904; was instantly killed by the overturning of his automobile, thirty-five miles north of Mooreland, August 17.

William W. McDonald, M.D., Sayre, Okla.; University of Alabama, Mobile, 1889; aged 49; a member of the Oklahoma State Medical Association; died at his home, May 16, from glandular fever.

Augustus Assenheimer, M.D., New York; New York University, New York, 1868; aged 68; a member of the Medical Society of the State of New York; died at Far Rockaway, N. Y., August 24.

Stacey Watkins Boyle, M.D., Middlebury, Vt.; New York Homeopathic Medical College, New York City, 1908; aged 30; died suddenly in Colon, C. Z., August 21.

George B. Wilmuth, M.D., Springdale, Ohio; Eclectic Medical Institute, Cincinnati, 1864; aged 85; died at his home, June 12, from cerebral hemorrhage.

Edward Balch Knight, M.D., Providence, R. I.; Harvard Medical School, 1867; aged 72; died at his home, May 8, from valvular disease of the heart.

Zacharias Worth Neil, M.D., Verona, Tenn.; University of Nashville, Tenn., 1872; aged 68; died at his home, August 4, from heart disease.

J. S. Hill, M.D., Greenville, Tex. (license, years of practice, Texas); aged 62; died at his home, May 21, from nephritis.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

DR. MILES' RESTORATIVE NERVINE

According to the trade package, "Dr. Miles' Restorative Nervine":

"Is Recommended for the Following Ailments: Epilepsy, Hysteria and St. Vitus's Dance. Nervousness, Sleeplessness, Neuralgia, Nervous Dyspepsia, and Nervous Prostration. Headache, Backache, and Palpitation of the Heart due to functional or Nervous Disturbances. This Remedy is also useful as an aid to other treatment for Tobacco and Alcoholic Excess, the Opium and Morphin Habits."

The "Nervine" is but one of several "patent medicines" put out by the Miles Medical Co. of Elkhart, Ind. As is usual in such cases the advertising of each nostrum is used as a supplemental means of exploiting the remainder of the group. For instance, in the treatment of "Backache" we are told that "few remedies have a more beneficial effect in this disorder than the Restorative Nervine." However, if the pain is severe, the sufferer is urged to take, in addition, "Dr. Miles' Anti-Pain Pills" (an acetanilid mixture) and it is further suggested that "Dr. Miles' Liver Pills" will render the "treatment" still more effective. In chorea the "Nervine" is recommended, together with "Dr. Miles' Restorative Tonic" to "enrich the blood" and "Dr. Miles' Liver Pills" to be taken "as needed." For drunkenness and delirium tremens "give large doses of Restorative Nervine" followed by the use of "Dr. Miles' Liver Pills." Those who desire to overcome the alcohol habit are urged to take from six to nine teaspoonfuls daily of the "Restorative Nervine" and the same quantity of "Restorative Tonic," while for any pain "use Dr. Miles' Anti-Pain Pills."

Sufferers from epilepsy are told that "few remedies are more beneficial in the treatment of this disease than the Restorative Nervine." Should the patient not improve as rapidly as expected, the company urges that the case should be reported to it and its "specialist will give advice free of charge as to the best treatment in such exceptional cases." One is led to believe also that the morphin habit may be cured by the combined use of the "Restorative Nervine," "Restorative Tonic," "Dr. Miles' Liver Pills" and "Dr. Miles' Anti-Pain Pills": "If not benefited in a month write for advice." For rheumatism purchase a bottle of "Nervine" to which add 1 ounce of salicylate of soda"; should the case prove obstinate add, in addition, "4 drams wine of colchicum," and, of course, "Dr. Miles' Liver Pills" and the "Anti-Pain Pills."

The public is told that it must not infer—as it might possibly do—that "Dr. Miles' Restorative Remedies" are "cure-alls"; the company expressly insists that they are not. There may be complications in your case that require the special advice of a skilled physician," if then the results obtained from "Restorative Nervine" are not satisfactory write to the Miles Medical Company and, if one is to believe the advertisements, "reliable advice will be furnished you by a competent physician."

Because of the number of inquiries that have been received about Dr. Miles' Restorative Nervine the preparation was analyzed in the Association's laboratory. A condensed statement of the chemists' report follows:



CHEMISTS' REPORT

"Dr. Miles' Restorative Nervine.—This preparation is a brown liquid having a sweetish-saline taste and an odor of a mixture of flavoring oils, among which the oils of lemon and cloves could be detected. Qualitative tests demonstrated the presence of ammonia (combined form), potassium, sodium, a small amount of calcium, a trace of iron, bromine, a small amount of chlorine and sulphate ion, also benzoic acid (combined form), sugar and color resembling caramel. From a consideration of quantitative determinations, which also were made, the following formula would produce a mixture essentially similar to the preparation:

Ammonium bromid (NH ₄ Br).....	1.13 gm.
Potassium bromid (KBr).....	9.87 gm.
Sodium bromid	6.93 gm.
Sodium chlorid	0.24 gm.
Sodium benzoate	0.85 gm.
Sugar	54.0 gm.
Caramel, sufficient to color	
Oil of lemon and cloves to flavor	
Water to make.....	100.00 c.c.

"The average single dose for an adult is given as two teaspoonfuls. Assuming one teaspoonful to be equivalent to 4 c.c. the total bromid content corresponds to 23.4 grains potassium bromid. This dose, given three times a day, makes the daily dose contain in bromids the equivalent of 70 grains of potassium bromid."

From the chemists' report it appears that "Dr. Miles' Restorative Nervine" is another one of the numerous bromid mixtures that have become so common since the passage of the Food and Drugs Act. The bromids, while powerful drugs, are not among those that the federal law requires must be declared, both qualitatively and quantitatively, on the label. The well marked physiologic effects of the bromids impress the public with the potency of any nostrum that contains them.

Every carton of the "Nervine" bears the statement in large letters:

"Dr. Miles' Restorative Nervine contains no alcohol, opium, morphine, heroin, chloral hydrate, chloroform, cocaine, alpha or beta eucaine, cannabis indica or acetanilid."

It fails to mention that the nostrum *does* contain very definite quantities of the depressing bromids which, when taken in ignorance of their presence, may dose the sufferer into physical and mental inactivity. No wonder the "patent medicine" interests fight formula disclosure.

PULVOIDS CALCYLATES

Report of the Council on Pharmacy and Chemistry

Pulvoids Calcyates 5 grains was submitted by the Drug Products Company, Inc., New York, under the following claims as to composition:

"When ingested represents the following chemical formulas: $C_6H_5(OH)_2Ca \cdot 2H_2O + Sr \cdot (C_7H_5O_2)_2 + 2H_2O$."

"Strontium Di-Salicylate 2½ grs. and our especially prepared Salt of Calcium and Acid Salicylic adjusted in such nascent form that these pulvoids upon ingestion will promptly form Calcium Neutral Di-Salicylate 2½ gr."

"A combination of Calcium and Strontium Di-Salicylate, in seemingly true chemical union."

These statements are rather vague, possibly because they are an attempt to mystify. The product, however, may be assumed to be a mixture (not a chemical combination) of calcium salicylate and strontium salicylate. The therapeutic claims made for the preparation are:

"Superior to ordinary salicylates. Can be taken continuously and indefinitely without gastric irritation, insuring maximum efficiency."

"Reports show surprisingly good results, even where the sodium salt fails."

As there is no evidence to show that strontium salicylate, calcium salicylate or a mixture of the two salts has any advantage over sodium salicylate, these claims cannot be accepted. The name and the statement of composition are objectionable in that they do not reveal the identity of the drugs in "Calcyates" and in suggesting that this preparation possesses radical advantages over salicylates in other forms.

The Drug Products Company was told that the facts just mentioned rendered "Pulvoids Calcyates" ineligible for New and Nonofficial Remedies. The company in its reply objected to the Council's conclusions, and in support of its position

1. The details of analysis will appear in the Reports of the Chemical Laboratory of the American Medical Association for 1916.

submitted testimonials from a number of physicians. The reply of the company embodied no facts or arguments which had not been considered by the Council's referee, and the testimonials from physicians contained no evidence to show that the combination has any real advantage over sodium salicylate.

The Council therefore declared "Pulvoids Calcylates" ineligible for New and Nonofficial Remedies for the following reasons: Unwarranted therapeutic claims are made for the mixture (Rule 6); the name does not describe the composition (Rule 8), and the mixture is an unessential modification of an established remedy (sodium salicylate) (Rule 10).

SECRETOGEN

Report of the Council on Pharmacy and Chemistry

The Council has adopted the following report and authorized its publication.

W. A. PUCKNER, Secretary.

At the request of the Council, Prof. A. J. Carlson of the University of Chicago performed certain experiments on secretin and commercial products (Secretogen and Duodenin), said to contain secretin. He found no secretin present in the commercial preparations examined. His results further¹ showed that secretin itself is inert when given by mouth; this the Council has previously held. The Council endorsed Professor Carlson's findings.²

The Council has recently received from the manufacturers of Secretogen (the G. W. Carnrick Company), a letter practically acknowledging the correctness of Carlson's findings in these words:

"Professor Carlson seems to have quite well established that the so-called secretin preparations do not contain secretin to any appreciable extent, and that they are inert in laboratory experiments on normal animals."

The letter,³ continuing, sets forth the company's claims for Secretogen on a wholly new and altogether improbable basis. Since the new arguments presented on behalf of Secretogen are merely speculative, the Council reaffirmed its previous action, declaring this preparation ineligible for New and Nonofficial Remedies.

Correspondence

Aromatic Spirits of Ammonia

To the Editor:—In the controversy regarding the efficacy of aromatic spirits of ammonia (THE JOURNAL, July 1, July 15 and August 12), each side is only partly right. The reason that ammonia does not dissipate shock or other forms of depression is not specifically that it is destroyed before it can reach the general circulation, as Dr. Wood says, but that drugs have no influence over depressed states. This principle is not generally expounded.

Aromatic spirits of ammonia is, however, not devoid of usefulness. A whiff of it, by virtue of its physical properties, resuscitates the depressed patient for a moment, at least, which is more than we get from digitalis and strychnin. The manner and intensity of this resuscitation may be of service in giving us an insight into the nature and extent of the depression. It is therefore deserving a place even in a restricted pharmacopeia, not as a life saver but as a useful agent.

Can we get the same results from whisky alone? Yes, but not in alcoholics. An aqueous solution of ammonia in sufficient concentration is inconvenient to use, and it cannot be fortified by aromatic oils as an alcoholic solution can. It

is not a perfect preparation nor an ideal one; it is even a chemically incompatible solution; but it is the best pharmacy and pharmacology have as yet devised for the emergency outfit.

Reverting to the amusing incident of Dr. Wood and the country doctor, if the latter believed that a dose of aromatic spirits of ammonia rendered his patient safe he was surely in error, but not more than Dr. Wood, who attempted to abort shock by digitalis and strychnin.

Is it not logical to assume that aromatic spirits of ammonia in shock, mustard baths in collapse, and flagellation in opium poisoning, by awakening large areas of tissues toward autonomic augmented metabolism, are more rational treatment than hypodermic injections of nervines which seem to work as if lifting weights by short leverage?

As to who is to blame, the eminent authors who preserve superstitions, as Dr. Hotard contends, or the rank and file who follow blindly, as Dr. Wood insists, the answer must be, both! It is inexcusable, however, for an intelligent person to allow himself to be led blindly by eminent authorities to use such absurdities as decolorized tincture of iodine, N. F., or to believe that the "ethers" developed in tincture of iron make it a specific in erysipelas and nephritis.

J. LANSKI, M.D., Chicago.

The Pasteurization of Milk

To the Editor:—With reference to the editorial on this subject in THE JOURNAL, Aug. 26, 1916, it is not correct to say that "the only valid objections to pasteurization, if indeed they are sufficiently tenable to be serious, come from the pediatricians who look with fear on a possible damage to the milk in point of digestibility or liability to the production of infantile scurvy."

With conditions as they are now or as they promise to be in any visible future, it has come to be universally admitted, so far as I know, by any one qualified to hold an opinion, that market milk should be pasteurized, by compulsion and under municipal supervision. Ask the milk-man; he knows, and, if he is frank, he will tell you how much milk he has had to refuse, this year in particular, as being absolutely sour and incapable of being rendered salable even by pasteurization. If this is true, then how much more comes just short of that point, containing from one-half to one billion bacteria to the cubic centimeter and having undergone butyric fermentation a little short of the obvious degree.

Just as surely as oil and water will not mix, just so sure is it that, if milk is to be rendered "absolutely safe"—save the mark—by pasteurization, dairy hygiene cannot be secured and enforced to the same degree as though it were to be distributed in the natural state.

While he has the highest interest in securing a milk free from bacterial contamination, the pediatrician is likewise very gravely concerned with the biochemical changes which may have occurred in the milk as the result of bacterial activity which may have ceased, as well as and more than—at the present time—those caused by pasteurization.

In a word, the pediatrician is most anxious to have the milk delivered in the nursery, or the milk laboratory, just as nearly as possible in the natural state in which it left the cow's udder, and then he can adapt it, lacticize it deliberately, if he choose, instead of casually through the bacteria accidentally present, pasteurize it, if so his judgment dictate: in fact, put it through any changes he wishes.

Finally, it is to be constantly emphasized that at present there is, probably long will be, and should be a special grade of milk, clinical milk. Dr. Coit is fond of calling it, which deserves and should receive radically different management from the ordinary supply.

WALTER D. LUDLUM, M.D., Brooklyn.

President of the American Association of Medical Milk Commissions.

Healthgram.—He who has health has hope, and he who has hope has everything.—Proverb.

1. Carlson, A. J.; Lebensohn, J. E., and Pearlman, S. J.: Has Secretin a Therapeutic Value? THE JOURNAL A. M. A., Jan. 15, 1916, p. 178.

2. So-Called Secretin Preparations, THE JOURNAL A. M. A., Jan. 15, 1916, p. 208.

3. The letter is too long for publication here. It will appear, together with the Council's comment, in the Annual Reports of the Council. Reprints of it have been prepared and will be sent to any one who will send a two-cent stamp for it.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SUBDURAL AND INTRAVENTRICULAR INJECTIONS

To the Editor:—Please give a detailed statement for making (1) subdural and (2) intraventricular injections.

HERBERT CALDWELL, M.D., Corpus Christi, Texas.

ANSWER.—1. Subdural or intradural injection usually refers to injection under the dura of the spinal canal. The technic is as follows: "The syringe employed for the injection is accurately graduated in drops. The patient is placed in a position for lumbar puncture, either sitting or lying, according to the choice of the operator. The puncture is then made with the needle, the end of which fits the graduated syringe. After a few drops of the spinal fluid have flowed out of the cannula, or a greater quantity if a diagnostic puncture is desired at this time, the syringe is fitted into the needle, and the fluid is allowed to run back into the syringe barrel, thus mixing with the amount of the drug in the barrel. The mixed spinal fluid and drug are then gently forced into the canal, and slight suction is made on the syringe to withdraw a second amount of fluid, which washes out the needle. This is then reintroduced, the needle is quickly withdrawn, and the patient placed in the Trendelenburg position, in which position he is allowed to remain for at least one hour."—Kolmer, John A.: *Infection, Immunity and Specific Therapy*. W. B. Saunders Company, Philadelphia, 1915, p. 806. See also Wile, Udo J.: *The Technic of the Intradural Injections of Neosalvarsan in Syphilis of the Nervous System*, THE JOURNAL, April 11, 1914, p. 1166.

Subdural injections are also made under the dura covering the cerebrum. From 10 to 20 c.c. of cerebrospinal fluid are usually first removed by lumbar puncture. The technic is similar to that of intraventricular injection, save that a shorter needle is used. (See Wardner, Drew M.: *Am. Jour. Insanity*, 1915, lxxi, 459.)

2. The following is a brief outline of intraventricular injection: "Under ether anesthesia, a small skin flap, slightly larger than the trephine used, is made a little in front of the regma and 2.5 cm. from the sagittal sinus. A button of bone 1.5 cm. in diameter is removed and the dura incised. The slender cannula with blunt point is introduced at a point free from underlying cortical vessels, and passed downward and a little backward into the lateral ventricle. The head of the table is lowered, and from 10 to 20 c.c. of fluid allowed to escape. The head of the table is now raised, and a funnel containing the serum is attached to the cannula by short rubber tubing. The fluid enters entirely by gravity and is very slowly introduced. The cannula is then withdrawn and the scalp wound sutured. In the second and subsequent injections the scalp over the trephine opening is infiltrated with novocain, and the ventricular injection is carried out as described above. As the brain is not sensitive, a general anesthetic is not required in second injections."—Hammond, M., and Sharpe, Norman: *The Treatment of Paresis by Injections of Neosalvarsan into the Lateral Ventricle*, THE JOURNAL, Dec. 18, 1915, p. 2147.

The substances usually injected by these methods are neosalvarsan and salvarsanized, antimeningitis, normal and conalescent serums. The operations are not without danger to the patients, and the results are uncertain. (See Riggs, C. E.: *Salvarsanized Serum in Syphilitic Nervous Disease, Some Clinical Facts: the Method, the Drug, the Results*, THE JOURNAL, Sept. 4, 1915, p. 841).

SOLUTIONS OF ALUMINUM ACETATE

To the Editor:—I wish some information on aluminum acetate and acetate. In THE JOURNAL, July 24, 1915, p. 291, is an article by Ravogli on the treatment of burns by aluminum subacetate, and in discussion of the paper the acetate is mentioned as the same as the acetate. Ravogli uses the subacetate in a 2 to 5 per cent. solution, when I attempted to make a 2 per cent. solution of the acetate, I found that it was practically insoluble in water. 1. Are the acetate and acetate the same? 2. What is their solubility? 3. What is their use in burns?

A. W. PATTERSON, M.D., Fonda, Iowa.

ANSWER.—Some confusion may easily arise as to the difference between the two aluminum solutions. The National Formulary, Third Edition, described only the solution of aluminum acetate—a basic aluminum acetate solution. In

the new National Formulary (Fourth Edition), however, the same solution is now described under the heading of "solution of aluminum subacetate," while there has been added a description of another and different solution, but labeled "solution of aluminum acetate." The latter solution is commonly called Burow's solution. "Solution of aluminum acetate," N. F. IV, prescribed as liquor alumini acetatis, contains about 5 gm. of neutral aluminum acetate $[Al(C_2H_3O_2)_3]$ per hundred c.c. The "solution of aluminum subacetate," N. F. IV, prescribed as liquor alumini subacetatis, contains about 7.8 per cent. of basic aluminum acetate $[Al(OH)(C_2H_3O_2)_2]$ per hundred c.c.

Pure aluminum acetate is quite soluble in water. However, the solid decomposes, losing acetic acid, and forming a complex basic mixture. This is not soluble, except on the addition of acetic acid. Hence, it is imperative that in preparing aluminum acetate solutions, methods such as are described in the National Formulary IV should be followed.

A dilute solution of aluminum acetate (or subacetate) is stated to be very efficacious in the treatment of Roentgen-ray burns, sunburn, etc. It is included in "Useful Drugs." It appears to be practically immaterial whether the normal or basic aluminum acetate is employed, except so far as concerns dosage. In case of the "solution of aluminum acetate," one part is used to ten parts water. The "solution aluminum subacetate" is used one part to fifteen parts water. It is probable that Ravogli referred to the solution which is now described as aluminum subacetate.

OXIDATION IN THE BODY AND DIET

To the Editor:—In THE JOURNAL, July 22, 1916, p. 249, a writer on the treatment of epilepsy, in speaking of the unquestioned benefits of life in camp or on the farm as it is exhibited in modern epileptic colonies, says: "There can be no doubt that the benefit is largely due to increased oxidation of waste and toxic substances," etc. Again, in discussing the regimen of patients, he remarks: "The diet should be so modified that in this organism, already toxic, as little strain as possible be placed on the liver, the thyroid and other defensive glands. For this reason the red meats are to be partaken of sparingly. The carbohydrates are also to be diminished. To take the latter in large amounts is to hamper the oxidation of the tissues, an oxidation which for the obvious reason of the autotoxicity of the patient should be maintained at as high a level as possible. In the diet, emphasis should be laid on the white meats, the succulent vegetables and milk; eggs also may be permitted."

Am I correct in assuming that the quotations here given present views which can scarcely be accepted as being in accord with the best current teachings of the physiology of nutrition? Certainly the vague generalizations about oxidation and the admonitions respecting the unlike dietary virtues of red and white meats are not in harmony with what one reads from time to time in your editorial columns.

A. T. N.

ANSWER.—In a recent editorial (Relation of Oxidation to Metabolism, Aug. 19, 1916, p. 622), THE JOURNAL commented on the inaccurate conceptions of the nature of oxidative processes in the organism still held by some physicians. There are few instances, if any—aside from cases of interference with oxidation locally in special organs or tissues—where the supply of oxygen is inadequate under ordinary atmospheric conditions. Oxygen is available in abundance; its use is determined by the requirement of the organism. In most instances so-called defective oxidation in the body is a misnomer.

Why red meats, composed of proteins and extractives and constituting muscles in one part of the animal body, should be forbidden while white meats, containing the same proteins and extractives in almost identical concentration in another part of the same animal body, are recommended for liberal use is never explained by those who formulate such prescriptions of diet. Aside from slight differences of texture the two forms of muscle tissue are essentially identical—at any rate for dietary purposes. If it is intended to avoid the undue ingestion of purins then all meats should be proscribed as well as fish, fowl and shell foods. If it is intended to reduce the protein intake, then it must be noted that eggs are quite as rich in albuminous constituents as are many forms of flesh. The red meat vs. white meat distinction ought to be abandoned except where it is desired to emphasize differences in palatability or culinary advantages represented by certain muscles such as the "white" meat of certain birds.

Finally, the statement that carbohydrates "hamper" oxidation in the tissues in the ordinary individual is not supported by the modern physiology of metabolism. So long as dietary advice is so largely based on empiricism, as it unquestionably still is, it seems advisable to avoid all attempts at explanations which will not stand the test of up-to-date investigations.

WRITER'S CRAMP

To the Editor:—I have a relative who has been troubled with writer's cramp for the past two years. Please let me know, personally or through THE JOURNAL, the most approved method of treating this condition.

H. B. M., M.D., Los Angeles.

ANSWER.—The treatment of this condition is usually difficult and often unsatisfactory, even though the most approved methods have been faithfully employed. The general physical condition of the individual has some bearing on the condition, particularly if the patient is living a sedentary life. Regular general exercise, good nutrition and free elimination are at times helpful. The mental attitude of the patient is an important factor. Early cases may at times be arrested by teaching the patient to make the movements of writing with the entire forearm rather than with the fingers and wrist alone. It is also important to hold the pen loosely. Holding the pen between the first and second fingers is sometimes helpful. Placing the writing surface at an acute angle to the front of the desk or table is important. Absolute rest of the arm and hand for several months in a plaster cast is probably as efficient as any well known form of treatment. The cast should be removed from time to time, the arm cleansed with alcohol and dried and the cast replaced. The use of the hand too early may be the cause of failure. When the cast is finally removed, gradual exercise and massage should be employed for at least two weeks before the patient attempts to write. The effect of electricity is mainly psychic and at times harmful. Drugs used internally are of course of no value unless there is present some definite general disease which is amenable to drug medication.

SAFETY OF WATER SUPPLY FROM MISSISSIPPI RIVER

To the Editor:—I am anxious to know something of the contents of Mississippi River water. Will you be kind enough to tell me where I can secure an analysis of it. If this has been made at some other point, I would be very glad to get this analysis. For domestic purposes and as a drinking water, especially, I wish to know how it ranks, with regard to bacteria present. I refer to the untreated river water. Our town has for years been furnished with unfiltered river water in the mains, and it is frequently used without treatment, as filtering, chemicals or boiling. What is your opinion and what is the health authorities' opinion of this kind of water as compared to surface well water, cistern water, etc.? Are any towns or villages supplied with the Mississippi River water untreated? How many use the river water?

CITY HEALTH OFFICER, Arkansas.

ANSWER.—Analyses of Mississippi River water have been made at St. Louis, New Orleans and other points. Application to the water commissioners in the cities named will undoubtedly bring useful information. It must be remembered, however, that such analyses made at other points do not necessarily give the sort of evidence that is desired. It may well be that sewage enters a short distance above an intake and, as is well known, it is this fresh, nearby pollution that is most dangerous. Conditions on the watershed above the intake may afford a better clue to the actual danger than any analyses that have been made elsewhere. It is a pretty safe rule in general that a surface water, such as the Mississippi, unless specially protected against contamination, should not be used without purification. The chlorin treatment is so effective and so inexpensive that it can be advantageously used, pending the adoption of a more permanent method.

THE JOURNAL'S NEUTRALITY AND FOREIGN CORRESPONDENCE

To the Editor:—As a subscriber of many years' standing I take the privilege of asking a few questions. I notice with astonishment that since the war began you publish war medical news only from Paris and London. While I read this, I am only moderately interested in Paris and London. Before the war you published medical news from Vienna and Berlin also. I would appreciate it greatly if you could give me a satisfactory explanation of this fact, because if it is done for partisan reasons, I would cancel my contract immediately. If I want to read a political journal, I have the daily papers. I am not speaking for myself alone, but this is the opinion of many other physicians with whom I have spoken about this phenomenon.

ALOIS JOKL, M.D., Lackawanna, N. Y.

ANSWER.—The reply to this letter will be found in an editorial headed "Foreign Correspondence" (THE JOURNAL, Aug. 12, 1916, p. 517). In the meantime, we shall be very glad if our present correspondent will enlighten us as to how we can secure the letters from our regular correspondents at Berlin and Vienna, as well as medical journals from Germany and Austria.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

CALIFORNIA: Los Angeles, Oct. 3. Sec., Dr. Charles B. Pinkham, Room 527 Forum Bldg., Sacramento.
COLORADO: Denver, Oct. 3. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.
GEORGIA: Atlanta, Oct. 10-12. Sec., Dr. C. T. Nolan, Marietta.
IDAHO: Wallace, Oct. 3. Sec., Dr. Charles A. Dettman, Burke.
ILLINOIS: Chicago, Oct. 10-12. Sec., Dr. C. St. Clair Drake, Springfield.
IOWA: Des Moines, Oct. 17-19. Sec., Dr. Guilford H. Sumner, State House, Des Moines.
KANSAS: Topeka, Oct. 10-12. Sec., Dr. H. A. Dykes, Lebanon.
MASSACHUSETTS: Boston, Sept. 12-14. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.
MICHIGAN: Lansing, Oct. 10-12. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.
MINNESOTA: Minneapolis, Oct. 3-6. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.
MISSOURI: Kansas City, Sept. 18-20. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.
MONTANA: Helena, Oct. 3. Sec., Dr. William C. Riddell, Helena.
NEW YORK: Albany, Buffalo, New York and Syracuse, Sept., 19-22. Mr. Harlan H. Horner, Chief Examinations Division, The University of the State of New York, State Department of Education, Albany.
PORTO RICO: San Juan, Oct. 3. Sec., Dr. Quevedo Baez, San Juan.

Oklahoma April Report

Dr. Ralph V. Smith, secretary of the Oklahoma State Board of Medical Examiners, reports the oral and written examination held at Oklahoma City, April 11-12, 1916. The total number of subjects examined in was 11; total number of questions asked, 100; percentage required to pass, 70. The total number of candidates examined was 9, of whom 6 passed and 3 failed. Fifteen candidates were licensed through reciprocity. Six candidates were granted reregistration licenses. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Georgetown University	(1891)	81
Illinois Medical College	(1910)	70 *
Medical College of Ohio	(1907)	84
Hahnemann Medical College and Hosp., Philadelphia	(1915)	91
University of Tennessee	(1915)	76
Texas Christian University	(1912)	73

College	FAILED	Year Grad.	Per Cent.
Meharry Medical College	(1914)	64
University of Tennessee	(1915)	80 ‡
College of Physicians and Surgeons, Dallas	(1911)	61 †

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas	(1912)	Arkansas
Atlanta College of Physicians and Surgeons	(1910)	Georgia
Georgia College of Eclectic Medicine and Surgery	(1910)	Arkansas
Hospital College of Medicine, Louisville	(1905)	Kentucky
Tulane University of Louisiana	(1901)	Mississippi
Baltimore Medical College	(1907)	Virginia
Boston University	(1900)	New Jersey
University of Michigan Medical School	(1901)	Michigan
Washington University	(1912)	Missouri
University of Nebraska	(1910)	Nebraska
Jefferson Medical College	(1891)	New Mexico
Meharry Medical College	(1914)	Tennessee
Memphis Hospital Medical College	(1912)	Mississippi
University of Tennessee	(1913, 2)	Mississippi, Tennessee

* Graduation not verified.
† Official records do not give this candidate as a graduate.
‡ Fell below the required average in one subject.

The following questions were asked:

PHYSICAL DIAGNOSIS
1. What is physical diagnosis? 2. Name some of the methods and technic of physical examinations. 3. Give clinical value of sphygmocardiography. 4. Describe technic of paracentesis. 5. What are the physical signs of a chest cavity? 6. Name the normal landmarks of the thorax. 7. Name three pathologic types of the thorax. 8. Diagnose spasmodic asthma. 9. Name the physical signs of pulmonary edema. 10. Diagnose all the stages of lobar pneumonia.

OBSTETRICS AND GYNECOLOGY
1. What is your method of delivery of a shoulder presentation; a face. 2. What is puerperal eclampsia? Give treatment. 3. Give pathology and symptoms of ectopic pregnancy. 4. What are the indications for cesarean section? What is Porro's operation? 5. What is placenta praevia? Give in full your treatment. 6. What is hydatidiform mole? Give treatment and caution in regard to same. 7. Give differential diagnosis of appendicitis, pyosalpingitis and cholecystitis. 8. Give diagnosis of carcinoma of uterus. Treatment. 9. Give causes and treatment

of leukorrhea. 10. What are vicarious menstruation, amenorrhea, dysmenorrhea, retroflexion, cystocele and rectocele?

PHYSIOLOGY

1. What is the mode of production of heat in the body? 2. State the function of the retina. 3. What do you understand by blood pressure? 4. How is the sensation of pain produced? 5. Describe the physiology of rectal feeding. 6. How are the vocal sounds produced? 7. What are the functions of the pancreas? 8. Describe the pons Varolii. 9. Describe the normal heart sounds. 10. Name the solids in the urine, and state the approximate amount of each voided daily by an adult.

BACTERIOLOGY

1. Give method of staining cover-glass preparations. 2. Define leukomains and ptomains. 3. Differentiate between *Bacillus influenzae* and pneumococcus. 4. Name and describe the malarial parasites. How does the blood picture differ in the quartan and estivo-autumnal parasites? 5. How would you grow the gonococcus? Give pathogenicity of the gonococcus.

PATHOLOGY

1. Give pathology of pleuritis. 2. What is the pathology of acute follicular tonsillitis? 3. What is the pathology of appendicitis? 4. Give pathology of puerperal metritis. 5. What is the influence of the nervous system on the process of inflammation?

MEDICAL JURISPRUDENCE AND TOXICOLOGY

1. In case of hanging what circumstantial evidence would you look for to determine whether the act was homicidal or suicidal? 2. Where a question arises as to personal identity, in what manner or by what test would you determine it? 3. What is malpractice? Civil and criminal? 4. When is it legally permitted to produce abortion? 5. What is infanticide? 6. Give the best antidote for arsenical poisoning. Mineral acids. 7. In what manner does death ensue in poisoning by hydrocyanic acid? By aconite? Morphin? Atropin? Strychnin? 8. Give symptoms of strychnin poisoning. Period when fatal. Fatal quantity. 9. Give symptoms of phenol poisoning. 10. Differentiate between opium poisoning and acute alcoholism.

ANATOMY AND HISTOLOGY

1. Bound the popliteal space, and name its contents. 2. Name, in detail, the structures involved in a cross-section of the thigh at the middle of lower third. 3. Discuss and classify articulations: (a) hip, (b) knee, (c) ankle. 4. Discuss the inguinal canal: boundaries, contents and surgical significance. 5. Name chambers, valves and membranes of heart. 6. Locate and describe Peyer's glands. In what disease are they involved? 7. Name the twelve pairs of cranial nerves. 8. Discuss briefly the encephalon and its membranes. 9. Give origin, course and two principal branches of the great sciatic nerve. 10. How many bones in the skeleton? Classify them and name bones of the skull. 11. Give origin and branches of the internal iliac artery. 12. Discuss the external markings and reflections of the pleura. 13. Give nerve and blood supply of uterus, spleen and tonsil. 14. Give lobes, vessels and nerves of the liver. 15. Discuss the histology of the mammary gland. 16. Discuss the histology of the stomach. Answer Questions 15 or 16 and any other nine.

SURGERY

1. Give definition of meningocele; of encephalocele. Give treatment of meningocele. 2. Give treatment for acute septic arthritis of knee joint. 3. Give differential diagnosis between tuberculous infection of knee and osteomyelitis of upper end of tibia. 4. Give etiology of aneurysm in general and give symptom and treatment of aneurysm of popliteal artery. 5. At what point can vertebral artery be ligated most easily? 6. How would you control hemorrhage of deep palmar arch, the result of punctured wounds? 7. Give treatment for fracture of nasal bones; for fracture of lower jaw. 8. Give symptoms and treatment of secondary syphilis. 9. Describe cataract and give treatment. 10. Name four general anesthetics. What are the contraindications to use of chloroform and ether?

CHEMISTRY

1. Give the antidote for iodine and formaldehyd. 2. How does potassium permanganate act as a disinfectant? 3. What is the law of chemical combination or constancy of composition? 4. What element is constantly present in coloring matter of the blood, and what four elements enter into formation of all organic bodies? 5. What is an element? Name the lightest and the heaviest element. 6. Name the varieties of urinary calculi. 7. If on the addition of barium chlorid to a specimen of urine, there appears an intense milky cloud, what does this indicate? What kind of diet would tend to diminish this condition? 8. What is the chemical name and formula for iodoform? 9. Give the specific gravity of abnormal urine and the abnormal constituents in urine. 10. Complete the equation: $C_2H_5Cl + KOH =$ What.

HOMEOPATHIC PRACTICE

1. Give treatments for facial erysipelas. 2. Following typhoid, where there was emaciation and prostration and many large boils, give treatment. 3. What is stomatitis? Name forms and outline treatment. Define ophthalmia neonatorum, cause and treatment. 5. In case of chronic constipation what would call for lycopodium? 9. Define scarlet fever and give treatment. 10. Give systems in malaria calling for quinine and china.

HYGIENE

1. How is malaria transmitted? How may it be prevented? 2. State the best method of disposing and disinfecting sputum. 3. Describe the general methods of purifying drinking water. 4. What hygienic precautions are necessary to produce a healthy sleep? 5. Describe the agency of the ptomains in inducing diseases and the disorders produced by them.

MATERIA MEDICA

1. Compare the action of morphin and atropin. 2. Give the physiologic action of veratrum and aconite, and name the diseases in which they are useful and state dosage. 3. What are the physiologic action of and medicinal uses of preparations of belladonna? 4. What is the official name of calomel? What drugs are incompatible with it? 5. Give the action, physiologic action and therapeutic action of oleum ricini.

PRACTICE

1. Describe the characteristics and significance of the several kinds of arterial pulse. 2. Give the physical signs of pleuritic effusion. 3. Differentiate between empyema and pulmonary abscess. 4. How would you diagnose pneumonia? 5. Differentiate between bronchitis and croupous pneumonia.

Book Notices

MODERN MEDICINE AND SOME MODERN REMEDIES. Practical Notes for the General Practitioner. By Thomas Bodley Scott, with a Preface by Sir Lauder Brunton, Bart., F.R.S. Cloth. Price, \$1.50 net. Pp. 160. New York: Paul B. Hoeber, 1916.

In the preface, Sir Lauder Brunton says of those who read this little volume:

Few, if any, will rise from its perusal without knowing something of which they were previously ignorant; and if other men qualified like Dr. Scott will follow the example he has set, and write down the results of their experience, the medical profession will gain greatly in knowledge, and patients will benefit greatly by improvement in treatment.

The book consists of four essays, on: (1) disorders of the heart, (2) arteriosclerosis, (3) therapeutic speculations and doubts, and (4) chronic bronchitis and bronchial asthma. These essays are essentially clinical. The author writes from a rich store of experience acquired by long, careful and unprejudiced observations. The matter bearing on the practical application of organic therapy is distinctly valuable. This is particularly true of the discussion of the various indications for thyroid gland medication. There is a tendency to be rather dogmatic at times in stating things which are still unproved, such as on page 27, where it is intimated that extract of the suprarenals is effective when given by mouth. The emphasis on the value of combination of drugs, as "iron, arsenic and strychnine, particularly in combination," is misleading. Names of manufacturing chemists and semiproprietary preparations are frequently mentioned (page 137). To recommend swimming, even in great moderation, for the treatment of the patient with a weak dilated heart is rather radical. The physiology is not always clear, and at times it is speculative. Yet despite these minor criticisms, this little book will help to keep alive the art of medicine. The author is surely an optimist in therapeutics when he says:

If in therapeutics we lose faith and hope, we become in a measure paralyzed, and, what is perhaps worse, we develop an underlying feeling that we are sailing under false colors and are not giving a quid pro quo, or as Goodhart puts it, a *quo pro quid*. Today surely there is no room for faithlessness nor for hopelessness.

POLISH FOR USE IN THE CLINIC. By Rev. Francis Bimanski, Chaplain Cook County Hospital, Chicago. Paper. Pp. 16.

This is a short collection of questions most commonly used in obtaining the history from a Polish patient in a charity hospital. The questions are brief and made up largely of catchwords. Pronunciation is made quite plain. The booklet makes no pretense of being complete. To the physician who wishes to pick up enough Polish to help him in getting the history from one of that nationality who cannot talk English, the book will be found useful. We judge from its title that it is for free distribution by its author.

ENGLISH-ITALIAN PHRASE BOOK FOR SOCIAL WORKERS. Physicians' Supplement. By Edith Waller. Paper. Pp. 19. Price, 25 cents. Morristown, N. J.: The Author.

ENGLISH-ITALIAN PHRASE BOOK FOR SOCIAL WORKERS. A Phrase Book for the Use of Social Workers, Teachers, Physicians and Nurses. By Edith Waller. Paper. Price, 75 cents. Pp. 178. Morristown, N. J.: The Author.

This little book is an attempt to supply the social service worker, nurse or physician with some of the words, phrases and common colloquial expressions that he will be most likely to want to employ in his daily visits with the Italian working people. By consulting the index at the back of the book, it should be possible for the social worker to turn without difficulty from mustard plasters to fresh air; from the ever shoeless truant to pure milk for the baby, as the insistent moment demands. The grammatical ground covered is very limited, being chiefly the concrete application of a few common rules. These extracts from the introduction show the scope of the work. The author has been successful in her attempt, unusually successful, we think. The sentences are chosen with rare good judgment, the language employed is simple, and the style direct and colloquial. Difficulties in mutual understanding on the part of the Italian immigrant unfamiliar with English, and of the American worker trying to handle a foreign language as a working tool, are avoided

so far as this is possible. The book is distinctly above the grade of the conversation tables so frequently seen at the back of travelers' guides and pocket dictionaries. The physician's supplement, while not quite up to the level of the larger book, is also valuable. Both can be heartily commended.

HOSPITAL LABORATORY METHODS FOR STUDENTS, TECHNICIANS AND CLINICIANS. By Frank A. McJunkin, A.M., M.D., Professor of Pathology, Marquette University School of Medicine, Milwaukee. Cloth. Price, \$1.25 net. Pp. 139, with 94 illustrations. Philadelphia: P. Blakiston's Son & Co., 1916.

"The purpose of this book is to place in the hands of the hospital laboratory worker and the technician of other small laboratories directions for the tests that are commonly required on specimens sent to such laboratories." The work embraces sections on the urine, gastric juice, feces, sputum, blood and bacteriologic, surgical and necropsy specimens. The manner in which the material should be handled before and after it reaches the laboratory is indicated in a specific way, and the simplest procedure by which the object of the analysis may be obtained with the greatest certainty is outlined in a detailed manner. No attempt has been made to interpret the laboratory findings, as this is rather the function of the clinician than of the laboratory worker. While this little book lays no claim to completeness, it is, nevertheless, sufficiently wide in scope to satisfy the needs of the general and hospital worker. Whenever there is necessity for more elaborate methods of analysis, larger works must be consulted. The choice of methods is excellent; the style of the text is clear and concise, and the illustrations are adequate. The book is recommended to all who may desire a short but adequate presentation of the laboratory methods requisite for the daily routine of practice.

HUMAN PHYSIOLOGY. A Text-Book for High Schools and Colleges. By Percy Goldthwait Stiles, Assistant Professor of Physiology in Harvard University. Cloth. Price, \$1.50 net. Pp. 405, with illustrations. Philadelphia: W. B. Saunders Company, 1916.

This little volume, in the words of the author, aims to present concisely the accepted facts in physiology, with only a limited description of the experiments on which these are based, and with little or no reference to unsettled questions. A book written with this aim is necessarily elementary, too elementary for a college and medical school textbook, but on the whole acceptable for the high school. The book is well written, but the illustrations are not numerous enough, and some of those given are poorly executed.

Miscellany

Endorsement of Health Insurance by Health Authorities

At the conference of the United States Public Health Service with the health authorities of the several states and territories, held in Washington, May 13 and 15, at which twenty-three states and territories were represented, a resolution was unanimously passed adopting the report of the committee on health insurance favoring the establishment of government systems of health insurance.

Discussing the relation of health insurance to the medical profession and to established health agencies, the report of the committee calls attention to the fact that under such legislation as has been adopted in other countries, the local administration of health insurance funds is usually left to local boards created for the purpose, or to trade unions, industrial establishments or societies which have been approved by the central governing board or commission. The German act left the administration of the medical benefits to these local bodies, and this resulted at times in restricting the insured persons' choice of physicians to a limited number of contract doctors employed by these local agencies and thus has caused so much friction as to result in "doctors' strikes." The English act, in the effort to remedy this defect, permitted free choice of physicians regis-

tered on the panels of the funds, but did not place proper restrictions on the signing of certificates admitting insured persons to benefits. The result was that the physicians were too complaisant in signing certificates, and the funds were subjected to improper drain.

In the bills for health insurance that have been introduced in the several state legislatures, the German plan has been followed; the matter of providing medical benefits has been left in the hands of local bodies, and no provision has been made for correlating the system with existing health agencies. These are serious objections, since without such provisions a health insurance law will have little value as a preventive measure, although it may meet the approval of those who advocate it as a relief measure. There must be a close connection of the administration of any health insurance system with the health agencies of the country and with the medical profession. It is believed that this can be brought about (1) by providing staffs of medical officers in the federal and state health departments, to carry into effect the regulations issued by the central governing health insurance boards or commissions; (2) by providing a fair and sufficient incentive for the active cooperation of the medical profession, and (3) by providing for a close cooperation of the health insurance system with state, municipal and local health departments and boards.

It would seem best to place the administration of the medical benefits under governmental agencies and to provide that no cash benefits be paid except on the certificates of medical officers of the national and state health departments, acting as medical referees under the regulations of the central governing health insurance board or commission. Since these officers would be the representatives of the health departments in the funds, their selection and appointment should also be based on their knowledge of preventive as well as of clinical medicine. One of their duties should be to examine each disabled beneficiary and keep themselves informed as to the progress of his recovery.

With such a check on the payment of cash benefits, the medical and surgical treatment provided for beneficiaries could safely be left to the physician of the patient's choice, and payment made on a capitation basis regardless of whether the patient was sick or well, after the manner of the English national insurance act. This method of selection and payment of physicians for the medical and surgical relief would offer every incentive to them to keep their patients well and to endeavor to please by rendering their most efficient service. But, in addition, free choice should be allowed to those who prefer institutional treatment by a selected staff, when available; and to this end the local and federated governing bodies might even provide dispensary and hospital units, each such unit to include a staff of physicians, surgeons, oculists, dentists and other specialists, and a staff of visiting and bedside nurses.

The greatest value of such a system of administration of the medical benefits would be in the organized corps of medical officers and of attending physicians registered on the panel, and in the opportunity it would offer for preventing disease among the insured persons and their families. The objection could not be raised that such a corps would be too expensive. It would not require more than one such medical officer to every 4,000 insured persons, and at that rate they could more than save their salaries by relieving insurance funds from paying unjust claims. Furthermore, while an estimate cannot be made of the amount to be saved by their efforts in the way of lowering the sick rate, it is safe to say that it would amount to many times more than the sum of their salaries.

Health officials should realize, now, the necessity for correlating the administration of the medical benefits of any proposed health insurance system with existing health agencies. If health departments are at present inefficient, they should be strengthened and made adequate to meet all demands. To enact a health insurance law simply as a relief measure without adequate preventive features would be a serious mistake; but with a comprehensive plan for disease

prevention there is every reason to believe that it would prove to be a measure of extraordinary value in improving the health and efficiency of the wage-earning population.

The recommendations of the committee, which were adopted by the conference, are as follows:

The following fundamental provisions should be embodied in any health insurance measure proposed for national or state governments:

1. *Insured Persons.*—Every person engaged in a gainful occupation and earning less than a specified annual income, say \$1,000, should be entitled to the benefits provided under the law. Every person earning more than the specified annual income should be allowed to qualify for the same benefits or greater benefits according to annual income.

2. *Funds.*—To be provided jointly by contributions from employees and employers; the government to appropriate for the expenses of supervision and administration.

3. *Benefits.*—The following benefits should be provided:

(a) *Cash Benefits:* Weekly cash payments in case of disability due to sickness, nonindustrial accident, or to childbearing by the beneficiary, for a period not to exceed twenty-six weeks in any one twelve-month period.

(b) *Death Benefits:* Cash payment (for funeral expenses) to legal heirs for death due to sickness or nonindustrial accident.

(c) *Medical Benefits:* To include adequate medical and surgical care, medicine and appliances in home, hospital, sanatorium, dispensary or physician's office, beginning with the first day of disability, whether due to sickness, nonindustrial accident, or to childbearing by the beneficiary or the wife of the beneficiary, and limited to a period of twenty-six weeks in one twelve-month period.

4. *Administration.*—All matters of promulgation of rules and regulations and appeals should be vested in a national or state commission created for this purpose. All matters of local administration should be vested in local boards of directors, federated according to districts, subject to supervision by the central authorities, and rules and regulations promulgated by the commission.

The commission and all local and federated boards should be composed of persons representing the contributors to the funds. The number representing employees and employers should be in the same ratio as their respective contributions.

Provision should be made for free choice of any physician registered on the local panel, and provision might be made also for adequate institutional care for those who prefer this method of medical benefits.

A corps of full-time medical officers should be provided within the national or state health service to have supervision of all hospital and dispensary relief; to examine all insured persons claiming to be disabled, and issue certificates in accordance with the regulations promulgated by the commission; to advise the administrative authorities and all contributors to the funds as to the best measures for the relief and prevention of sickness; to advise with the physicians attending sick members as to measures which will shorten the periods of disability, and to perform such other duties as may be fixed by regulations.

Sterilization of the Insane.—The annual report of the American Institute of Criminal Law and Criminology gives summary of what the various states are doing as regards the criminal insane:

- Indiana—No operations since 1908.
 - Washington—No operations had been performed before last year's report was written. No information has been received since then.
 - California—Insane, 634; criminal, 1. Since passage of law.
 - Connecticut—Insane, 21, since passage of law.
 - Nevada—No operations.
 - Iowa—No operation under old law.
 - New Jersey—No operations.
 - New York—No operations. Case pending before courts March, 1916.
 - Michigan—No operations.
 - Kansas—No information. No operations up to 1915.
 - Wisconsin—Feeble-minded, 24.
- So far as the committee has been able to ascertain, no attempt is being made to enforce any of the laws providing for the sterilization of criminals except in Washington, where the law is punitive.

Medicolegal

Evidence and Law as to Misbranding of Pink Pills

(*Eleven Gross Packages, More or Less, of Dr. Williams' Pink Pills vs. United States (U. S.), 233 Fed. R. 71*)

The United States Circuit Court of Appeals, Third Circuit, affirms a decree of forfeiture for averred misbranding of the packages of pills in violation of the amendment of Aug. 23, 1912, to the Food and Drugs Act. The court says that to its mind the words used in the statute are clear in meaning. The purpose of the act was, in the branding of drugs, to punish false and fraudulent statements regarding the curative or therapeutic effect of such drug or any of its ingredients. Limiting the extracts to locomotor ataxia alone, the court notes the branding complained of made the statement that the pills were: "Useful in locomotor ataxia and partial paralysis. . . . This remedy is offered to the public with full confidence in its efficacy in the treatment of diseases arising from or dependent upon impoverished blood, . . . rheumatism, leucorrhoea. . . . These pills are a valuable remedy for . . . sciatica, . . . and have accomplished beneficial results in . . . partial paralysis and locomotor ataxia. . . . Cases diagnosed as locomotor ataxia and as partial paralysis, and having characteristic symptoms have shown beneficial results under this tonic treatment, and in the cases under observation the resulting improvement has been lasting." The libel alleged that: "These statements were false and fraudulent in this: That they indicated to the purchaser thereof, and created in the minds of the purchasers thereof, the impression and belief that the said article was a remedy for, when in fact it was not a remedy for, locomotor ataxia, partial paralysis," etc. In support of its case, the government called several witnesses, physicians of proved ability, knowledge and experience, who testified that the pill would not, and why it could not, have any beneficial effects in locomotor ataxia and the other diseases named. They also testified to the fact that medical opinion was unanimous in so saying. It was also shown, and all of this without contradiction, that the pill was practically the well known Blaud pill, used generally in medical practice. It was complained that the testimony of these witnesses was not competent, being a mere expression of their personal opinions or views. But an examination of the proofs showed that the case was wholly different from one in which witnesses were testifying to their personal views on a controverted question of opinion. The testimony here was of fact, namely, that there was general, uncontroverted consensus of opinion. In the absence of countervailing proof in such matters, it was manifestly a question for the jury to determine the fair or fraudulent character of the branding statement. This question the court left to it, saying: "If they were satisfied 'that the pills were shipped in interstate commerce, with an honest belief on the part of those responsible for making the statement that they would do just what was stated on the label they would do, then it would be your duty to return a verdict in favor of the defendant.'" Referring to such statements, the court further said: "You will take those facts into consideration, and determine whether or not it was the intention of this language, interpreting it as an ordinarily intelligent man would, on the part of the claimants to convey the impression that they were to cure or act as a remedy for the diseases and ailments, even where the language does not directly say so. If it was the intention to so frame a statement that it conveyed those impressions, and those statements were false, and they are known to be false, or you can infer the intention to defraud, then it would be your duty to return a verdict in favor of the government. . . . If you believe from the evidence that any one of the therapeutic claims as to the effect of these pills upon locomotor ataxia, St. Vitus dance, sciatica, rheumatism, impotence, spermatorrhoea, or partial paralysis was false, and was made by the claimant with a reckless and wanton disregard as to whether it was true or false, you may find a verdict for the government." On the whole, it may be said the cause was properly tried and fairly submitted.

Damages Allowed for Malpractice in Treatment of Shoulder

(*Hoffman vs. Watkins* (Wash.), 155 Pac. R. 159)

The Supreme Court of Washington, on this second appeal in this action to recover damages for alleged malpractice in the treatment of an injured shoulder, affirms a judgment in favor of the plaintiff on condition of his remitting \$1,600 from the \$4,000 awarded him. The court says that the plaintiff, a man 54 years old, had been assaulted, knocked down, stunned and robbed, sustaining a cut over the eye and a severe injury to the right shoulder. At both trials the gist of the charge of negligence was the failure of the defendant to diagnose the injury to the shoulder as a dislocation. On the next morning after the injury, another physician called, treated the cut over the eye, and diagnosed the injury to the shoulder as a sprain. On the same or the next evening the defendant called and also diagnosed the injury as a sprain. Two or three days afterward the plaintiff visited the defendant's office, where the defendant claimed he again examined the shoulder and found it merely sprained. Each of these physicians testified that he examined the shoulder for a dislocation by inserting the fingers in the armpit, and also by placing the right hand of the patient on the opposite shoulder, with the elbow pressed against the side or chest, and that by these tests it was determined absolutely that there was no dislocation. These two and every other physician who testified stated that these are infallible tests for any kind of dislocation of the shoulder, and that when the hand and elbow can be so placed the conclusion is invariable and absolute that there is no dislocation, but that if this cannot be done the contrary conclusion is just as absolute. But the testimony on behalf of the plaintiff tended to show that neither the other physician nor the defendant applied this or any other test, or attempted to lift, move or manipulate the arm in any way. In short, the evidence was conflicting, and the question of negligence was clearly one for the jury. Moreover, the sole controverted question being whether the defendant had applied these tests, it was unnecessary to submit to the jury the technical question as to what tests should have been made. However, the court thinks that the award of \$4,000 damages was excessive. The evidence indicated that the shoulder had entirely recovered and was not giving the plaintiff any pain. While it was true that some of the effects of the operation which had to be performed were permanent in their nature, the evidence showed that the plaintiff's earning capacity was not materially diminished. It was true that he could not perform those tasks which necessitated lifting above the level of his shoulder, and that he had suffered much pain, inconvenience and considerable expense. Yet the joint, so far as the evidence showed, was otherwise unimpaired. In another case, similar to this in many respects, but where the results were much more serious, it was required that an award of \$5,500 should be reduced to \$2,000. So, everything considered, the court would make the judgment here \$2,400 and costs, to bear interest from the date of its original entry.

May Express Opinions But Not Conclusions

(*Taylor Coal Co. vs. Miller* (Ky.), 182 S. W. R. 920)

The Court of Appeals of Kentucky holds that it was error to ask physicians, not for an expression of opinion, but for their conclusion, as to whether or not the injuries received by plaintiff Miller caused his tuberculosis. The court says that it was insisted that this principle is applicable only when a hypothetic question is submitted to an expert, and should not be applied when the expert is testifying after a personal examination of the person concerning whom he is called on to express an opinion. But the court does not see how any sound distinction can be made in the application of this rule between the answer to a hypothetic question and the answer to a question based on personal observation. Whether the witness is testifying as an expert from information imparted to him by a hypothetic question, or from information gained by a personal observation, he is in both instances called on to give an expression of opinion arrived at from information received by him, and in neither case should he be asked or

permitted to give more than an expression of his opinion. An expert who is called for the purpose of enlightening the jury concerning a matter that they might not understand without the assistance of some person skilled in the particular matter under consideration is allowed to give his opinion for the benefit of the jury, but not to express a conclusion on his opinion, as that is the province of the jury.

Society Proceedings

COMING MEETINGS

Am. Assn. for the Study and Prev. of Inf. Mort., Milwaukee, Oct. 19-21.
Am. Assn. of Obstetricians and Gynecologists, Indianapolis, Sept. 25-27.
American Association of Railway Surgeons, Chicago, Oct. 17-19.
American Electro-Therapeutic Association, New York, Sept. 12-14.
American Public Health Association, Cincinnati, Oct. 24-27.
American Roentgen Ray Society, Chicago, Sept. 27-30.
Idaho State Medical Association, Twin Falls, Oct. 5-6.
Indiana State Medical Association, Ft. Wayne, Sept. 27-29.
Kentucky State Medical Association, Hopkinsville, Oct. 24-27.
Minnesota State Medical Association, Minneapolis, Oct. 11-13.
Missouri Valley Medical Society, Omaha, Sept. 21-22.
Nevada State Medical Association, Reno, Oct. 10-12.
New Mexico Medical Society, Albuquerque, Oct. 11-13.
Oregon State Medical Association, Portland, Sept. 14-15.
Pennsylvania State Medical Society, Scranton, Sept. 18-21.
Utah State Medical Association, Salt Lake City, Sept. 12-13.
Virginia State Medical Society, Norfolk, Oct. 24-27.
Wisconsin State Medical Society, Madison, Oct. 4-6.

MICHIGAN STATE MEDICAL SOCIETY

Fifty-First Annual Meeting, held at Houghton, Aug. 16-17, 1916

(Concluded from page 768)

End-Results in the Treatment of Cancer of the Uterus

DR. H. W. HEWITT, Detroit: In the surgical treatment of cancer of the uterus, there has been an extension of the limits of operability and an increase in the number of five year cures. Cautery treatment and the combined cautery have their uses, as has also radical abdominal hysterectomy. In the treatment of cancer, combined roentgenotherapy with hysterectomy is desirable in operable cases and combined roentgenotherapy and the cautery in inoperable cases.

DISCUSSION

DR. JAMES T. CASE, Battle Creek: Dr. Hewitt has given us a sane view, so far as treatment is concerned. There is no reason why a surgeon should confine himself exclusively to the surgical treatment of this condition, and the same may be said of the roentgenologist, or the man who believes solely in the cautery method. I take a definite stand in favor of operation for every operable case. I have not seen a single case in my own experience in which there has been an actual cure of cancer of the uterus by the radiotherapeutic method.

DR. RICHARD R. SMITH, Grand Rapids: There has been a great deal of discussion in the last few years regarding the use of the Roentgen ray in the treatment of cancer of the uterus, so that we are apt to be confused. We do not distinguish clearly between what are cures and what is simply temporary relief. No method has yet been discovered for curing uterine cancer. There is no method but what yields essentially more deaths than cures, and a cure for uterine cancer has still to be discovered.

DR. LESLIE H. DEWITT, Kalamazoo: I believe the Percy method of treatment is the best for the class of cases under discussion. When Percy began this treatment he used the red hot soldering iron. We treated a series of thirty or forty cases in the University Hospital with this method, but the end-results were very poor. The iron was used hot, a cherry heat. These patients died quickly. Many of them developed quickly vesicorectal fistula and did badly. With the improved method of using a mild amount of heat, which is now advocated by Percy, much better results can be expected. Several cases have been treated in Kalamazoo by a surgeon by the slow heat method and later on hysterectomy performed, and the pathologist at the state hospital was unable to find any cancer cells present.

Peace and War in the Human Organism

DR. F. McDEE HARKIN, Marquette: We should give the human organism a clean heredity by proper legislation controlling marriages and permitting the asexualization of the manifestly degenerate; but better still would be a propaganda of education, beginning in the schoolroom and based on the Biblical injunction "Know thyself." We should utilize and improve on every existing measure of child protection and social reform, from fresh air funds and the prohibition of exhausting child labor, to sanitary housing, playgrounds for old and young, social centers that are more attractive than the saloon, and popular education on vital subjects by the lectured moving picture show. Greater prominence should be attached to the full-time health officer whose work in the schoolroom and in matters of sanitation is not yet half appreciated, and who should be among the best paid and most respected of our citizens. There should be the employment of all legitimate means of exploiting the truth with regard to fake medical nostrums, from "oxydonor" tin tubes to Christian Science adumbrations of the spirit, which latter cult, with its ostrich-like head in the sand nescience, never seems to recognize the limitations of the basic fact of the centuries that faith and a cheerful spirit are but factors, and not always essential in numberless therapeutic measures which are positively indispensable.

Age and Arterial Degeneration

DR. B. A. SHEPARD, Kalamazoo: Attention in the past to sclerotic changes in the artery has largely centered about the intima. Rokitanski believed that cells were deposited directly from the blood stream on the intima; Virchow believed that there was some formative stimulus and that the thickening was an inflammatory hyperplasia; Thomas maintained that the thickening was a compensatory thickening of the vessel wall to diminish the lumen of the blood vessel, the increase of which was due to increased blood pressure; this presupposes that the increased blood pressure antedates the beginning of the thickening.

All these men looked on the intima as the location of the primary changes; but Koster and others maintained that the degenerative changes of the arterial wall had their origin in the adventitia and infiltration from there to the media through the vasa vasorum. Koster determined that except in the brain and lungs the vasa vasorum do not pass deeper than the outer third of the media, but in the brain and lungs there was a fine capillary network penetrating the deeper layers of the media and along the medial surface of the elastica interna. This is of special interest in the study of brain syphilis. A close study of the structure of the artery, especially the media, is held by some to argue against the theories brought out of degeneration of the whole wall due to direct irritation of the intima from the blood stream. My own view is that the etiologic factors, by this meaning the toxic agents either chemical or bacterial, may come either through the blood stream in the lumen of the artery or through the vasa vasorum; the latter I believe the principal source, especially for bacterial factors. Thus I believe that most bacteriologic degenerative changes originate as a mesarteritis rather than as an endarteritis.

As an etiologic factor, syphilis is the most frequent of any of the factors which are definitely known to be in themselves solely responsible for arterial degeneration. It is quite generally believed by observers that mesarteritis due to syphilis is liable to affect the first part of the aorta, but it has quite a tendency to extend down to the sinuses of Valsalva and here produce constrictions about the mouths of the coronary arteries and result in weakening of the myocardium, and angina. Often the process is over the cusps of the aortic valves themselves, causing a deformity and shrinkage, thereby giving rise to an aortic insufficiency. In every case of aortic insufficiency, the possibility of syphilis as an etiologic factor should be considered.

A recent theory ascribes hyperactivity of the suprarenals as important in the production of arterial degeneration. A contraction of the arterioles is produced, and consequently the vasa vasorum receive a diminished amount of blood, and the vessels are insufficiently nourished.

In our active treatment of the condition as found, the term "moderation" must apply. The mental as well as the physical activities should be well considered. One of the first demands is usually that of toxemia from faulty metabolism and deranged digestive processes and removal of foci of infection. Closely related to this is the action and relation of the diaphragmatic muscle with its impaired function and resulting effects on the splanchnic vessels and gastric motility during digestion, together with its effect on the respiration and oxygenation.

In those cases showing renal inadequacy, I have seen considerable benefit from the use of potassium or sodium citrate. The solids in the urine will gradually increase, and then, too, it is sudorific in its action.

Adhesions of the Pelvic Colon

DR. JAMES T. CASE, Battle Creek: The present terminology refers to that portion of the colon from the crest of the left ilium to the inner border of the left psoas muscle as the iliac colon; and from this point to the front of the body of the third sacral vertebra as the pelvic colon. The pelvic colon is normally freely movable, and the proper function of the pelvic colon and rectum as a mechanism for accumulation and periodic discharge of fecal matter depends on this movability of the pelvic loop. The pelvic colon is normally more or less fixed, owing to the shortness of the mesocolon at this point, but the middle of the pelvic loop should rise during the accumulation of fecal matter. Normally the act of defecation clears the colon below the splenic flexure. When the pelvic loop is adherent or, being very long, incarcerated, the evacuation is complete. These adhesions should be proved both by enema and by test with the barium meal, under fluoroscopic guidance. The Roentgen findings should be considered with the other clinical findings. Enterospasm is an important symptom of adhesions, although it may be present without adhesions.

A serious question is raised as to the advisability of employing the pelvic colon as a means of covering up raw surfaces in the pelvis following pelvic operations. Care should be exercised to place the pelvic loop carefully to avoid, if possible, the production of binding adhesions which may later make the patient's life miserable on account of constipation.

DISCUSSION

DR. RICHARD R. SMITH, Grand Rapids: We have all been interested in the matter of covering in surfaces in the pelvis following operations to prevent adhesions, and have employed the pelvic colon for this purpose; but it has its limitations. I use the colon for covering in raw surfaces on the left side of the pelvis, but believe it is best not to attempt to crowd it down in the pelvis to cover such surfaces. To prevent adhesions I am now using a large rubber dam which was brought to the notice of the profession by Dr. Keefe of Providence, R. I. One can use a large piece of rubber dam. After bringing the omentum down over the intestine, the rubber dam is placed over it, leaving the surface smooth and apparently free from any traumatism.

DR. REUBEN PETERSON, Ann Arbor: The illustrations show beyond question that with reverse peristalsis in constipated women there is pain around the cecum, and they assume certain positions to overcome this pain. This leads to great difficulty in making the diagnosis unless some such method as Dr. Case has referred to is employed.

In the old days, when we used to cure patients primarily, they suffered a great deal afterward on account of adhesions of the pelvic colon. They suffered from all sorts of sequelae. We were not as careful about peritonization of the pelvis as we are now. These patients suffered from a gluing down of the pelvic colon in the pelvis. All of our methods of operating should be directed toward preventing these adhesions.

DR. JAMES T. CASE, Battle Creek: Pain in the cecum and in the region of the appendix is very common after appendectomy. Appendectomy has been done in such cases under insufficient indications. Patients have complained of pain, and their appendixes have been removed, but the pain still continues. It was not an appendical pain but a cecal pain. The appendix at operation in such cases does not look violently inflamed, and constipation after operation is a frequent thing.

Current Medical Literature**AMERICAN**

Titles marked with an asterisk (*) are abstracted below.

Annals of Ophthalmology, St. Louis

July, XXV, No. 3

- 1 Intradural Tumor of Optic Nerve. E. C. Ellett, Memphis, Tenn.—p. 435.
- 2 Résumé of Experiments on Effects of Different Conditions of Lighting on Eye. C. E. Ferree and G. Rand, Bryn Mawr, Pa.—p. 447.
- 3 Spontaneous Absorption of Opacities in Crystalline Lens. S. H. Brown, Philadelphia.—p. 457.
- 4 Sclerocorneal Trephining Operation for Glaucoma. Report of Forty-Five Operations. W. R. Parker, Detroit.—p. 467.
- 5 Epibulbar Sarcoma. E. B. Heckel, Pittsburgh.—p. 474.
- 6 Six Cases Treated with Tuberculin, Including Cases of Keratitis, Choroiditis and Cyclitis. C. A. Clapp, Baltimore.—p. 478.
- 7 Optic Neuritis from Syphilitic Leptomeningitis. W. H. Wilder, Chicago.—p. 489.
- 8 Miners' Nystagmus. F. L. Hoffman.—p. 503.

Arkansas Medical Society Journal, Little Rock

August, XIII, No. 3

- 9 Arteriosclerosis. F. B. Young, Little Rock.—p. 45.
- 10 Common Fallacies in Technical Diagnosis of Indigestion. E. D. Holland, Hot Springs.—p. 48.
- 11 Differentiation Between Upper (Central) and Lower (Peripheral) Motor Neuron Involvement. G. B. Fletcher, Little Rock.—p. 50.

Boston Medical and Surgical Journal

August 24, CLXXV, No. 8

- 12 Hygiene of Mind. B. P. Croft, Greenfield.—p. 251.
- 13 Mental Preparedness. J. J. Putnam, Boston.—p. 260.
- 14 Meaning of Mental Hygiene Movement. W. A. White, Washington, D. C.—p. 264.
- 15 Menace of Mental Deficiency from Standpoint of Heredity. H. H. Goddard, Vineland, N. J.—p. 269.
- 16 Functions of Social Service in State Hospitals. H. Curtis, Hathorne.—p. 271.

Bulletin of Medical and Chirurgical Faculty of Maryland, Baltimore

June, VIII, No. 12

- 17 Dispensary Abuse and Certain Problems of Medical Practice. J. W. Williams, Baltimore.—p. 229.

Florida Medical Association Journal, Jacksonville

August, III, No. 2

- 18 Lumbar Puncture and Examination of Spinal Fluid. R. N. Greene, Chattahoochee.—p. 33.
- 19 Interpretation of Wassermann Reaction. W. P. Dey and G. E. Henson, Jacksonville.—p. 40.
- 20 Diagnosis and Treatment of Syphilis. J. E. Gammon, Jacksonville.—p. 43.
- 21 Few Facts Concerning Complement. J. R. Bean, Jacksonville.—p. 48.

Journal of Biological Chemistry, Baltimore

August, XXVI, No. 1

- 22 Quantitative Comparison of Casein, Lactalbumin and Edestin for Growth or Maintenance. T. B. Osborne and L. B. Mendel, New Haven, Conn.—p. 1.
- 23 *Effect of Surgical Procedures on Blood Sugar and Renal Permeability. A. A. Epstein, J. Reiss and J. Branower, New York.—p. 25.
- 24 *Comparative Study of Behavior of Purified Proteins Toward Proteolytic Enzymes. E. M. Frankel, New Haven, Conn.—p. 31.
- 25 Metabolism of Sulfur. Relative Eliminations of Sulfur and Nitrogen in Dog in Inanition and Subsequent Feeding. H. B. Lewis, Urbana, Ill.—p. 61.
- 26 *Physiology of Phenols. H. Dubin, Philadelphia.—p. 69.
- 27 *Influence of Ingested Carbohydrate, Protein and Fat on Blood Sugar in Phlorizin Diabetes. F. A. Csonka, Pittsburgh.—p. 93.
- 28 Researches on Pyrimidins. Synthesis of Thymine-4-Aldehyd. T. B. Johnson and L. H. Cretcher, Jr., New Haven, Conn.—p. 99.
- 29 Cerebronic Acid. Relation of Cerebronic and Lignoceric Acids. P. A. Levene and C. J. West, New York.—p. 115.
- 30 Dialysis of Trypsin and Proteoclastic Action of Protein Cleavage Products. C. Funk, New York.—p. 121.
- 31 Influence of Ethyl Alcohol and Glycerol on Rate of Solution of Casein by Sodium Hydroxid. T. B. Robertson and K. Miyake, Berkeley, Calif.—p. 129.
- 32 Chondrosaminic. P. A. Levene, New York.—p. 143.
- 33 Synthesis of Hexosamines. P. A. Levene, New York.—p. 155.
- 34 Physiologic Action of Glucal. J. O. Balcar, Chicago.—p. 163.
- 35 Formation of d-Lactic Acid by Autolysis of Pus. H. Ito, Japan.—p. 173.

- 36 Origin of Humin Formed by Acid Hydrolysis of Proteins. Hydrolysis in Presence of Carbohydrates and of Aldehyds. R. A. Gortner, St. Paul.—p. 177.
- 37 *Uric Acid Solvent Power of Normal Urine. H. D. Haskins, Portland, Ore.—p. 205.
- 38 Cell Penetration by Acids. Further Observations on Blue Pigment of Chromodoris Zebra. W. J. Crozier.—p. 217.
- 39 Id. Data on Some Additional Acids. W. J. Crozier.—p. 225.
- 40 *Feeding Experiments on Substitution of Protein by Definite Mixtures of Isolated Amino-Acids. H. H. Mitchell, Urbana, Ill.—p. 231.
- 41 *Digestibility and Utilization of Egg Proteins. W. G. Bateman, New Haven, Conn.—p. 263.

23. **Surgery and Renal Permeability.**—Operative procedures under anesthesia cause an increase in the blood sugar content (hyperglycemia), associated with a reduction or impairment of renal function. From this it is concluded by the authors that diminished permeability of the kidneys is responsible for the infrequent elimination of sugar in the urine after operation.

24. **Comparative Study of Proteolysis.**—It has been demonstrated that pepsin is the effective agent in pepsin hydrochloric acid digestion since hydrochloric acid alone in the concentrations ordinarily employed has very little proteolytic effect. As a result of a series of experiments the conclusion seems justified to Frankel that comparable results in proteolysis studies are to be obtained only when the substrates are in solution; otherwise deviations of 10 to 15 per cent. may be encountered in duplicate experiments. An examination of the digestion of thirteen proteins shows that there is a parallelism in the cleavage curves of all the proteins, if the cleavage is calculated as the ratio of the amino nitrogen liberated at any one time to that obtained on total hydrolysis of the protein with strong acid. Pepsin hydrochloric acid can liberate about 20 per cent. of the total amino nitrogen of a protein in less than 100 hours. Trypsin acting on proteins partially digested with pepsin effects a cleavage of about 70 per cent. The action of trypsin on native proteins can cause a cleavage of about 50 per cent. of the peptide linkages. Further addition of trypsin may cause further disintegration of the protein. Erepsin following the action of pepsin is a very effective agent in causing the disruption of the protein molecule. In two series of experiments cleavage of about 85 per cent. of the protein could be demonstrated. The successive action of pepsin, trypsin and erepsin liberates about 85 to 90 per cent. of the total amino nitrogen of the protein studied.

26. **Physiology of Phenols.**—The results of Dubin's investigation, in addition to confirming the findings of Folin, bring to light some interesting observations. The elimination of phenols from day to day is quite constant. Withdrawing water from the diet causes an increased phenol elimination. After Eck fistula, the free phenols represent as high as 97 per cent. of the total, the latter, as also the former, exhibiting a tendency to decrease. After intestinal obstruction, there is an increase in both free and total phenols, the former constituting as low as 55 per cent. of the latter. In pancreatic insufficiency, there is an increase in both free and total phenols with an accompanying decrease in the percentage of free phenols. After excluding the bile, both free and total phenols increase, but with an increase in the percentage of free phenols. The feeding of phenol and p-cresol results normally, with but slight variations, in the elimination of about 65 per cent. and 40 per cent., respectively. After Eck fistula, about the same excretion is noted. After intestinal obstruction, pancreatic insufficiency, and exclusion of bile, there is in both cases a drop in the amount excreted. The feeding of tyrosin results normally in an excretion of about 14 per cent., as phenols. After Eck fistula, practically the same amount is eliminated.

After exclusion of bile and pancreatic juice, about 20 per cent. of ingested tyrosin is eliminated. Feeding of any of the three substances causes an increase in the conjugation at all times—p-cresol to a greater degree than phenol, and the latter to a greater extent than tyrosin. Tyrosin, phenol and p-cresol, fed in amounts of 5 gm., 1 gm. and 1 gm., respectively, were all eliminated within twenty-four hours. No unchanged tyrosin could be demonstrated in the urine or

feces. Fasting reduces the phenols to a low level; the injection of phlorizin during fasting causes an increase in the output of phenols. It is impossible to free the urine entirely of phenols by the use of calomel. The bile appears to have some influence on the conjugating function of the liver. The phenols can be taken as an index of intestinal putrefaction.

27. Phlorizin Diabetes.—Following the ingestion of 20 gm. of glucose the blood sugar reached the maximum at the second hour, and declined to the original level at the fourth hour. In another experiment, it was shown that of 16 gm. of glucose given to a phlorizinized dog, 94 per cent. was excreted during the first five hours as extra glucose. The curve of the blood sugar content runs parallel with the curve of the extra glucose. Since the elimination of ingested glucose is practically complete and the curve of blood sugar runs parallel to that of extra glucose, the conclusion is reached that no glucose was deposited between the periods of absorption and elimination. The only difference observed in the blood sugar content after the ingestion of large quantities of glucose in a more concentrated solution (50 gm. of glucose in 150 c.c. of water) is that the hyperglycemia is maintained for a longer period of time. That the blood sugar is increased after ingestion of protein is apparent from the curve which shows that the endogenous glucose derived from meat protein and gelatin appears in the blood as glucose—at least, partially so—since the isoglucogenic quantities of ingested endogenous and exogenous glucose should give the same increase of blood sugar. The ingestion of fat, which does not produce extra glucose, did not cause any appreciable increase in blood sugar.

37. Uric Acid Solvent Power of Urine.—When shaken with uric acid for twenty minutes at 37 C., Haskins found that many urines that are slightly acid and all that are neutral or alkaline take up extra uric acid. The less acid the urine the more uric acid, as a rule, it will dissolve. Dilute urines when considered in proportion to their concentration show much greater solvent power than less dilute urines. Some urines dissolve so much uric acid that they come to contain more uric acid than is present in a saturated solution of monosodium urate. Haskins suggests that in all probability in these cases at least part of the uric acid is in colloidal solution.

40. Feeding Experiments with Amino-Acids.—Experiments are reported by Mitchell in which mice have been kept alive or seventy to ninety-eight days by feeding alternately (1) rations containing 4 to 6 per cent. of various mixtures of isolated amino-acids, 6 to 4 per cent. sucrose, 34 per cent. starch, 28 per cent. protein free milk (prepared either according to the procedure of Osborne and Mendel or to a modification of this procedure described in the text), 10 per cent. lard and 18 per cent. butter fat, and (2) a ration containing 0 per cent. sucrose, with other constituents in the same proportion as in the first mentioned rations. In many of these experiments periods of fifteen to thirty-five days' duration have been observed in which the mice practically maintained their weight. The alternate feeding of an amino-acid ration and a nonnitrogenous ration (except for the nitrogen present in the protein free milk) induced a better total consumption of food than feeding with an amino-acid ration alone, and in all other respects led to more successful results. However, it is probable that in no case was the amino-acid intake sufficiently large to assure a fair test of its adequacy. Amino-acid rations containing no added tyrosin, or no added tyrosin and phenylalanin, did not give appreciably different results from rations containing these amino-acids. However, if tryptophan was absent from an amino-acid ration, the period of survival of mice fed this ration alternately with the nonnitrogenous ration was noticeably shorter than the periods of survival of mice kept on rations containing added tryptophan. Mice could be kept for much longer periods of time on rations containing mixtures of amino-acids, including tryptophan, fed alternately with the nonnitrogenous basal ration, than when fed the basal ration alone. Furthermore, this difference in survival cannot be counted for by a difference in energy intake. This fact has been interpreted as meaning that at least some of the

amino-acids have specific functions in metabolism aside from that of serving simply as material for the synthesis of body protein.

41. Utilization of Egg Proteins.—Raw egg-white, Bateman says, is a decidedly indigestible substance. It may cause diarrhea in dogs, rats, rabbits and man when ingested in any large quantity. Its utilization by the body is poor since it is used only to the extent of 50 to 70 per cent. Subjects can acquire a certain tolerance for the native protein after ingesting it for several days so that it no longer causes diarrhea and is somewhat better utilized. Raw egg-white can be made digestible through coagulation by heat; by precipitation with alcohol, chloroform, or ether; by incubation with dilute acids or alkalis; by partial digestion by pepsin; by conversion into alkali-metaprotein. The indigestibility of native egg-white probably lies either in its antitryptic content or in its chemical constitution. Its physical texture appears to play a minor part in its behavior. Of the individual proteins constituting egg-white, the albumin fraction appears to be the indigestible component. The whites of the hen's egg and duck's egg act alike in causing diarrhea and in being poorly utilized. Egg-yolk either raw or cooked is excellently utilized. It sometimes causes digestive disturbances in dogs, apparently because of its high fat content. In current dietotherapy raw whole eggs, raw egg-white, and albumin water, are extensively prescribed. There appears to be little in their conduct as foodstuffs, however, to warrant such faith in their nutritive value or ease of assimilation.

Journal of Cancer Research, Baltimore

July, I, No. 3

- 42 *Teratomata of Brain. M. Barron, St. Paul.—p. 311.
- 43 Hereditary Transmission of Differences in Susceptibility to Growth of Transplanted Tumors in Various Strains of Mice. M. S. Fleisher and L. Loeb, St. Louis.—p. 331.
- 44 Precancerous Dermatoses. W. J. Heimann, New York.—p. 343.
- 45 Model of Gastric Tubules in Early Gastric Cancer. L. B. Wilson, Rochester, Minn.—p. 357.

42. Teratomata of Brain.—A study of the cases of brain teratomata discussed in the literature, Barron says, shows that tissues of mesodermic origin are the elements most commonly found in these tumors. However, excluding the case cited by the author there are only four examples (Strassmann and Streckner, Saxer, Gutzeit, and Newmann) in which there is reported the presence of striated muscle fibers. Similarly in only one other case (Saxer) is there described the presence of spaces lined with columnar epithelium containing goblet cells. Indeed, Saxer's resembles the present case more closely than any other. It is interesting to note that practically all the cases which developed symptoms from these tumors died before the twentieth year. The origin of such tumors is best explained by the inclusion of totipotent cells very early in the development of the ovum. The tumor here described presents derivatives from all three primitive germ layers. This tumor belongs to the embryonal type of teratomata originating most probably in the epiphysis.

Journal of Laboratory and Clinical Medicine, St. Louis

August, I, No. 11

- 46 *Immunity in Syphilis. H. Zinsser, New York.—p. 785.
- 47 Estimation of Sugar in Blood by Lewis-Benedict Method. Graph for Obtaining Directly Percentage of Dextrose. L. McDanell, New Haven, Conn.—p. 804.
- 48 Role of Cholesterol in Pathology. J. C. Small, Chicago.—p. 809.
- 49 *Complement Fixation Test in Tuberculosis. H. R. Miller, New York.—p. 816.
- 50 Quantitative Estimation of Phenol Tetrachlorophthalcin Excreted in Fresh Bile in Disease of Liver. H. L. McNeil, Galveston, Texas.—p. 822.
- 51 Focal Infection. J. W. Shuman, Sioux City, Iowa.—p. 825.
- 52 Case of Progressive Lenticular Degeneration with Necropsy. C. Hunter and S. J. Peirce, Winnipeg, Canada.—p. 830.
- 53 Roentgenographic Studies of Cerebral Vascular Lesions. C. O. Dhonau, Cincinnati.—p. 836.
- 54 Stupid Words and Statements Commonly Appearing on Laboratory Reports. B. G. R. Williams and E. M. Williams, Paris, Ill.—p. 841.

46. Immunity in Syphilis.—Complete sterilizing immunity or, in other words, complete cure, Zinsser says, occurs but rarely without specific medicinal aid, and the untreated

syphilitic might go on to apparent cure, in that a general syphilization of his body would bring about a general resistance, but would always harbor virulent treponemata which could cause recrudescences in parts in which resistance was diminished, and eventually kill by degenerative processes in the central nervous system where many injuries cannot be compensated for as is possible in other organs. The resistance which develops is apparently a new attribute only of the cell groups which have undergone direct reaction with the treponemata. This resistance may consist merely in the complete failure of the tissue cells to react to the virus, a sort of "tissue indifference" or "Anergie." It may be, however, and probably is, accompanied by a certain amount of active defense in the form of local phagocytosis of the treponemata by the fixed tissue cells.

49. **Complement Fixation Test in Tuberculosis.**—Miller emphasizes the fact that complement fixation in tuberculosis is a definitely valuable diagnostic method which will occupy an important place among the practical methods of diagnosis.

**Journal of Pharmacology and Experimental
Therapeutics, Baltimore**

August, VIII, No. 8

- 55 *Cross Tolerance. Altered Susceptibility to Codein, Heroin, Cannabis-Indica and Chloral-Hydrate in Dogs Having an Acquired Tolerance for Morphin. H. B. Myers, New York.—p. 417.
- 56 *Absorption of Potassium Iodid by Thyroid in Vivo, Following Its Intravenous Injection in Constant Amounts. D. Marine and J. M. Rogoff, Cleveland.—p. 439.
- 57 Some New Time Recording Apparatus. W. Hale, Boston.—p. 445.
- 58 *Peripheral Action of Opium Alkaloids. Effect on Sensory Nerve Terminals. D. I. Macht, S. L. Johnson and H. J. Bollinger, Baltimore.—p. 451.
- 59 *Lethal Dose of Arsenic for Splenectomized Mice. C. Towles, Baltimore.—p. 465.

55. **Cross Tolerance.**—Myers claims that a marked crossed tolerance exists to codein and to heroin in dogs habituated to morphin, in so far as effects on the respiratory center are concerned. A slight crossed tolerance exists between codein and morphin, and between heroin and morphin in regard to their actions on the tissues governing equilibrium. Dogs tolerant to morphin when given codein or heroin have increased intestinal peristalsis. No evidence of crossed toleration to cannabis indica or to chloral hydrate exists in dogs tolerant to large amounts of morphin. The experiments cited by Myers show that a cross tolerance may exist between closely related drugs but that this tolerance is evidenced only on those functions in which the drugs have a common selective action.

56. **Absorption of Potassium Iodid.**—There is apparently no difference between in vitro and in vivo perfusions as regards the percentage of iodine absorbed. The absorption is practically instantaneous in each case. Maximum thyroid effects are produced by such exceedingly small amounts of iodine and the gland has such an extraordinary affinity for salts of iodine, that its loss through the kidney may be considered negligible, and this probably holds true for all other body tissues. The size of the gland and the stage of physiologic activity modify the amount of potassium iodide absorbed apparently to the same degree whether it is introduced by in vitro perfusion or injected intravenously in the living animal. The liver and spleen show no retention of potassium iodide, whether introduced by in vitro perfusion or by intravenous injection. With constant amounts of potassium iodide introduced and with glands of similar degrees of physiologic activity, there is no noteworthy difference in the percentage absorbed, whether the in vivo perfusion lasts one hour or thirty hours. There must be some slight increase in the amount of iodine absorbed from a single dose in the succeeding minutes or hours of a given experiment, but it was not sufficiently marked to be detected as an increase in the iodine content of the thyroid, in this series of glands with the methods employed; although after an hour it was not present in detectable amounts in the circulation.

58. **Peripheral Action of Opium Alkaloids.**—A quantitative study of the pain threshold before and after local application of various opium alkaloids, shows that they exert a distinctly

measurable action on the sensory nerve terminals, producing a slight analgesic effect. In the order of their efficiency in this respect the opium alkaloids may be arranged as follows: Papaverin, narcotin, morphin, narcein, codein and thebaine. A combination of total opium alkaloids was found to be no more effective than the amount of morphin, or of papaverin or narcotin, it contains would be if given alone. The local effect of opium observed in this investigation by the author agrees well with numerous empirical observations by clinicians in the past and present.

59. **Lethal Dose of Arsenic for Splenectomized Mice.**—It is concluded by Towles from her experiments that the resistance to arsenic is not reduced by removing the spleen.

Kansas Society Medical Journal, Topeka

August, XVI, No. 8

- 60 Advantage of Transverse Incision in Appendicitis. J. D. Williams, Emporia.—p. 221.
- 61 Malignant Tumors of Ovaries; Report of Cases. R. S. H. Newton.—p. 223.
- 62 Biennial Report of the Medical Department of Kansas Penitentiary. P. B. Matz.—p. 227.
- 63 Valuable Treatment for Glaucoma. H. C. Markham, Parsons.—p. 234.

Kentucky Medical Journal, Bowling Green

August, XIV, No. 8

- 64 After Effects of Diphtheria on Eye, Ear, Nose and Throat. G. C. Hall, Louisville.—p. 407.
- 65 Modern Treatment of Diphtheria. J. I. Greenwell, New Haven.—p. 412.
- 66 Pathology of Glaucoma. W. D. Levi, Louisville.—p. 414.
- 67 Medical Treatment of Glaucoma. I. A. Lederman, Louisville.—p. 416.
- 68 Choice of Operations. A. O. Pfingst, Louisville.—p. 417.
- 69 Ophthalmia Neonatorum and Trachoma. J. G. Carpenter, St. Louis.—p. 418.
- 70 Surgical Infections of Jaw. C. B. Spalding, Louisville.—p. 419.
- 71 Differential Diagnosis Between Chronic Cholecystitis, Duodenal Ulcer and Simulating Neuroses. M. Casper, Louisville.—p. 420.
- 72 Other Fellow's Mistakes. G. G. Thornton, Lebanon.—p. 432.
- 73 Plea for Better Diagnosis. C. L. Sherman, Millwood.—p. 433.
- 74 Modification of Ferguson's Operation for Excision of Upper Lip. J. W. Price, Louisville.—p. 439.

Medical Record, New York

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- 75 Seborrhic Dermatitis. W. P. Cunningham, New York.—p. 357.
- 76 Is Infant Mortality an Index to Social Welfare? Scand. Rep. K. C. Mead, Middletown, Conn.—p. 357.
- 77 Physician and Psychotherapy. S. E. Jelliffe, New York.—p. 358.
- 78 Medicine as Practiced by Chinese. W. W. Cadbury, Canton, China.—p. 364.
- 79 Treatment of Paralysis Agitans and Arthritis Deformans. Continuous Bath. S. Danzer, Brooklyn.—p. 367.
- 80 Proctitis. C. J. Drueck, Chicago.—p. 369.
- 81 Case of Laceration of Liver. C. A. Wayland and R. T. Wayland, San José, Calif.—p. 371.
- 82 Universal Immunization. H. B. Baruch, New York.—p. 372.
- 83 Fatal Case of Poliomyelitis in Adult. J. G. Smith, New York.—p. 373.

New Jersey Medical Society Journal, Orange

August, XIII, No. 8

- 84 Beriberi in Union County Jail. H. R. Livengood, Elizabeth.—p. 395.
- 85 Home Care vs. Institution Training for Blind Babies. English, Summit.—p. 398.
- 86 Case of Uterus Didelphys. W. P. Conaway, Atlantic City.—p. 401.
- 87 Case of Vesico-Uterovaginal Fistula and Rectovaginal Fistula. W. P. Conaway, Atlantic City.—p. 401.

New Mexico Medical Journal, Las Cruces

August, XVI, No. 5

- 88 Family Physician in Reference to Early Diagnosis of Tuberculosis. W. T. Murphey, Albuquerque.—p. 143.
- 89 Use of Pituitary Extract in Obstetrics. C. L. McClellan, Fort Worth, Texas.—p. 150.
- 90 Salvarsan in Treatment of Syphilis. C. F. Montgomery, Reno.—p. 153.
- 91 Kidney Efficiency. H. A. Ingalls, Roswell.—p. 155.
- 92 Autobiography of Old Silk Hat. S. D. Swope, Deming.—p. 157.

New York Medical Journal

August, 19, CIV, No. 8

- 93 Treatment of Acute Poliomyelitis. S. J. Meltzer, New York.—p. 337.
- 94 Autotherapy in Poliomyelitis. C. H. Duncan, New York.—p. 337.

- 95 Control of Epidemics. J. Manning, Saratoga Springs.—p. 343.
96 Evaluation of Paraphrenia. (To be concluded.) E. A. Strecker, Philadelphia.—p. 344.
97 Study of Drug Action. T. J. Mays, Philadelphia.—p. 349.
98 American Medicine of Eighteenth Century. G. W. Cook, Washington, D. C.—p. 351.
99 Roentgenotherapy in Chronic Arthritis. E. Zueblin, Baltimore.—p. 355.
100 Toluol; Its Value in Sterilization of Vaccines. L. D. Bristol, University, N. D.—p. 360.
101 Abnormal Labor. S. Wiener, New York.—p. 361.

August 26, No. 9

- 102 Substitute Feeding of Infants. J. P. C. Griffith, Philadelphia.—p. 385.
103 Physiologic and Toxic Actions of Formaldehyd. S. E. Earp, Indianapolis.—p. 391.
104 Fever, Part of Syndrome of Toxemia. F. M. Pottenger, Monrovia, Calif.—p. 392.
105 Typhoid. I. L. Nascher, New York.—p. 394.
106 General Practitioner. J. V. O'Connor, Woonsocket, R. I.—p. 398.
107 Evaluation of Paraphrenia. E. A. Strecker, Philadelphia.—p. 399.
108 Chronic Suppurative Otitis Media. H. B. Blackwell, New York.—p. 402.
109 Orthopedics of Hand; Report of Two Cases. L. G. Hanley, Buffalo.—p. 405.
110 Frost Bite in Hand Resembling Raynaud's Disease. N. S. Yawger, Philadelphia.—p. 406.
111 Value of Iodin in Gonorrhea. M. Abramovitz, Baltimore.—p. 407.

Ohio State Medical Journal, Columbus

August, XII, No. 9

- 112 Medical Practice—Past, Present and Future. G. H. Matson, Columbus.—p. 537.
113 Problem of Infection. S. M. McCurdy, Youngstown.—p. 543.
114 Use and Abuse of Forceps During Labor. W. Gillespie, Cincinnati.—p. 545.
115 Cesarean Section, Classical and Extraperitoneal. E. J. March, Canton.—p. 548.
116 Pubiotomy, Symphyseotomy and Perforation. G. B. Farnsworth, Cleveland.—p. 551.
117 Convulsions of Infancy and Early Childhood. E. G. Horton, Columbus.—p. 553.
118 Proctitis. C. E. Howard, Cincinnati.—p. 556.
119 Whooping Cough in Ohio. F. G. Boudreau, Columbus.—p. 557.
120 Applying Animated Drawing to Teaching of Surgical Technic. W. J. Brownlow, Cleveland.—p. 560.

Oklahoma State Medical Association Journal, Muskogee

August, IX, No. 8

- 121 Early Cancer of the Stomach. A. W. White, Oklahoma City.—p. 225.
122 Carcinoma of Uterus. O. R. Gregg, Alva.—p. 231.
123 Surgeons' vs. General Practitioners' Viewpoint of Gastric Disturbances. R. Grosshart, Tulsa.—p. 235.
124 Gastric Ulcer Perforation Followed by Operation Twelve Hours Later and Recovery. F. S. Clinton, Tulsa.—p. 240.
125 Radical Treatment and Cure for Epididymitis, Acute, Subacute and Chronic. W. J. Wallace, Oklahoma City.—p. 242.
126 Second-Hand Surgery. W. W. Jackson, Vinita.—p. 243.
127 Acute Infective Osteomyelitis. J. J. Dial, Muskogee.—p. 245.
128 Mule in Intestinal Tract. C. W. Heitzman, Muskogee.—p. 248.

Southwest Journal of Medicine and Surgery, El Reno, Okla.

August, XXIV, No. 8

- 129 What Are We Doing and What Should We Do for Feeble-minded. W. L. Kendall, Enid.—p. 221.
130 Apoplexy. C. Von Wedel, Jr., Oklahoma City.—p. 229.
131 Surgical Symptomology of Right Upper Abdominal Quadrant. F. H. Clark, El Reno.—p. 238.
132 Mechanics of Human Body. C. B. Francisco, Kansas City, Mo.—p. 242.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

July, XIII, No. 151

- 1 Herpes Recurrens. H. G. Adamson.—p. 193.
2 Case of Ateleiosis. F. P. Weber and G. F. Stebbing.—p. 200.
3 Appendicitis Complicating Pneumonia. J. Allan.—p. 207.

Dublin Journal of Medical Science

August, CXLII, No. 536

- 4 Fractures and Fracture Dislocations. J. S. McArdle.—p. 73.
5 Clinical Report of Rotunda Hospital for One Year, November 1, 1914, to October 31, 1915. W. J. Smyly, R. D. Purefoy and E. H. Tweedy.—p. 79.
6 Diagnosis in Uveitis. E. Maxwell.—p. 94.

Edinburgh Medical Journal

August, XVII, No. 2

- 7 *Toxi-Infection of Central Nervous System. D. Orr and R. G. Rows.—p. 78.
8 *Four Cases of Acute Fatal Cirrhosis of Liver in Same Family; Suggested Relationship to Wilson's Progressive Degeneration of Lenticular Nucleus. B. Brainwell.—p. 90.

7. Toxi-Infection of Central Nervous System.—From clinical cases and the results of experiments Orr and Rows arrive at the following conclusions: (1) In spinal and cranial nerves there is an ascending lymph stream to the central nervous system, whose main current lies in the spaces of the perineural sheath. Toxins reach the spinal cord and brain by this route, and although they spread to some degree in the lymph spaces of the pia-arachnoid, and so may affect structures at a distance from the point of entrance, they pass for the most part in the main stream along the nerve roots into the substance of the central nervous system. (2) Outside the central axis the nerves are possibly protected by the vital action of their neurilemma sheath; most probably, however, it is the peripheral situation of the lymph current which is the deciding factor. The author holds that acute and chronic myelitic conditions are readily produced by infection of the ascending lymph system in nerves; that general paralysis of the insane is a chronic inflammatory disease of lymphogenous origin; to tabes dorsalis they assign the same lymphogenous genesis; that cases of acute meningomyelitis fall into the lymphogenous category, and there is now a preponderance of evidence to show that acute poliomyelitis must also be included in this group. There are many facts which show that infantile paralysis cannot be a blood infection, and indisputable evidence in favor of the lymphogenous genesis.

8. Familial Cirrhosis.—Four cases of acute fatal cirrhosis of the liver in the same family are reported by Bramwell, the patients being respectively 9, 10, 14, and 14 years of age. The disease was not due either to syphilis or to alcohol. The possible relationship of cases of familial cirrhosis of the liver and Wilson's progressive lenticular degeneration is suggested.

Indian Medical Gazette, Calcutta

July, LI, No. 7

- 9 Case of Pellagra. J. T. Calvert.—p. 241.
10 Iron and Arsenic as Cure for and Prophylactic Against Malaria. G. W. P. Dennys.—p. 242.
11 *Cheap Absorbent Dressing for Wounded: Incinerated Paddy Husk. W. A. Justice.—p. 246.
12 Purification of Water Supply of Lawrence Military Asylum, Sanawar, by Means of Bleaching Powder. M. A. Nicholson.—p. 248.
13 Abdominal and Bovine Tuberculosis in India. C. A. Sprawson.—p. 257.

11. Incinerated Paddy Husk.—Paddy (i. e., rice in the husk), is husked and then boiled at rice mills, the fuel used being paddy husk. This is not completely burnt and a large ash is left which Justice has called "incinerated paddyhusk." Incinerated paddy husk has a grayish black color and has the consistence of the rough siftings of tea. Envelopes or bags of cotton cloth are made. Two ounces of the paddy powder are filled into these envelopes, which are sewn up. The envelopes are tied up in brown paper in packets of six to a dozen, leaving the ends open. They are then placed in a steam sterilizer and subjected to a temperature of 120 C. for one hour. On removal from the sterilizer the ends of the packages are closed and sealed. The dressings are applied direct to the wound, care being taken that a sufficient number of bags, according to the size of the wound, are applied. A gauze bandage keeps them in position—so little effusion reaches the bandage that the bandages can be used again and again—this is important in military dressings. The dressings should be changed every twenty-four hours at least, but the ease with which they can be removed or replaced lends itself to more frequent renewals. It is a dressing as absorbent cottonwool. No leakage takes place till the whole is saturated. It is a powerful deodorant. The smell from the most offensive wounds is completely absorbed. It is a light dressing and is cool, a desideratum in tropical climates. The dressing is not injured by efficient sterilization.

Journal of Laryngology, Rhinology and Otology, London

July, XXXI, No. 7

- 14 *Atrophic Rhinitis (Ozena) and Tuberculosis. III.—The Pathologic Aspect. W. Wingrave.—p. 276.
 15 Final Report on Isolation and Cultivation of Tubercle Bacillus from Discharging Ear in Cases of Chronic Purulent Otitis Media. G. H. Cocks and J. G. Dwyer, New York.—p. 288.

August, No. 8

- 16 Reports for Year 1915 from Ear and Throat Department of Royal Infirmary, Edinburgh. Part III. Stenosis of Larynx in Children Following Intubation and Tracheotomy. A. L. Turner.—p. 313.
 17 The Past and Present of Otolaryngology. P. McBride.—p. 329.

14. **Atrophic Rhinitis and Tuberculosis.**—Wingrave found that a certain acid-fast bacillus is present in every case of true ozena (atrophic rhinitis) which is never found in any allied conditions. It possesses a close morphologic and tinctorial resemblance to the tubercle bacillus. The histologic changes resemble those of a tuberculous condition (lupus erythematosus). Animal inoculation produced lesions undistinguishable from tuberculosis. But there are two postulates which have not been conformed with, viz.: (a) Demonstration of the organism in the diseased tissues, (b) Production of the disease in an inoculated animal. With regard to the first, it is not alone in this deficiency, since other diseases share the same defect. As to the second, it is almost an insuperable difficulty in a guinea-pig, not only for anatomic reasons, but also for physiologic reasons. The disease in man is spread over a long period of years, and one can hardly expect a condition of such slow growth to be developed in the very short period of observation on the short life of the animal. So that some critical elasticity is demanded in this direction. Notwithstanding these weak links, Wingrave's investigation supports the view that atrophic rhinitis is a disease closely allied to tuberculosis, and that its subjects are purveyors and distributors of an organism which is probably a variety of the tubercle bacillus.

Journal of Tropical Medicine and Hygiene, London

August 1, XIX, No. 15

- 18 *Beriberi Puzzle: A Suggested Solution. W. M. McDonald.—p. 177.

18. **Beriberi Puzzle: A Suggested Solution.**—McDonald is of opinion that the volume of evidence is sufficient to warrant the assumption that improvement in housing and sleeping accommodation where large numbers of men live together, as in barracks, prisons, common lodging houses, mining kongis, ships, should be considered as a particularly important prophylactic measure in countries where beriberi is endemic or epidemic.

Lancet, London

August 12, II, No. 4850

- 19 *Treatment of Infected Suppurating War Wounds. R. Morison.—p. 268.
 20 *An Anomaly in Widal Reaction. A. F. S. Sladden.—p. 272.
 21 Effect of Typhoid Inoculation on Endemic Goiter at Lawrence Military Asylum, Sanawar, Punjab.—p. 275.
 22 *Etiology of Epidemic Cerebrospinal Meningitis. M. F. H. Gamble.—p. 277.
 23 Shiah Pilgrimage and Sanitary Defences of Mesopotamia and Turco-Persian Frontier. F. G. Clemow.—p. 289.

19. **Treatment of Infected Suppurating War Wounds.**—The steps of treatment advocated by Morison are: 1. Under an anesthetic, usually open ether, cover the wound with gauze wrung out of 1:20 phenol and clean the skin and the surrounding area with the same lotion. 2. Open the wound freely and, if possible, sufficiently to permit of inspection of its cavity. (In doing this special regard must be paid to nerve trunks and muscular branches of nerves, since the division of blood vessels, excepting the largest, and of the muscles themselves, does little harm as compared with that of the disability following nerve damage.) Cleanse the cavity with dry sterile gauze, mops, Volkmann's spoon, and remove all foreign bodies. 3. Mop the surrounding skin and the wound cavity with methylated spirit. Cottonwool mops conveying the spirit are used for this purpose, and are introduced on forceps. 4. Fill up the whole wound with the following paste: bismuth subnitrate, 1 ounce by weight;

iodoform, 2 ounces by weight; with sufficient quantity of liquid paraffin to make a thick paste. Dress it with sterile gauze, and cover all with an absorbent pad, which is held in position by sticking plaster and a bandage. This dressing requires no change for days or weeks if the patient is free from pain or constitutional disturbance. Should, however, discharge come through, the stained part must be soaked in spirit and a gauze dressing, wrung out of the same, applied as a further covering. The advantages of this treatment have been most striking in cases of compound fractures of the long bones. Previously such compound fracture patients suffered so severely that their treatment had proved an ordeal for all concerned. Such cases now are associated with little more suffering and trouble than those of fracture without a wound at all. Redressing is very simply done. After removal of the old dressings the wound is covered with a dossil of wool soaked in spirit, and the sticky, dirty looking discharge is wiped off the surrounding skin until it is clean. This is done with dossils of cottonwool, soaked in spirits and applied by forceps. The wound and a small area of the surrounding skin are then plastered with paste, which in its turn is covered by a gauze dressing under a pad and bandage. In more than forty cases treated by this method, there has been no need to change a dressing sooner than intended. There has been, except in head wounds, no spread of septic infection, no cellulitis nor abscess formation, and no aggravation of constitutional disturbances after the operation. Relief of pain and fall of pulse and temperature when they were abnormal has been the invariable rule.

20. **Anomaly in Widal Reaction.**—In order to diminish the occurrence of this zone phenomenon as much as possible the use of distilled water as diluting fluid instead of normal saline has been initiated by Sladden in his routine work. No practical objections to its use have been discovered, nor is the sharpness of the end point impaired. It is not claimed that the operation of the zone effect is thereby annulled, but that it is diminished and the agglutination test rendered distinctly more delicate without becoming any more complicated.

22. **Etiology of Epidemic Cerebrospinal Meningitis.**—It is Gamble's firm conviction that cerebrospinal meningitis in epidemic form is a true gonorrheal inflammation of the arachnoid membrane of the brain and spinal cord, set up by the bites of gonococcal infected pediculi corporis.

Bulletin de l'Académie de Médecine, Paris

July 25, LXXVI, No. 30, pp. 65-88

- 24 *Radiotherapy of Intra-Abdominal Neoplasms of Testicular Origin. A. Bécère.—p. 72.
 25 *Autoserotherapy in Gonorrheal Orchitis. Wagon.—p. 81.
 26 Serotherapy in Typhoid. Technic for Preparation of the Serum. A. Rodet.—p. 83.
 27 Advantages of the Ass as Vaccine-Producer. (L'asino-vaccin et ses avantages.) Arnaud and Huon.—p. 85.

24. **Radiotherapy Effectual for Tumors Originating in Testicles.**—Bécère reports three cases which confirm the peculiar susceptibility of tumors of this class to radiar energy. The first case was the most strikingly successful of any he has ever encountered. A young man of 35 had an enormous tumor of the spleen three years after a retained testicle on that side had been removed on account of pain and epitheliomatous degeneration. The spleen had become involved in the course of time and had rapidly enlarged without any signs of leukemia, but entailing extreme anemia and emaciation. The weight was only 60 kg., but the girth of the abdomen was 86 cm., the solid tumor reaching from the diaphragm to the groin and apparently filling the entire left half of the abdomen and encroaching on the right side. Under weekly Roentgen exposures of 4 H. units for each region, the tumor began to retrogress at once. In five months of the radiotherapy the 24 kg. he had lost were regained; no tumor could be palpated, and there has been no return of symptoms during the five years since. The young man has been serving as a cavalry officer through the war. The other cases showed marked improvement, permanent in one, but the other patient succumbed to metastasis. There

no doubt, Bêclère reiterates, that the cells of a testicle are exceptionally sensitive to radiotherapy, and tumors originating in them share this susceptibility.

25. Autoserotherapy of Gonorrheal Orchitis.—Wagon has only four cases to report, but the results were so good and so prompt that he thinks the method deserves more of a trial. He punctured the scrotum and injected 1 c.c. of the effusion aspirated from the scrotum into the subcutaneous tissue in the man's thigh.

Paris Médical

August 5, VI, No. 32, pp. 101-132

- 28 An Automobile Surgical Ambulance. R. Monod.—p. 101.
- 29 Technic for Amputation from Standpoint of Prosthesis Later. (L'amputation de Gritti au point de vue de la prothèse.) E. Mériel.—p. 107. (Moignons d'amputation du membre inférieur au point de vue de l'appareillage.) Judet.—p. 126.
- 30 Drainage after Operations on Gastro-Intestinal Tract. H. Chaput.—p. 112.
- 31 Importance of Prompt Reeducation of the Elbow After Resection. (Le rôle de la rééducation motrice dans la résection du coude.) Kouindjy.—p. 115.
- 32 Combination of the Abbott and the Forbes Methods of Treating Scoliosis. (Notre technique actuelle du traitement de la scoliose. Suppression du hamac, passage de feutres, fenêtres, etc.) J. Calvé.—p. 119.

Presse Médicale, Paris

July 27, XXIV, No. 42, pp. 329-336

- 33 The Remote Results of War Wounds of the Chest. (Les suites éloignées des blessures pleuro-pulmonaires par projectiles de guerre.) Denéchau.—p. 329.
- 34 Technic for Tracheotomy in Adults. H. Luc.—p. 330.
- 35 Spring Device for Reduction of Fractured Jaw. (Appareil pour la réduction médiate des fractures des maxillaires.) C. Blanc.—p. 331.
- 36 *Cholesterin Content of the Blood in Holland and in the East Indies. (Echanges cholestériniques et pathologie de la race.) C. D. de Langen.—p. 332.

36. Cholesterin as a Factor in Cholelithiasis.—De Langen's studies of the cholesterin content of the blood in Holland and in the Dutch East Indies have shown that there is a marked difference between Europeans and the natives of the Dutch Indies in this respect. In the latter the cholesterin content of the blood is only about half the European figure, while that of the bile is also extremely low. In Japan, the corresponding figures are said to be about midway between those in the Dutch Indies and in Holland. De Langen was led to this research by noticing the extreme rarity of gallstone trouble in the East Indies. When gallstones are found they are not the cholesterin stones of Europe, but are composed principally of calcium bilirubinate, thus resembling the *calculs hémolytiques* described by Chauffard. In a group of 5,800 sick natives of the islands there were only five cases of diabetes mellitus, while in a corresponding average group at the Groningen Hospital in Holland, the year before, he had found twenty-two diabetics among 1,200 patients. In Japan, also, glycosuria is very rare, and it is so mild that, as a recent Japanese writer has said, it does not deserve the name of diabetes. De Langen mentions further that the arterial pressure is low among the natives of the Dutch East Indies. He does not attempt to decide whether the physiologic hypocholesterinemia of the natives is the result of their diet or is a racial peculiarity nor whether this low cholesterin content of the blood has anything to do with beriberi.

Progrès Médical, Paris

July 20, XXXII, No. 14, pp. 117-128

- 37 *Syphilis as a Factor in Rheumatism; Sulphur and Mercury in Treatment. Loeper, Bergeron and Vahram.—p. 117.
- 38 The Indemnity as a Factor in Traumatic Neuroses. (La notion de consolidation dans les névroses traumatiques des sinistrés du travail et des blessés de guerre.) H. Verger.—p. 118.
- 39 Bacteriologic Study of Kephir. A. Sartory.—p. 122.
- 40 Continuous Progressive Gentle Traction by Simple Means in Treatment of Stiff Joints and Muscular Contracture. J. Regnault.—p. 123.

August 5, No. 15, pp. 129-136

- 41 *Staphylococcus Septicemic Meningitis. G. Etienne and A. Grosjean.—p. 129.
- 42 Case of Gastric Cancer with Metastasis in Cerebellum and Terminal Meningitis. D. De Fortunet and A. Cade.—p. 132.

- 43 Reaction in Genital Organs to Vaccination Against Typhoid and Paratyphoid. (Réactions orchio-épididymo-funiculaires consécutives à la vaccination antityphoïdique et antiparatyphoïdique.) A. Satre.—p. 134.

37. Syphilis as Factor in Rheumatism.—This article describes 41 cases of joint rheumatism developing in syphilitics and yielding as a rule to measures directed against the syphilis. Only one joint was affected in 3 cases, the trouble resembling ordinary white swelling. Several joints were involved in 8 cases. In 11 cases there was an arthritis without effusion, and in 10 the joint trouble was of the deforming rheumatism type. In 4 there was merely pain in the joint without deformity or nervous reaction. It seems plausible to assume that the rheumatism would not have developed in these young men if it had not been for the syphilitic soil. This assumption is confirmed by the benefit under mercury, especially when combined with sulphur.

41. Staphylococcus Meningitis.—The man of 46 had *Staphylococcus albus* septicemia, and was apparently on the way to recovery when secondary meningitis developed which soon proved fatal. The germ was in pure culture, and rabbits inoculated with it developed a similar septicemia.

Revue Médicale de la Suisse Romande, Geneva

July 20, XXXVI, No. 7, pp. 385-448

- 44 *Cerebrospinal Meningitis at Geneva. H. Mallet.—p. 385.
- 45 *Uterine Cancer and Radium. L. Aubert.—p. 401.
- 46 Râles Propagated to Other Side of Chest as Source of Error in Auscultating the Tuberculous. F. Heim and M. Jeanneret-Minkine.—p. 411.
- 47 Acute Sensory and Motor Lumbar and Sacral Polyradiculitis Following Furunculosis. Roehrich.—p. 422.
- 48 Hydropyonephrosis from Supernumerary Artery. C. Perrier.—p. 427.
- 49 Nephrectomy for Hypernephroma. C. Perrier.—p. 428.
- 50 Fixation of Painful, Sagging Liver. (Cas d'hépatopexie.) C. Perrier.—p. 430.
- 51 Incision in Lumbar Region to Explore the Kidney Before Venturing to Remove Its Tuberculous Mate. (Lombotomie exploratrice comme moyen de diagnostic dans un cas de tuberculose rénale.) C. Perrier.—p. 432.

44. Epidemic Cerebrospinal Meningitis.—Mallet recalls that the first description of this disease was published by Vieusseux of Geneva, Switzerland, in 1806. By a curious coincidence, there has been no epidemic there since until this year. Mallet reproduces the original description of 110 years ago; the disease was then entitled *fièvre cérébrale ataxique*. His analysis of the recent cases confirms the importance of healthy carriers in spreading the disease. He found only one carrier in the environment of his own cases, and he isolated this healthy person, and had him rinse out his nose repeatedly and take potassium chlorate internally. By the next day, no further meningococci could be found in the nasal secretions. In his fatal cases necropsy disclosed pneumonia in twelve and acute pericarditis in three. There were two cases of cerebral deafness among the survivors, and one case of mental disturbance during convalescence. The only certain sign is the discovery of the meningococcus in the cerebrospinal fluid on lumbar puncture. The mortality of the disease has been materially reduced by serotherapy. Its results are better the earlier it is started, the larger the doses, and the shorter the intervals. In infants, the disease is often difficult to differentiate and it is liable to assume a chronic form. If the foramen of Magendie becomes obstructed, the serum must be injected directly into the lateral ventricle.

45. Uterine Cancer and Radium.—Aubert agrees with those who regard radium as a useful palliative in inoperable cases and as an adjuvant to thorough surgical measures. Degrais insists that an inoperable cancer always derives some benefit from the radium exposures.

Correspondenz-Blatt für Schweizer Aerzte, Basel

July 29, XLVI, No. 31, pp. 961-992

- 52 *Acute Poliomyelitis in Switzerland. (Die Heine-Medin'sche Krankheit in der Schweiz mit bes. Berücksichtigung einer Epidemie im Kanton Luzern im Herbst, 1915.) J. Andoussieur.—p. 961.
- 53 A Fungus as Dressing Material. (Die Anwendung einer Flechte—*Bryopogon jubatus*—als Verbandstoff.) B. Galli-Valerio.—p. 981.
- 54 Fungoid Mycosis in Woman. Fatal in Three Years. J. Weber.—p. 983.

August 5, No. 32, pp. 993-1024

- 55 *The Spirochete of Febrile Jaundice and Production of Antiserum. (Eine kurze Mitteilung über die Entdeckung des Erregers — Spirochaeta ictero-haemorrhagiae nov. sp. — der sogen. Weil'schen Krankheit in Japan und über die neueren Untersuchungen über die Krankheit.) R. Inada and others.—p. 993.
- 56 *Measurement of the Elasticity of the Arteries, and Its Clinical Importance. (Versuche über die elastische Kapazität der Arterien.) A. Bühler.—p. 1003.

52. **Infantile Paralysis in Switzerland.**—Androussieur reviews the history of acute anterior poliomyelitis, and reports a recent epidemic at Lucerne. The first case was in a woman of 32, the second in a man of 41 whose healthy wife had nursed the first case. The disease came on with sudden onset and high fever in both and simulated Landry's paralysis, proving fatal in six and four days. Eight other cases followed, all in children over 5. Some communication between the families was known in a number of the cases through healthy carriers, although they were in scattered farms. But in five cases no epidemiologic data could be discovered. The funeral of the first woman that died was largely attended and the fact that no more cases developed confirms Wickman's statements that the susceptibility to the disease is slight as a rule. The period of incubation was from two to seven days in all but two cases; in these it seemed to be thirteen days and five weeks. In three families two children were affected. In the seventy-nine cases at Zurich in the last twenty-five years the youngest patient was 4 weeks, the oldest 12 years old. Androussieur lists the various large epidemics on record, including Norway, 1905, 918 cases, and 1906, 334 cases; Sweden, 1906, 379; American, New York, 1907, 2,500; Massachusetts, 236; 1908, Massachusetts, 136; Australia, 1908, 135; Austria, 1908-1909, 1,393; Germany, 1909, 2,140; Nebraska, 1909, 200, and Paris, 1909, 100. In prophylaxis he urges strict isolation and disinfection at the bedside, with terminal disinfection. All in the environment should be watched and any with slight fever or sore throat should be isolated, especially children. Scrupulous cleanliness and ample ventilation should be enforced. All the persons in the house should gargle systematically and rinse out the nose and mouth with some disinfectant, such as 0.5 per cent. potassium permanganate, 0.5 per cent. dilute phenol solution, or neutral hydrogen dioxid. The children in the family should be kept at home for at least eight days and not be allowed to return to school unless they keep entirely well. The child that has had the disease should not be allowed to return to school until at least three weeks after definite recovery.

55. **Spirochete of Febrile Jaundice in Japan.**—Inada and his assistants give an illustrated description of the spirochete they have isolated from cases of the disease in Japan which presents the same clinical picture as that of Weil's disease in Europe. Patients were treated with serum from convalescents or an immune serum derived from immunized horses. The horse serum was given in twenty-six cases. After injection of 40 or 60 c.c. of the immune serum the spirochetes disappeared from the blood in twenty-four hours. One horse bore the subcutaneous injection of 800 c.c. of a virulent culture containing from twenty to thirty spirochetes in one field. A rabbit could be protected by injection of 0.01 c.c. of this horse serum against infection from 1 c.c. of a culture with 10 spirochetes to the field. Experiments were also made with goat serum. In clinical cases the spirochetes are not numerous in the blood, but if guinea-pigs are inoculated in the peritoneum with some of the blood, the spirochetes proliferate rapidly and induce a characteristic disease. They found that the spirochetes could penetrate the intact skin and can also cause the disease when swallowed. The spirochetes seem to live in stagnant water and damp ground and there does not seem to be any intermediary host. They are eliminated in the excreta, in the urine, mostly toward the end of the third week, but in some cases up to the sixtieth day.

56. **Elasticity of the Arteries.**—Bühler examined thirty-eight arteries from twenty cadavers, having devised an apparatus to measure the elasticity. The formulas and figures cited show the mathematical-physiologic laws regulating arteriosclerosis, etc.

Gazzetta degli Ospedali e delle Cliniche, Milan

July 30, XXXVII, No. 61, pp. 945-960

- 57 *Pulsation and Murmur to the Right of Umbilicus as Sign of Pancreas Lesion or Aneurysm of the Celiac Artery. (Su di un sintoma sconosciuto nelle lesioni del pancreas e nell'aneurisma del tronco celiaco.) G. Onano.—p. 948.

August 3, No. 62, pp. 961-976

- 58 *Improved Technic for Exclusion of the Pylorus. (Esclusione del piloro con introflessione della sierosa nel lume enterico.) G. Onano.—p. 965.

57. **Differentiation of Pancreas and Gallstone Trouble.**—Onano had a patient referred to him for operative removal of gallstones as the man was suffering from colics and jaundice. In palpating the liver and gallbladder he noted an abnormal pulsation and sensation of friction, with a murmur very distinct on auscultation, applying the stethoscope a fingerbreadth to the right of the umbilicus. These findings were peculiar and not to be detected in other patients with gallstones or in the healthy. This suggested that the pain and jaundice might be the result of compression of the common bile duct from some tumor, especially as there was no fever and hence acute inflammation could be excluded. At the same time the idea of a tumor did not harmonize with the periodical return of the colics about once a week, or with what seemed to be an enlarged gallbladder, which could be palpated under the edge of the large lobe of the liver. Roentgenoscopy was negative, but this might be explained by the gallstones being formed of cholesterol. The abdomen consequently was opened. The gallbladder was found normal and the trouble was found to be a large tumor in the pancreas. In a second similar case the compression inducing the recurring colics and jaundice was the work of an aneurysm in the celiac artery.

58. **Exclusion of the Pylorus.**—Onano utilizes the power of adhesion possessed by the peritoneum to exclude the pylorus. He has experimented with it on animals and found the results superior to other technics, while it seems to be simpler and takes less time, while no foreign body is left in the tissues. He makes a longitudinal incision, 5 or 6 cm. long, in the tract between the stomach and the duodenum, and turns in the walls so that the serous membranes of the two walls are brought into contact inside the intestine for a certain stretch. To promote formation of adhesions he abrades the visible mucosa that is accessible when the intestine is thus incised, and he takes a few stitches to bind together the introflexed serosa and press it against the abraded mucosa. The serosa beyond is sutured over the whole, and this in turn is protected by suturing a pedunculated wisp of omentum over it. Dogs operated on in this way, with a supplementary gastro-enterostomy, bore the operation perfectly and the new opening seems to functionate perfectly. None of the animals has been killed yet, but the exclusion of the pylorus seems complete.

Policlinico, Rome

July 30, XXIII, No. 31, pp. 943-966

- 59 Bullets Fired Base First? (Gli austriaci rovesciano anch'essi volutamente i proiettili di fucile nella cartuccia?) R. Alessandri.—p. 943.
- 60 A Field Hospital. (L'ospedaletto da campo da 50 letti.) T. Pontano.—p. 946.

July, Surgical Section No. 7, pp. 193-224

- 61 *Experimental and Clinical Study of Ligation of Coronary Arteries and Veins. (Legatura separata e simultanea delle arterie e delle vene coronarie del cuore.) L. Dominici.—p. 193. Concluded.
- 62 Fracture of the Tuberosity of the Tibia. (Contributo alla patogenesi della malattia di Schlatter-Osgood.) T. Costa.—p. 215.
- 63 Incision of Kidney Hilus to Extract Concretions. (Contributo alla chirurgia renale: pielotomia.) P. Amorosi.—p. 219.
- 64 Stab Wounds of the Kidney; Reimplantation of Severed Portion. G. Serafini.—p. 222. Continued.

61. **Ligation of Coronary Arteries and Veins.**—Dominici gives the details of forty-six experiments in this line on dogs. In six other dogs the effect of severing the vagus or paralyzing it with atropin was studied further. He has found in the literature eighteen cases in which coronary vessels had to be ligated in the course of operations. A branch of the artery was ligated in twenty instances and a vein once. He summarizes them all, including Bradbury's case published

in THE JOURNAL, 1913, lxi, 1809. One of the patients succumbed to his wound on the table, one died the next day and three within the week. The others left the hospital in good condition. One died from tuberculosis five years later, and one is known to be in good health after four years. Necropsy in two cases in which the severed descending branch of the coronary artery had been closed with a stitch showed that no harm had resulted, one of the men surviving for five years. On the other hand, in the two cases in which this artery was ligated, both patients died. Ligation of the ventricular collateral branches of the left coronary artery seems to do no harm; at most there results merely a focus of fatty infiltration. Ligation of other portions of the left coronary is always dangerous, but ligation of the great coronary vein seems to be harmless. Ligating at the same time the vein and the artery reduces materially the injury from ligation of the artery alone. This is probably due to extensive anastomoses. This assumption is confirmed by the survival for three hours of one dog after ligation of both coronaries and the great coronary vein. The injury from ligation of one of the coronary arteries is enhanced by the mechanical obstacle of the ligature, impeding the action of the myocardium. There is every reason to assume that the results of experiments on dogs can be applied in estimating the probable effect of such procedures on man.

Brazil-Medico, Rio de Janeiro

July 8, XXX, No. 28, pp. 217-224

65 *The Campaign Against Snake Poisoning in Brazil. (A lucta contra o ophidismo no Brazil.) J. Pinto.—p. 217.

66 *Primary Localization of Diphtheria in the Conjunctiva of Left Eyelids. (Caso de localização primitiva da diphtheria na conjunctiva.) N. Da Rocha.—p. 219.

July 15, No. 29, pp. 225-232

67 Fecundation of Flagellate. (Fecundação n'um flagelado de vida livre "Prowazekia Cruzi"—Hartmann & Chagas.) C. Chagas and M. Torres.—p. 225.

68 Case of Actinomycosis; Tenth Recorded in Brazil. O. Torres.—p. 225.

65. The Campaign Against Snake Poisoning in Brazil.—Pinto relates that the state of S. Paulo in southern Brazil leads the world in its efforts to combat snake poisoning—ophidism. An institute was organized for the purpose of procuring antitoxins for the venom of snakes and their application in suitable cases. The antitoxins are supplied free and delivered also without charge to any point in the state reached by railroad. The number of ampules thus distributed has amounted to 5,000 a year in recent years. S. Paulo is the only state that keeps accurate records of its cobra bites, but estimating them for the whole country on the basis of its statistics shows that there must be on an average about 4,800 deaths from cobra bites and 19,200 accidents from this cause annually. Pinto urges the other states to organize relief stations where the antitoxin can be promptly administered and where venom can be taken from cobras and forwarded to the S. Paulo institute, which will return the equivalent in antitoxin. By this means, with very little expense each region could be equipped to combat cobra bites effectually. V. Brazil is in charge of the S. Paulo institute, and he has recently published a book, "Defense Against Ophidism," describing poisonous snakes in general and those of Brazil in particular, with colored plates, describing also the clinical picture which follows their bites and the means of prophylaxis. Chief among these are leather shoes and leggings, as 75 per cent. of all bites are in the legs. A bounty on cobras is also a useful measure, but only S. Paulo offers it. The *mussurana*, *Oxyrhopus cloelia*, destroys poisonous serpents, and it should be protected and its services utilized in this way. It seems to be peculiar to Brazil. [The dictionary defines "mussurana" as a kind of field mouse, but *Oxyrhopus* is the name of a family of snakes more or less poisonous, but not seriously harmful for man.] At the institute it has been found that the snake poisons of Brazil can be classified in four groups and a special antitoxin is prepared from native snakes for each group. From 10 to 20 c.c. of the antitoxins are injected at once and repeated in six hours, unless marked improvement is evident. Brazil now has records of 1,058 applications of the antitoxin. That

prepared in France from the venom of serpents from British India is not effectual against Brazilian snake bites.

66. Localization of Diphtheria on the Conjunctiva.—Da Rocha's patient was a child of 2 whose left eyelids were swollen and hard, and the inner side was covered with false membranes, but there was no purulent secretion. The aspect suggested diphtheria, but no case was known in the region. Local instillation of antitoxin and injection of 10 c.c. were followed by the dropping off of the false membranes the next day, and the gradual subsidence to normal of the eyelids. The instillations were kept up and a second injection given. Nothing but staphylococci could be grown from the false membranes and the nasal secretions at this time, but two days later the condition grew worse again and diphtheria bacilli were then found in pure cultures. Antitoxin was then injected in small doses, 3 c.c. on alternate days, to ward off any tendency to anaphylaxis, and recovery was soon complete. The other eye kept normal throughout and the general health did not seem to suffer much.

Siglo Medico, Madrid

LXIII, No. 3268, pp. 481-496

69 The Nuclear Structure of Red Blood Corpuscles. (Investigaciones microscopicas acerca de la llamada estructura nuclear de los eritrocitos del hombre y de los mamiferos.) F. Mas y Magro.—p. 482. Continued.

70 Diarrhea in Children. (Tratamiento de las diarreas en los niños.) C. S. de los Terreros.—p. 489.

Prakticheskiy Vrach, Petrograd

XV, No. 20-21, pp. 169-180

71 Case of Echinococcus Disease of the Liver Complicated with Ascites. (K kazuistik exinokokka petcheni, oslozhnennago vodyankoi.) V. M. Volkovitch.—p. 169.

No. 22-23, pp. 181-192

72 Myxedema in Two Children. B. I. Morgulis.—p. 183. Commenced in No. 20.

Russkiy Vrach, Petrograd

XV, No. 21, pp. 481-504

73 *Similar Organic Heart Defect in Six Children of One Family. (Sluchai semejnego rasprostraneniya serdetchnikh porokov.) N. E. Kusheff.—p. 481.

74 *Action of Camphor and Menthol on Coronary and Peripheral Vessels. (Dieistvie kamphori, borneola i mentola na vienetchnie i peripheritcheskie sosudi.) N. P. Likhatcheva.—p. 483.

75 *Experimental Appendicitis Induced by Way of the Blood. N. F. Mordvinkin.—p. 485.

76 *Suppurating War Wounds of the Knee. Z. I. Ponomareff.—p. 486. Commenced in No. 20.

77 Extension Walking Device for Fracture of Long Bones. N. A. Gurevitch.—p. 495.

78 Splint for Compound Fracture of Humerus. A. N. Abramova.—p. 497.

79 Poisoning with Methyl Alcohol and Its Detection in Alcoholic Beverages. N. N. Gromoff.—p. 498.

No. 22, pp. 505-528

80 *Asphyxiating Gases in Warfare. N. A. Kruglevsky.—p. 505.

81 *Grasping Movement as Pathologic Reflex. (O reflex skhvativaniya.) A. E. Yanishevsky.—p. 510.

82 *Action of Poisons on the Vessels in the Brain. (O dieistvie yadov na sosudi golovnogo mozga.) V. I. Berezin.—p. 513.

83 *Salvarsan and Similar Preparations Specific Treatment for Relapsing Fever. (Lietchenie vozvratnago typha salvarsanom, neosalvarsanom i arsenobenzolom Billon.) I. I. Iversen.—p. 518.

84 Action of Infantry Bullets. (O dieistvie ostrokonetchnoe malokalibernoe puli na russko-germano-austriiskikh frontakh.) G. V. Fovelin.—p. 520.

73. Familial Heart Defect.—There has been no postmortem in the family described, but six of the children presented an apparently identical syndrome and three of them have died suddenly. The three surviving show the same symptoms in various degrees. One child died young; the others all reached adult age.

74. Action of Camphor and Menthol on Coronary and Peripheral Vessels.—Likhatcheva found from her experiments on the ear and heart of rabbits that camphor, borneol and menthol dilate the coronary and peripheral blood vessels in dilutions of 1:2,500 and 1:5,000. Camphor is the weakest of the three. In dilutions a tenth weaker than this there is in the peripheral vessels first temporary constriction followed by gradual dilatation. The findings are tabulated for comparison.

75. **Experimental Appendicitis.**—Mordvinkin injected a culture of staphylococci directly into a vein in the ear of rabbits, after ligating the appendix or cutting it between two ligatures. The normal appendix proved able to eliminate the bacteria, thus reaching it in the blood, passing them on into the lumen of the intestines without harm if the appendix was permeable. If the appendix was obstructed, the staphylococci reaching it by way of the blood soon set up inflammation in it, with complicating peritonitis.

76. **Suppurating War Wounds of the Knee.**—Ponomareff decries any attempt to probe or drain the cavity of the knee joint when there is an infectious process in it or such is even suspected. He advocates absolute rest, immobilizing with plaster or splint. If the suppuration keeps up, however, he incises and drains the anterior half, following this by incising and draining the posterior half if this alone does not help. If nothing avails, excision of the joint or amputation of the femur must follow promptly if the infection shows a tendency to spread to adjacent regions.

80. **Asphyxiating Gases in Warfare.**—Kruglevsky analyzes the pathologic, pharmacologic and clinical facts observed and comes to the conclusion that the gases used in warfare at present are mainly chlorin and bromin.

81. **Grasping Reflex with Brain Tumors.**—Yanishevsky writes from Odessa to call attention to the way in which persons with brain tumors and other affections of the depths of the brain respond like very young infants by grasping any object that touches the fingers. He calls it the grasping reflex, and gives illustrations of the prompt way in which the fingers curl around a stick brought in contact with them, when otherwise the patient may be unable to flex the fingers. One patient with a tumor in the right frontal lobe and left paresis was unable to bend his fingers or open the hand voluntarily, but if a stick touched the volar side of the hand or the open hand was flicked with a towel, the object was grasped. Robinson and Preyer have studied the similar phenomenon in infants, and found it pronounced up to the age of 84 days. Yanishevsky noted this pathologic reflex in cases of spastic paralysis agitans, diffuse cerebral arteriosclerosis with diplegia and pseudobulbar phenomena, and in the last stages of paralytic dementia, but never in capsular or cortical brain affections. The reflex is particularly frequent and pronounced with tumors of the frontal lobe. In this region of the brain there must be normally some inhibiting center for the grasping reflex. The deeper a lesion in the brain, the more the reflexes resemble those in very young infants.

82. **Action of Poisons on the Vessels of the Brain.**—Berezin experimented with rabbits and large fish, pikes, finding that the cerebral vessels in both responded about the same to the action of various poisons. The alcohols dilate the vessels, the effect being most pronounced the higher the molecular weight of the alcohol. Various hypnotics, including chloral, also cause dilatation of the vessels in the brain. It was most pronounced with hedonal. Narcotics, such as ether, chloroform and acetone, also induce dilatation, weakest with the last mentioned. Dilatation was also produced by caffeine, camphor, atropin, antipyrin, quinin and salicylic acid. The cerebral vessels also respond to vasoconstricting substances, such as epinephrin, but not as actively as the peripheral vessels. The latter are affected by even extremely dilute solutions to which the cerebral vessels scarcely respond. On the other hand, the action of the vasodilating substances is much more pronounced on the cerebral than on the peripheral vessels, and the cerebral vessels are also affected by such poisons as morphin, atropin, etc., which do not affect the vessels of other regions.

83. **Salvarsan Specific in Relapsing Fever.**—Iversen's experience has been that the spirochetes disappeared entirely from the blood in from four to eight hours after an intravenous injection of from 0.4 to 0.6 gm. salvarsan in 100 or 150 c.c. normal salt solution. The patients were discharged from the hospital in from five to eight days, while with other methods of treatment the hospital had to keep them a month or two. He adds that equally good results were obtained with similar preparations of other makes.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

August 5, II, No. 6, pp. 453-520

- 85 Influence of the Pitch of Sounds on the Reflex Response of the Membrana Tympani. (Over den invloed der toonhoogte van den geluidsprikkel op de uitkomst van den tensorreflex.) M. Ono.—p. 457.
- 86 Electrograms from Fragments of the Frog Myocardium. (Over eenige electrogrammen van kikkerhartspierfragmenten.) H. C. Rümke.—p. 462.
- 87 Mucilaginous Seeds as Laxatives. (Het zaad van *Ocimum basilicum* L.—selasih—en andere slijmerige zaden als laxerend middel.) E. C. van Leersum.—p. 478.
- 88 Anomalies in the Structure of the Frontal Sinus. (Moeilijkheden door variaties en den anatomischen bouw der voorhoofdsholten.) A. de Kleyn.—p. 488.
- 89 Pseudo-Glaucoma. W. Koster.—p. 491.

Ugeskrift for Læger, Copenhagen

July 20, LXXVIII, No. 29, pp. 1197-1250

- 90 *Research on Occult Hemorrhages. (Undersøgelser over okkult Blødning. II. Kliniske Resultater ved Anvendelse af Benzidinproven.) J. P. Gregersen.—p. 1197. Concluded in No. 30.
- 91 *Etiology of Aortic Valvular Defect. (Etiologien til Aortaklæppefejl uden samtidig anden Klæppefejl.) G. Fløysturp.—p. 1214.

90. **Occult Bleeding.**—In this instalment of his report Gregersen reviews his clinical experience as compared with the findings of the tests for occult hemorrhages. Only one among 147 patients free from signs of ulceration in the alimentary canal gave a positive response to the tests for occult bleeding. This proportion of error of only 1:147 is a fine showing for any clinical test. In 18 other cases there was once one solitary positive reaction in a long series of negative responses but these 18 solitary reactions do not count among the nearly 1,300 negative findings in the stools. He found the benzidin test so delicate that it gave a positive response even after ingestion of 1 gm. blood by the mouth. The findings were constantly negative on applying the test to 135 specimens of feces from 18 patients with heart disease, and to 30 specimens from 4 patients with nephritis, and 51 specimens from 3 with cirrhosis of the liver. This group confirms the general experience that even with such congestion in the abdominal organs as accompanies these three affections, no blood finds its way into the lumen of the bowels. The findings were also negative in 35 specimens from 4 patients with pronounced gallstone trouble, but in a fifth case there was a faint positive response in 2 specimens while 23 were negative. This patient soon died from perforation of the wall of the common bile duct by a stone. A positive response thus in cholelithiasis may suggest ulceration and impending perforation.

His experience in 25 cases of chronic gastritis with achylia was also constantly negative; only one patient gave one faint positive response with 13 negative. The test was reliable also even when the outside of the lump of feces became coated with bloody mucus as it reached the lower part of the bowel. Applying the test to a scrap from the center of the lump gave a negative response in all but one of 102 examinations of stool from 11 patients with severe constipation plus colitis. His report on his 34 cases of gastric ulcer is not completed in this instalment although he mentions here that the tests for occult blood were instructively positive in 30 of the 34. The first instalment was summarized in these columns on page 84.

91. **Etiology of Isolated Aortic Valvular Trouble.**—Fløysturp analyzes here the necropsy findings in 42 cadavers with lesions of the aortic valve, the other valves apparently intact. It was evident, he says, that arteriosclerosis was responsible for the aortic trouble in 19 per cent. while there were signs of acute infectious endocarditis in 23.8 per cent. No causal factors could be incriminated in 60 per cent. of the pure insufficiency cases, while 80 per cent. of the pure stenosis cases were due to arteriosclerosis and 75 per cent. to syphilis in the mixed type. In 11.9 per cent. of the total 42 cases there was a history of acute articular rheumatism, and the age averaged about 38. In the arteriosclerosis cases the ages ranged from 56 to 83, while the syphilis patients were between 40 and 70 years old. Death followed not very long after the first symptoms of aortic trouble in most of the cases, but in one the interval had been ten years.

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CHRONIC MOUTH INFECTIONS IN THEIR RELATION TO GENERAL DISEASES: A SYMPOSIUM

THE PREVALENCE OF CHRONIC MOUTH INFECTIONS AND THEIR MANAGEMENT *

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An examination of the histories of 498 cases of chronic arthritis in the service of Dr. Frank Billings at the Presbyterian Hospital, Chicago, furnishes valuable information on the incidence of chronic mouth infections. Of this number 332 had careful Roentgen-ray mouth examinations; 1,132 periapical infections ranging from small areas of rarefaction to gross bone lesions were recorded; 994 of the teeth involved had been treated, with varying degrees of root-canal fillings, and 138 teeth showed no evidence of root-canal treatment. The percentage of patients in this group showing definite Roentgen-ray evidence of chronic alveolar abscess was 89; 1,342 teeth were involved in varying degrees of pyorrhea, the diagnosis being based largely on the Roentgen-ray evidence of periodontal membrane destruction. Seventy-six per cent. of the patients showed well defined pyorrhea, many of them well advanced with marked suppuration.

A second group of patients from Dr. Billings' service, seventy in number, excluding all arthritics, showed chronic alveolar abscess in 74 per cent. The first included myositis, neuritis, goiter, asthma, nephritis, etc. Forty-nine per cent. had pyorrhea. A third group taken from 150 private office records showed chronic alveolar abscess in 69 per cent.

In determining the incidence of chronic alveolar abscess in patients suffering from chronic disease, one should limit his investigations to adults. Other foci of infection are more likely to be responsible for chronic disease in young people in whom the tonsil undoubtedly is more often responsible than the teeth. While pulpless teeth are met with in young people, the percentage is quite low compared to those of middle life. This is more largely true of pyorrhea than chronic alveolar abscess. Pyorrhea before twenty-five years of age is comparatively rare. The danger both from chronic alveolar abscess and pyorrhea decreases with advancing age, and the loss of teeth. One may

regard, therefore, the period from 25 to 60 as the period of greatest danger.

An edentulous jaw or partially edentulous jaw, where the remaining teeth are free from infection, does not absolve the mouth from responsibility. The removal of part or all of the teeth involved in a chronic infection may serve to clean up the mouth of a patient whose tissues elsewhere have suffered permanent harm, and without effecting a cure. The fact that a mouth at the time of examination may be free from infection does not exclude such a mouth from responsibility any more than the removal of infected teeth insures the repair of permanently damaged joints or other structures.

Such an argument, however, does not absolve one from the responsibility of removing infection whenever it is discovered, whether in recent or long standing cases. The 718 cases cited illustrate the incidence of chronic mouth infection in three groups of cases. The first group of 498 cases were all chronic arthritics. The second group of seventy were chronic infections, none of them suffering from joint lesions. The third group of 150 were office cases, referred for mouth examination because of some systemic disease.

In the first group 89 per cent. had alveolar abscess; the second group 74 per cent., the third group 69 per cent.

The appearance of 89 per cent. of chronic alveolar abscess in so large a group of hospital patients is probably more than presumptive clinical evidence, particularly when viewed in the light of results following treatment and animal experimentation.

In the light of our present knowledge these facts must constitute an eloquent predication. An interesting feature of our study of the frequency of chronic mouth infections was the discovery that the poorer classes had relatively fewer chronic abscesses than the middle and well-to-do classes. The reason is not difficult to find—the poor people, including foreigners, usually have aching teeth treated by early extraction.

Considering the manner of infection, chronic alveolar abscess may be classified as primary and secondary: primary, those in which infection occurs through the root canal from an infected pulp; from faulty technic in root canal treatment; from a failure to adequately seal the root canal and pulp chamber in the introduction of permanent filling materials. Those infections classed as secondary are blood borne, the predisposing cause being a lowered resistance in the periapical tissue brought about, first, by the careless use of arsenic as a devitalizing agent, and, secondly, by the indiscriminate use of irritating agents in the treatment of root canals. The irritation set up in the tissues at the apex of the root results in a stimulation and multiplication of the fixed tissue cells, and

* Chairman's address, read before the Section on Stomatology at the Sixty-Seventh Annual Session of the American Medical Association, St. Louis, June, 1916.

the end result is scar tissue, which interferes with normal circulation. The resistance of such areas is relatively low. A periapical infection in a vital tooth can scarcely occur. These secondary infections may be largely represented by the principle of asepsis rather than antisepsis. More good and less harm is accomplished by surgical cleanliness than by the use of antiseptics and disinfectants.

The relative danger of chronic abscess compared to pyorrhea is difficult to measure. While a closed suppurating cavity is more serious than an open one, the quantity of infection is apt to be very much greater in pyorrhea.

Pyorrhea may be looked on as the lesser of two evils, but not to any degree of tolerance.

TREATMENT

The object of treatment is twofold: first, to save the teeth, and second, to rid the mouth of infection. Whatever form of treatment may be undertaken, nothing short of restoring the tissues to a state of health can be considered satisfactory.

A discussion of the various methods employed in the treatment of pyorrhea would for the present purpose be without profit. No fault can be found with an honest, intelligent effort to save teeth involved in a chronic suppurative pericementitis.

In carefully selected cases in the mouths of patients who are in a state of good health, one may properly undertake the treatment of teeth which are not seriously damaged. Where a large portion of the periodontal membrane has been destroyed, no permanent cure need be expected. The process of repair in this class consists in the formation of connective tissue—scar tissue—in which the circulation of blood is very limited and which does not form a biologic union between the cementum and alveolar process. No permanency need be expected of repair of this type.

The fibers of the periodontal membrane are attached to the cementum by the cementoblasts. Destroyed by a chronic suppurative pericementitis, the cementoblasts probably do not regenerate to any appreciable extent. The cementoblasts being destroyed, there is no hope of union between the cementum and surrounding tissues, except by scar tissue. There is no continuity of tissue in this type of repair, and reinfection is likely to follow.

Well selected cases in the hands of specially trained men undoubtedly yield gratifying results; but the number of men thus qualified form a small percentage of the dental profession, and a great many people are afflicted with chronic suppurative pericementitis.

Recently emetin has been rather extensively advocated and used in the treatment of this condition on the assumption that the endameba was the essential cause. This has been based on a rather far fetched analogy. No one to our knowledge has demonstrated by animal experiments, or even convincing clinical evidence, that the endameba bears anything more than perhaps a symbiotic relationship to the infection. While we cannot at this time enter into a detailed discussion of the subject, we cannot refrain from expressing the opinion that the use of emetin as an experiment has been a failure.

The treatment of chronic alveolar abscess falls naturally into two groups: (1) conservative, and (2) radical.

The first type saves the tooth, and, theoretically at least, removes the infection. The second type removes

the tooth and is the only method which removes infection in all cases. In the first type there is involved the opening of each root canal to its apical foramen, and complete disinfection and filling with a neutral substance which shall seal the canal at the foramen, and shall not be affected by moisture or cause irritation to the surrounding tissue. Theoretically these are the requirements. Practically they are realized in a minor degree.

Allowing for natural conditions and body defenses, probably not more than 25 per cent. of all root canals treated may be considered safe. This statement embraces general practice and does not particularize the few teeth treated by a few specialists.

At present there are not enough dentists to care for the people, and while the poor and ignorant have been automatically excluded in the past, they must now be dealt with, because of our new knowledge of chronic infection, on the same basis as the better classes.

Perhaps not over 10 per cent. of dentists may be considered competent to undertake difficult root canal operations. Surely not over 10 per cent. of the people can afford to pay for the services of a dentist who has acquired high skill in root canal technic. If, then, there are too few dentists to take care of all the people, and all the people must be cared for in the matter of infections, and only 10 per cent. of the dentists may be called on to save teeth involved in chronic infections, and only 10 per cent. can afford the services of a specialist, after discounting the successes of specialists in root canal technic, one is confronted with the practical fact that most of the people are seriously involved.

One may postulate that only certain chronic infections are dangerous; but who shall discriminate and say, "This chronic abscess or pyorrhea is harmless and this one is harmful"? When in doubt and the patient is ill, which shall be sacrificed, the tooth, or a possible opportunity for the patient's recovery? No doubt teeth are being extracted which do not bear a causal relationship to general infection; but it certainly is the lesser of two evils to remove the tooth. In so doing one is at least performing a reasonable service in an attempt to bring back health, and whether a patient is well or ill it is never justifiable to allow any infection to remain anywhere in the body which may be removed with as little loss or discomfort as the extraction of a tooth. The functional value of an infected tooth cannot compensate for the harm it may cause.

Every tooth should be saved which may be made to serve the patient better than an artificial substitute, provided we interpret the quality of service in the light of the health and comfort of the patient. Conservative dentistry is strongly urged when its objective is general physical well-being. Saving teeth which perpetuate chronic infection is not conservative dentistry, but destructive dentistry. The chief object of dentistry must always be the maintenance of health. The teeth must not be looked on as independent structures but as interdependent structures. Viewed as tissues intimately associated with health and disease, the teeth and their adnexa cannot be dealt with in the abstract. One may undertake conservative measures in the mouths of patients who are in good health and whose general body defenses are good. Such cases, however, must be checked up and not dismissed until the teeth in question are either free from

infection, or, in case of failure of treatment, have been removed. While at a given time a patient may be in a state of health, one may not presume on good health, and permit conditions to exist which he would not permit in the mouths of those in a state of ill health.

Because of general serious conditions one feels obliged to extract teeth which might be saved if the health of the patient would justify the necessary time for treatment. Teeth may always be extracted, and every reasonable effort should be made to save them when local conditions indicate that they may be saved, and the patient's interests are in no way jeopardized by the process.

While the Roentgen ray is relative, not absolute, we are dependent on it for our estimate of tissue loss both in chronic suppurative pericementitis and chronic abscess. The interpretation of Roentgen-ray films is a fine art, but no amount of experience will save one from occasional surprises and disappointments. A large granuloma, for example, may involve only the spongiosum, and where the external and internal bony plates are thick and dense, the Roentgen ray will not define the area.

To differentiate between an active infection and a rarefied area which has been disinfected and is undergoing repair is difficult or even impossible, especially in a dense field.

The relation of tooth roots to rarefied areas may be quite obscure a lesion where the exposure has been made from only one angle. Even though unsatisfactory at times, the Roentgen ray is an indispensable factor in the diagnosis of bone lesions associated with the teeth, and the percentage of failures or mistakes in diagnosis is relatively small.

The very fact that clinical experience demonstrates occasional positive and negative errors only serves to make one careful not to overlook the danger of doubtful cases. The apparent size of a diseased area bears no relation whatever to its possible danger. Chronic infections are dangerous because of quality, not quantity. When conservative treatment is undertaken, the Roentgen ray should be used, first to demonstrate successful root-canal fillings, and second, to check up on the process of repair. Partially healed foci must be looked on with suspicion. Residual infection, though limited in extent, following either therapeutic or surgical measures, may be quite as dangerous as before treatment. No dependence whatever may be placed on subjective symptoms. Through active therapeutic measures a chronic alveolar abscess with a discharging sinus may quiet down, the sinus close, and the overlying tissue become normal. From clinical evidence alone such cases have been classed as cured. In the absence of a roentgenogram no definition of repair can be made. Frequently these cases do not heal, and are much more serious than before treatment, the treatment rarely serving to convert an open infection into a closed one.

SUMMARY

1. The incidence of chronic mouth lesions in a group of over 700 carefully analyzed cases, showing percentages ranging from 69 to 89 per cent., must be looked on as more or less serious evidence.
2. The overwhelming majority of chronic abscesses are associated with previously treated root canals and serve to emphasize the importance of root-canal technique.

3. Both in diagnosis and in determining the extent of tissues lost, the Roentgen ray is paramount.

4. The involvement of the peridental membrane is the crux in deciding between conservative and radical treatment.

5. Faulty root-canal technic, the careless use of arsenic as a devitalizing agent, and irritating drugs in the treatment of root canals are strong predisposing factors of chronic alveolar abscess.

6. In carefully selected cases, conservative measures should be employed both in the treatment of chronic abscess and chronic suppurative pericementitis.

7. Where root canals have been disinfected and filled, portions of roots resected, etc., the process of repair should be checked up by roentgenograms made at frequent intervals.

8. Regardless of whatever form of treatment may be employed, the removal of infection is imperative in all cases, whether the patient at the time may be well or ill.

Where the health, comfort and usefulness of a patient are to be weighed over against a tooth, or even all the teeth, the greater interests of the patient must be preserved.

122 South Michigan Avenue.

THE PRINCIPLES INVOLVED IN FOCAL INFECTION AS RELATED TO SYSTEMIC DISEASE *

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We understand that an infectious disease is a condition due to the invasion of pathogenic micro-organisms, which are capable of multiplication within the tissues of the host.

The principles of infection, both local and general, may be discussed by a consideration of three chief factors:

1. The pathogenic micro-organisms and the conditions which modify their virulence and pathogenicity.
2. The host or infected individual and the conditions which modify his susceptibility to infection.
3. The nature and result of the reactions between the infectious agents and the tissues of the host.

THE PATHOGENIC MICRO-ORGANISMS

The pathogenic micro-organisms which may cause infectious diseases are certain fungi, unicellular animal life, the protozoa, and bacteria. We also recognize that certain infectious diseases are caused by a filterable virus of ultramicroscopic size. The subject of this paper will be limited to a discussion of infectious bacteria, with the exception that *Endameba buccalis* will be considered in oral sepsis.

The objects of the paper will be quite as fully attained, too, by limiting the discussion to the usual pathogenic bacteria which cause focal infection, namely, the members of the streptococcus-pneumococcus group, staphylococci, gonococci, colon, diphtheria and tubercle bacilli, certain anaerobes and possibly other micro-organisms. Practically all of these may be found on the skin or mucous membranes, and

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if the surface is unbroken they may exist as harmless parasites. Apparently healthy individuals may be carriers of the bacilli of influenza and diphtheria and of streptococci, pneumococci and meningococci located on the mucous membrane of the tonsils, pharynx, nose and accessory sinuses. An individual who has had typhoid fever and occasionally one who has never had the disease may be a carrier of typhoid bacilli which may be discharged with the feces and urine. The bacteria named may bear an apparently harmless parasitic relation to the carrier, but if communicated to another individual may excite morbid reactions within the tissues of the new host.

The perpetuation of micro-organisms requires that they be transmitted from time to time to new hosts. That is accomplished by a direct route through the secretions and excretions of the mucous surfaces on which they live as parasites; through the pathologic products which they excite in infected tissues, and indirectly through the blood stream by way of the secretions and excretions. Here we are not concerned with those infectious diseases transmitted by blood-sucking insects. In direct transmission to new hosts the pathologic exudates must communicate with the outside surface, as in furunculosis, tonsillitis, sinusitis, gonorrhea, pyorrhea alveolaris, and bronchitis.

The transmission may be facilitated by direct individual contact, as in kissing and coitus; through approximate contact by inhaling air immediately charged with infected dust, droplets of saliva and sputum; by contact with infected articles, drinking and eating utensils, dental and surgical instruments, clothing, and many other forms of fomites; through infected food, especially milk, and by many other means. The tissues of the new host may be infected, therefore, through the mouth, air passages, skin or genito-urinary apparatus. The infection may be single, as, for example, in gonorrhea, or mixed, as may be seen frequently in diphtheria, with coincident streptococcus infection of the throat. A secondary infection is the invasion of pathogenic bacteria into the tissues previously infected. It is a type of mixed infection. Clinical experience and animal inoculation seem to show that bacterial association in mixed infection tends to increase the virulence of one or all of the species included in the microbic invasion. For example, appendicitis, which in most instances is caused primarily by the hematogenous invasion of bacteria, may become fulminating and rapidly gangrenous through a secondary invasion of the injured tissues by the bacterial flora in the lumen of the appendix, usually colon bacilli and certain anaerobes.

A high degree of virulence of the infectious micro-organisms is liable to destroy the host, and thus directly diminishes the chances of the infectious agents to pass to new hosts. While the susceptibility of the host to a specific infection is an important factor in the result of the microbic invasion, still the laws which govern the perpetuation of pathogenic micro-organisms include adaptation to the conditions, which mean lessened pathogenicity and permit of parasitic existence. The permanency of the perpetuation of a given species will depend on the perfection of its adaption to the environment and the opportunity to pass to other hosts. As susceptible hosts diminish, through increased resistance, the infection becomes milder and mortality less. While the perpetuation of the existence of pathogenic micro-organisms is dependent on the attainment of a condition of parasitism and the

opportunity to pass to the new hosts, there is proof that the infectious agents may regain pathogenic powers of a general and even of a special kind. The acquisition of a general or special pathogenicity with varying degrees of virulence may occur in various ways. Some of the species of bacteria under discussion are pathogenic for animals and may exist in the tissues of animals, as in man, as parasites. The bacteria existing as parasites in the animal may be pathogenic in the new host, man.

So too the mildly pathogenic or parasitic species may be communicated by man to a medium outside of the body, on which the bacteria may grow and attain pathogenic qualities and varying degrees of virulence for the host. Dairymen may infect milk with streptococci from their mouths and air passages. Milk is a good culture medium and in it streptococci and other bacteria may attain unusual virulence, and cause severe infection of the mucous membrane of the throat and digestive tract of susceptible persons who drink the unsterilized milk. The micro-organisms which have become parasitic in one human host may become pathogenic when communicated to a new host more susceptible to the species. The bacterial invaders, mildly pathogenic, may become virulent in a host suffering with general debility from any cause, or whose vitality is low or in whom the blood circulation is poor because of exposure to extreme cold or to severe fatigue. The conditions mentioned and other modifying influences may, among other things, affect the oxygen supply of the tissues of the host. The varying quantity of available oxygen in the tissues may be an important factor in determining the immediate or remote development of the micro-organisms in the tissues into harmless parasites or into virulent invaders of local or systemic tissues.

Schottmüller classified streptococci pathogenic for man, by growing them in solid blood-agar medium, into *S. hemolysans* (*longus*), *S. mucosus* and *S. viridans* (*mitior*). We have learned that any one of these types may change in general and special pathogenicity and the degree of virulence. *S. viridans*, so named because of the green colored halo produced by the colonies on blood-agar, is usually of very mild pathogenicity for man. It is a very common surface parasite of the mucous membrane of the mouth and tonsil. Apparently this type of streptococcus may acquire special pathogenicity for the endocardium and especially for old valvular scars and cause enormous vegetations and thrombus formation on the heart valves. A person so affected suffers from a constant viridans streptococcemia. In other instances a green producing streptococcus of less virulence than the foregoing may be isolated from the infected tissues of the patients suffering from myositis, arthritis and other chronic diseases. Evidently the property of green color production on the blood-agar plates only affords a name, but does not signify the pathogenic character or virulence. The type may even lose the property of green color production on culture media.

By varying the character of the culture mediums, *S. hemolysans* may lose the property to hemolyze blood-agar medium. It may possess a hemolyzing property, and at the same time may vary in pathogenic characters. It may be pyogenic; may acquire a special pathogenicity and tropism for subcutaneous tissues, as in erysipelas without suppuration. The ability to hemolyze blood-agar does not necessarily indicate a special or general pathogenicity.

The variation of the members of the streptococcus-pneumococcus group in culture characteristics, biologic quality, in general and special pathogenicity and degree of virulence has been noted by many clinical bacteriologists. We know that these variations may be brought about in the laboratory, by serial animal inoculations and by modifications of the character of the media and the oxygen pressure in bacterial cultures.

Apparently like changes may occur in localized, confined infections, especially those due to the streptococcus-pneumococcus group. Here one may infer that the tissues involved in the focal infection act as a culture medium. The tissue mediums may be modified by variations in blood supply, consequently in oxygen tension, or unknown biochemic or other factors may alter the character of the confined infectious agents. Apparently in no other way may we explain the sudden onset of rheumatism after acute or during chronic tonsillitis; of streptococcus viridans endocarditis associated with alveolar abscess, and many other systemic infections, undoubtedly etiologically related to an existing chronic, localized and confined infection.

THE HOST AND THE CONDITIONS WHICH MODIFY HIS SUSCEPTIBILITY TO INFECTION

Man possesses a natural immunity to infection, but it is never absolute. The facility of infection of the person and the opportunity for the pathogenic micro-organisms to perpetuate themselves, depends in some degree on the characteristics of the infectious agents, as we have seen, but also on conditions peculiar to the host.

The age, environment, social condition, occupation, habits, domiciliary and occupational environment, climate, physical well-being are important factors in determining the susceptibility of the host to infection. It is not necessary to consider all of these factors, but a detailed discussion of some of them is important in the attempt to establish a clear idea of the principles involved.

The individual host must be considered first, because he becomes a carrier of infection the more readily in proportion to the lack of personal cleanliness, in the habitual overuse of alcohol and habit forming drugs, the practice of sexual immorality and other debility-producing habits. By contact with his fellow men in dwelling, workshop, and public conveyances and public congregations, he readily communicates the infectious parasites of which he is a carrier to others. The few hosts are more or less susceptible, dependent on the conditions which make for good or for bad defense, already mentioned. The facility of communication of the infection from host to host will be necessarily modified by the density of the population, by the hygienic conditions of the home, the workshop, the vehicles of transit, by the general conditions dependent on municipal control of the cleanliness of the streets, the water and the food supply and on the adequacy of the sewage disposal.

The person is also important as a host, in regard to his susceptibility to infection due to the modifying influence of age, occupation and the existing physical and mental conditions. The child is comparatively more susceptible to the contagious diseases. The lymphoid tissues of the child are relatively excessive, especially the structures of the nose and pharynx. Therefore children suffer frequently with tonsillitis, coryza, sinusitis, otitis media and mastoiditis, both acute and

chronic. The regional cervical lymph nodes may be secondarily infected from the foci named, and while the lymphadenitis may prevent immediate general infection, the infected glands may serve, sooner or later, as additional sources of systemic infection. The debility of old age, with the associated poor blood circulation, relatively low tissue nutrition and faulty metabolism, increases the susceptibility to infection and facilitates parasitism. Diseases due to faulty metabolism, like diabetes mellitus and gout, invite and prolong infection.

Exhausting chronic infectious diseases, like pulmonary tuberculosis, are frequently associated with secondary infection of pyogenic bacteria. The mixed infection promotes the virulence of one or all of the invading pathogenic micro-organisms with consequent harm to the host. Occupations which entail exposure to excessive fatigue, extremes of heat and cold and to air contaminated with mechanical and chemical irritants are important factors in the production of local and general infection.

THE NATURE AND RESULT OF THE REACTIONS BETWEEN THE INFECTIOUS MICRO-ORGANISMS AND THE TISSUES OF THE HOST

The entrance of pathogenic micro-organisms into the body of a susceptible host is characterized by local or general reaction between the invading parasites and the tissues of the host. Dependent on the virulence and genus of the invaders, the reaction in the tissues may result in exudates which may be serous, fibrinous, purulent diphtheritic, hemorrhagic, necrotic or proliferative. Local fibrinous and purulent exudates are apparent efforts of the tissues of the host to concentrate protective substances and physical barriers about the invading parasites to prevent extension of further infection. The walled-off infection may remain localized, the infectious parasites, adjusting themselves to a parasitic existence or local infection, may disappear under the influences of the defensive and offensive powers of the tissues, aided by medicinal or surgical management. On the other hand, the local infection may be coincident with general systemic infection or general infection may occur at some indefinite time subsequent to the local tissue invasion.

Systemic invasion from a local infection may be by way of the blood or lymph stream. The hematogenous route is undoubtedly the usual one. Practically always the regional lymph nodes are secondarily invaded from the primary local tissue infection. The lymph node infection may be subsequently a source of systemic infection by the hematogenous route. On the other hand the secondarily infected lymph nodes may be the place of destruction of the invaders.

The reactions of the systemic tissues hematogenously infected are essentially the same as those mentioned under the local reactions of the tissues; that is the production of serous, fibrinous, purulent, hemorrhagic or other inflammatory conditions. As already pointed out, these reactions are in the nature of defensive or offensive measures on the part of the tissues of the host to destroy the invading bacteria. The infectious micro-organisms also promote the formation within the tissues of the host of defensive and offensive substances, or antibodies. These substances, in the form of ferments, are apparently mobilized by the reaction between the invading bacteria and the tissues of the host. Immunologists are not in agree-

ment as to the exact factors which enter into the reaction. All are in agreement, that all pathogenic bacteria do not cause the mobilization of a uniform number or of like kind of antibodies. The number and kind of antibodies found in the host in some infectious diseases, like typhoid fever, may overcome the invaders and afford a lifelong immunity to future infection. In other infectious diseases the defensive and offensive forces may overcome the present invasion, but afford no protection, or apparently may increase the susceptibility to future attacks, as in pneumonia and rheumatism.

The result of hematogenous invasion with pathogenic bacteria will be modified by the specific type, the virulence of the bacteria and also by the character of the anatomic structure and specific function of the tissue involved.

The type and virulence will decide the character of the tissue reaction as to the formation of a serous, fibrinous, purulent or other form of exudate. The more virulent the invaders the severer the reaction. The less virulent type will cause serofibrinous exudates. The tissues of the host are disturbed by the reactions, destructive in character (abscess, necrosis, hemorrhage and gangrene) by virulent micro-organisms, and deprived of nutrition and oxygen, more or less, by the proliferation of the endothelium of the arterioles and the serous and fibrinous exudates by the less virulent invaders. The infection of a joint with virulent streptococci or virulent gonococci will cause purulent destructive arthritis. The infection with less virulent streptococci and gonococci will result, usually, in a chronic serous or fibrinous arthritis, with subsequent metabolic degenerative changes due apparently to the poor local nutrition, in consequence of the injury to the blood vessels and tissues of the joint. Very virulent bacteria are apt to cause local tissue destruction or to kill the host. That is, virulent bacteria may be ultimately destroyed by the severe reactions they excite in the tissues of the host.

On the other hand, pathogenic micro-organisms of low virulence, which gain access through the blood stream, excite mild reactions, which, however, lessen the supply of blood and oxygen to the tissues involved. This may create a condition favorable to the perpetuation of the invading bacteria in the tissues of the host. In this tissue medium the bacteria may continue to be pathogenic for an indefinite time or may become purely parasitic without apparent harm to the host. Chronic confined infection or even chronic general infection finds an explanation in the reactions excited in the tissues of the host by pathogenic bacteria of relatively low virulence. The natural anatomic structures of the teeth, dental alveoli, faucial tonsils, accessory nasal sinuses, seminal vesicles, prostate gland, fallopian tubes, gallbladder and other structures favor confined infection. When infected, the resulting morbid anatomic changes in all the tissues named add to the physical conditions which promote focal infection. This is well illustrated in chronic alveolar abscess. The invasion of the dental alveoli with *Endameba buccalis* streptococci and other micro-organisms results in destruction of the periodontal membrane and other tissues. The roots of the teeth deprived of periosteum become more or less devitalized and, with other local dead tissues, promote continued and aggravated confined infection. The structure of the faucial tonsils invites and promotes continued infection. An infected accessory nasal

sinus does not as readily discharge the pathologic products of inflammation as the normal mucus secretion. The seminal vesicles infected with gonococci may retain them for years of time.

The function of infected specialized tissue will be usually disturbed in ratio to the degree of anatomic injury due to the invading bacteria. Hematogenous infection of the kidney may result in a general glomerulonephritis of a degree of severity entirely to suppress its function; a like infection of less severity may diminish the function, as manifested by the excretion of a scant, bloody albuminous and cast-containing urine. Periodic hematogenous infection of specialized tissues with bacteria of relatively low resistance results in repeated anatomic injury. The repeated injury to the blood vessels and other tissues may be so great finally as to result in malnutrition, and metabolic changes degenerative in character take place. Probably this is the sequence of events in chronic infectious nephritis, arthritis, myositis, pancreatitis and chronic infections of other organs.

The space allotted to this paper will not permit a discussion of the interesting tissue reactions, morbid anatomic changes and altered function which occur in infection of the stomach, subcutaneous tissues, the nerve ganglia, iris, thyroid gland and other specialized tissues.

CONCLUSIONS

The conclusions which may be drawn from this discussion of the principles involved in local and general infection are evident. The laws which govern the perpetuation of pathogenic micro-organisms involve a life of parasitism harmless to the host or of varying degrees of pathogenicity. Apparently any specific type of the bacteria discussed may attain the biochemic qualities which permit them to exist in the host as harmless parasites or as injurious agents possessed of a special or a general pathogenicity of varying virulence. The varying pathogenic qualities, special and general, may be acquired apparently in the host or in the passage from host to host (man or animal), or may be brought about in culture mediums.

Confined infection (focal) seems to be a site in which the infectious agents may attain specific pathogenicity chiefly in the nature of tissue tropism (elective tissue affinity). This special quality is not recognized necessarily by cultural characteristics. The power to hemolyze or to produce green color in blood-agar plates by some members of the streptococcus group does not necessarily indicate specific pathogenicity or degree of virulence. The special or general pathogenicity of the infectious agents of the focal infection, and the susceptibility of the host, measured by many factors cited in the paper, may determine the severity, acute or chronic, the extent, local or general, and the site, election of tissue, of the systemic infection. It is believed that these conclusions have been sustained by clinical observations and bacteriologic research.

122 South Michigan Avenue.

Ages of Carelessness.—Every one knows that few individuals between the ages of 30 and 60 take any constructive forethought for their physical welfare; few carry out any definite plans for regular daily exercise or proper breathing of fresh air. Fewer still have even a fair conception of their own physical make-up or their condition at any particular time; this fact is due likely both to lack of time and to reluctance to face the truth.—C. H. Forsyth.

DENTAL INFECTIONS AND SYSTEMIC DISEASE

TREATMENT AND RESULTS *

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From the medical standpoint as well as from the dental, the object of the treatment of infections of the teeth is the conservation, as far as possible, of the structure and the function of the teeth, and the prevention of disabling systemic disease. So far as the physician is concerned the present discussion is in no sense a propaganda to prove anything with respect to the methods of treatment of teeth by the dental profession. It is rather a recital of facts which have come to light in the course of an effort on the part of the physician to understand the cause and mechanism of production of a large group of more or less disabling ailments which for years have baffled him in his efforts to cure them. It is true that there have developed many other angles to the question, but these latter have been largely secondary, and the main problem has been and is now that of relieving patients from their disabilities by as conservative and yet as effective methods as possible. Every new proposal or discovery in medicine, or in any field of human activity, passes through certain phases of reaction on the part of the professions concerned, characterized by incredulity, popularity, abuse, and finally, if found of value, takes its place among recognized procedures.

This has never been better illustrated than in the present discussion of alveolar abscess and its relation to systemic disease. It would appear that the great prevalence of alveolar abscess was until recent years little suspected by many of the dental profession as well as by physicians, although the importance of oral sepsis was pointed out years ago by such pioneers as Miller and Hunter. Now that the facts are becoming known, in large part by reason of the perfecting of roentgenographic technic, many readjustments of practice, both dental and medical, are being found necessary. It is the difficulties of these readjustments and not the fault of the demonstration of abscesses, which have led to certain temporary misunderstandings, for the correction of which the only essential is a frank discussion, and then sympathetic team-work between dental surgeon and physician.

In this discussion of the medical aspects of dental infection I shall limit myself more particularly to forms of disease associated with alveolar abscess. The more superficial lesions, such as pyorrhea and gingivitis, probably exert an unfavorable influence on the general health, and conversely, systemic disturbances may furnish the conditions favorable to their development; but as a rule they do not appear to give rise to the metastatic lesions so commonly associated with alveolar abscess. Extensive pyorrhea may result in lateral alveolar abscesses, and possibly give rise to distant metastases, but a study of the medical complications associated with dental disease leads one to the conclusion that infections about the teeth conform to the same principles as do surgical lesions elsewhere, and that it is the closed process which usually gives rise to general infection.

I suppose every dentist will agree that a definite and recognized alveolar abscess should be eradicated, whether it is causing general disease or not. Such a position is in keeping with the best tenets of American dentistry.

It must be recognized also that the final decision as to diagnosis and proposed treatment of a dental lesion should properly lie with the dental surgeon, to whose opinion the physician should defer; but in order that his opinion may be worth having, the dental surgeon must acquire an adequate knowledge of the pathology as well as the mechanical treatment of the dental structures. The sins of omission in this matter have not been confined to the dental profession, however, for physicians have been notoriously remiss in the examination of patients, and have overlooked many sources of disease, including those of the mouth, which now are clearly evident.

The observance of ordinary rules of professional courtesy by the physician, the dentist, and, I might add, the roentgenographer will go far toward making successful team-work possible, but each must make himself professionally worthy to deserve this courtesy, and must be willing to listen to the views of his colleagues.

Before passing to a consideration of the results of treatment from a medical standpoint, I wish to refer to certain misconceptions which have been introduced into the problem.

The startling frequency of alveolar abscess and other extensive dental infection has so impressed many physicians and not a few dentists that they are ready to ascribe all human ailments to disease of the teeth, and to attempt to cure them all by the extraction of teeth without definite proof of incurable dental disease, or even presumptive evidence of the causal relation of the dental infection to the systemic disease.

This extreme and wholly unwarranted position has brought about a reaction, and in some quarters the pendulum has oscillated to the other extreme, at which are found a group of protesters, who are ready to declare that diseases of the teeth have no relation to infections in other parts of the body, and who from their attitude would seem to assume that the presence or absence of alveolar suppurations is a matter of no concern either to dentist or physician. Now looking at the problem for the moment from an impersonal point of view, one can see that neither of these positions can be right, but that the truth lies somewhere between.

Another group of physicians and dentists, enthusiastic, somewhat less radical than those just mentioned, have assumed that in a patient suffering from evident disease, such as arthritis, in whom also an alveolar abscess is found, there is necessarily a direct etiologic relation between the two, and that drainage of the abscess will surely result in cure of the arthritis. It is true that occasionally this is the sequence of events, but it often happens that the alveolar abscess is only one of several areas of chronic infection in the body, and may indeed be coordinate with arthritis, both being secondary to some previously existing infection. The perspective of the enthusiast in any specialty is likely to be narrow, and he does not appreciate the importance of the field of his colleagues.

Examination of the blood to determine the presence of leukocytosis has been proposed as a guide to the dentist in determining whether or not a tooth show-

* Read before the Section on Stomatology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1906.

ing doubtful roentgenographic findings should be extracted. The desire of dentists to study patients more thoroughly is laudable, but in this instance the presence or absence of leukocytosis can be of but little value unless all other causes of leukocytosis, such as infections in tonsils, sinuses, the genito-urinary and other organs of the body are first excluded, and since this necessitates a complete medical examination, which is not usually available, the test must therefore be far less reliable in routine dental work than the expert examination of the patient's mouth and roentgenogram by the dentist.

The importance of alveolar abscess as a factor in the production of systemic disease has been already discussed by my predecessors in this symposium. Statistics on this subject have come largely from those who are interested in special lines of inquiry, and the relation of alveolar abscess to systemic disease has been determined by the study of groups of patients selected on account of the presence of some clinically striking lesion, such as arthritis.

An examination of the converse proposition is of some interest from the point of view both of etiology and of treatment. An unselected group of 329 patients in a medical ward in Cook County Hospital was studied and the incidence of all discoverable infectious processes determined and tabulated for each patient. The patients were then classified according to final diagnosis, and the percentage of each type of infection in each disease group calculated. It was possible to obtain roentgenographic studies, most of which were confirmed by consultation with dental surgeons, in 124 of the 329 patients. Careful tabulation showed that the patients submitted to roentgenographic examination were fairly representative of the entire group. In 44 per cent. of the 124 patients alveolar abscesses were found. In the arthritic group 76 per cent. had alveolar abscesses; in the group of nephritis and cardiovascular disease 47 per cent.; other diseases, including pneumonias, respiratory, gastro-intestinal, 23 per cent., or less than one third of the percentage in the arthritic group. Abnormalities in tonsils, as expressed by hypertrophy, were present in 45 per cent. of the arthritic group, in 24 per cent. of the cardiovascular group, and in 19 per cent. of the remainder. Other chronic infections, such as those of sinuses or genito-urinary tract, were found in 21 per cent. of the arthritic, 13 per cent. cardiovascular group, and 11 per cent. of other diseases. Syphilis, either from the history, clinical evidence or Wassermann, was found in 23 per cent. of the arthritic group, 39 per cent. of the cardiovascular group, and 13 per cent. of other diseases.

This group of patients is not entirely comparable to a group coming from a higher economic station in life, but the figures serve to demonstrate the relation of the incidence of infections to other forms of disease within the group.

All arthritis or other metastatic and systemic disease is not due to alveolar abscess or to tonsillar infection, of course, but the preponderance of such lesions in this group suggests that these infections may play an important part in the production of chronic arthritis and similar ailments, and probably of certain types of cardiovascular disease, not only the valvular, but the arteriosclerotic, and also certain forms of nephritis, in which cold and exposure are only part of the determining causes.

In the arthritic group therapeutic measures directed to the removal of infectious processes have been fol-

lowed by gratifying results, even in a rather unfavorable material. Our readmissions for recurrences of arthritis, which in former years were frequent, some patients returning as many as four times in a season, have been relatively fewer, and usually of patients who for some reason or other could not be submitted to proper surgical attention.

In a series of 100 cases of iritis studied with Dr. E. V. L. Brown we found alveolar abscesses and other closed infections, as revealed by roentgenograms and expert dental consultation, in 36 per cent. of forty-seven private patients and 45 per cent. of fifty-three dispensary patients, and in 18 per cent. of the 100 patients the disease of the eye appeared to be associated with dental infection.

In estimating the results which may be expected from the correction of alveolar abscess in any given case it is evident that the presence and influence of other infectious foci must be considered, and neither too great credit for success nor too great censure for failure should be imposed on the dental surgeon who deals with only one of the possible factors in the larger general problem of recovery of the patient. Nor can we always promise prompt cure, even in those patients whose illness clearly originated in dental infection, for after the apparent immediate source of infection is removed, there often remain the mechanical injuries of joints and eyes, or other tissues may have become secondary foci of infection, and recovery is a question of measures which shall build up the resistance of the patient by improving his general nutrition.

VACCINES

The question of the use of vaccines has vexed the physician quite as much as it has the dentist. Active immunization by the injection of specific vaccines has proved of enormous value in the prevention of certain diseases, such as typhoid fever, but the results of the use of vaccines in the treatment of persons already suffering from infections have been in general decidedly disappointing.

There are certain more or less theoretical considerations in regard to the effect of an injection of vaccine on the balance of immunity between invading organism and host in a lesion such as alveolar abscess, but inasmuch as this balance may be deflected as often against as in favor of the host, the theoretical as well as the practical results of vaccine injections as now practiced indicate that their value is extremely doubtful, and that in no case should their use be allowed to replace or hinder the employment of recognized dental and surgical procedures.

Under the most favorable conditions a vaccine could be only an adjunct to other treatment, and in the type of disease we are now discussing, adequate surgical treatment by the dentist usually renders this adjunct superfluous so far as concerns the medical care of the patient. The dentist deals with special types of tissue but allowing for peculiarities in structure and function of the tissues involved, the same principles of immunity and surgical procedure apply to infection about the teeth as to other organs of the body. When proper surgical measures are carried out by the dentist the natural resistance of the tissues of the body including those about the teeth, is usually sufficient to overcome the infecting organism. It would be foolish and futile to attempt to substitute the injection of vaccines for drainage and other well-established methods.

of treatment of an alveolar abscess; when proper dental procedures have been carried out, vaccines become unnecessary. The same statement would appear to apply to the treatment of pyorrhea, in which the practice of injecting vaccines, as advised by those commercially interested in their production and sale, has led to absurdities as discreditable to the skill of the dental profession as are similar practices so common in the past among physicians.

SUMMARY

The attitude of the physician in studying his patient should not be that of the prosecuting attorney bent on convicting the teeth of being the cause of all disease, nor should the dentist assume the brief of the defendant, ignoring the evidence of roentgenograms and systemic disease. Both must work in harmony, each believing in the sincerity and good-will of the other, observing professional courtesy and laboring to place the patient in the best physical condition possible.

There seems to be no question that in many cases alveolar abscesses are the source from which invading organisms pass into the circulating blood and produce lesions in joints, eyes, nerves and other structures of the body. It is also true that alveolar abscesses, like tonsillar and other infections, may be latent so far as any marked effect on general health is concerned. Nevertheless, they are potential sources of trouble, and from the medical standpoint, and I believe from the dental, should be eliminated. The recognition of the important relation of alveolar abscess to systemic disease is a great step forward, and the period of extreme neglect of the past will never return. The readjustments in methods of diagnosis and in the establishment of a rational conservatism will come gradually as we learn to appreciate the interdependence of all organs of the body and the community of interest of the dental and medical professions. And this advance in turn calls for better medical education, better dental education.

The difficulties and misunderstandings from which we are now emerging afford one instance among many of the necessity of providing educational facilities which shall produce broad-minded professional men who can appreciate the problems of departments of human medicine other than their own.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MOOREHEAD, BILLINGS AND IRONS

DR. ROBERT HESSLER, Logansport, Ind.: When I first entered the medical college in 1889 my respiratory mucous membranes reacted acutely; I had profuse coryza and catarrh. At times the secretion was abnormal, and under severe infection there was actual pus. After the formation of scar tissue the mucous membranes reacted less. At present I seldom have a coryza. I have an "open throat"; it is not closed by encroaching hypertrophied tonsils. In the course of years the reaction of the respiratory tract on inhaling infected air became less marked, but the cardiovascular system reacted. Ordinarily, I live under good air conditions on the edge of a small town and my blood pressure is about 100. On inhaling infected dust, as at present, it will run up to 150. My father was a "high pressure case" and died at 40; I am 55. During the last year I noticed a new reaction: After being exposed to bad air, I could readily draw blood from my gums; in the morning it is dark. I can do it now; I tried it a few moments ago. Depending on the amount of infection inhaled or length of exposure, this condition prevails for one or more days, maybe a week, when it fades. Then there may be another

exposure, and I can again draw blood. The gums are infected. At such times I also notice more or less arthritic pain, especially in the wrists. It means infection. (My father was subject to general arthritic, "gouty" pains and had an ankylosed left wrist.) As a student of prevalent ill health and causes, I believe the problem is largely one of communal cleanliness, especially in abolishing the spitting habit.

DR. M. L. RHEIN, New York: With our understanding of local infections at the present time, I am impressed with the fact that so far as the welfare of the public is concerned, it is timely for our profession to speak in no unmeasured terms in regard to things that are being done today by dentists who know better, and whose only excuse is an economic one. One most unfortunate fact is the imperfect education of the dentist. There is no place in the practice of stomatology in the future for the man who is not thoroughly educated in medicine. A great deal has been said about focal infection, with reference to alveolar abscess. I believe it is wise to divide focal infections into two classes, the one where there is a distinctive type of alveolar abscess, and the other where there is no abscess. In the dental granulomas, where there is a distinct growth of granulation tissue, with its fibrous envelope, known in the older literature of dentistry as the blind abscess, there is no abscess, and no pus formation. We almost invariably have the colonization of the *Streptococcus viridans*. In fact, these granulomas are simply filled with *Streptococcus viridans* whose low degree of virility seems to make it impossible for them to produce pus, but they seem to have the same power of producing as severe a toxin as could come from pus itself. Where we have either of these conditions present, are they the sources of metastases? During the past year I have had recourse to the streptococcus fixation complement test, introduced by Dr. Hastings. It is a most efficacious means of determining whether the individual is having a direct effect from these infections. My clinical study of cases leads me to believe that these organisms gain their entrance to the alveolar structure at the foraminal entrances of the roots due to imperfectly handled dental operations. These foraminal openings are left unsealed.

DR. W. D. CALVIN, Fort Wayne, Ind.: When emetin was first proposed as a cure I studied two series of cases, one with the use of emetin in conjunction with a careful hygiene of the teeth, in which I found some improvement; and another in which I allowed the patients to use the same mouth hygiene as previously practiced, and with the use of emetin, and in these latter cases I did not note the same improvement. I have come to the conclusion that emetin is worth practically nothing. The only point I wish to emphasize is that we should consult with our dentist brethren more than we do. As Dr. Billings stated, the mouth probably is the dirtiest place in the human system, but I do not think that we should arrive at the conclusion that it is the cause of as many of the conditions as have been attributed to it in the last two years. We should recognize that mouth infections not only act on other parts of the body, but that the mouth is acted on by septic conditions in other parts of the body.

DR. G. R. SATTERLEE, New York: I, too, would like to emphasize the advantage of meetings between dentists and medical practitioners. A short time ago a paper was read before the Bronx Medical Society by a very well-known Boston dentist, who made the statement that he thought the medical profession was laying too much stress on infections from the teeth, and the gist of his statement was that he could not see how an apical root abscess with a strong peridental membrane and pericementum around it could possibly be the cause of a general infection. I do not suppose any medical man among us has failed to have at least one case where an alveolar abscess, that has been relieved by withdrawal of the tooth, has not been followed by relief of the patient's symptoms. Of course, the difficult thing is to decide whether it is a concomitant or whether it is the cause. I think we all agree that it ought to be taken care of anyway. I would like to ask the speakers one question—and particularly Dr. Billings—as to the value of the complement fixation test in the identification of different types of organisms; just

what organisms can be identified by a complement fixation test; what types respond to it, and if, by injection of a vaccine of that particular type, we obtain a local reaction in some part of the body, would that reaction give any clue as to the locality of the cause of the infection?

DR. WILLIAM C. FISHER, New York: There seems to be an idea among the medical and dental professions, and it is getting among the laity, that in order for a dentist to treat roots properly he must have the M.D. degree. No one wants the higher education of our dentist extended more than I do, but there are thousands of dentists in the United States who have only a dental college education, and have been properly trained in dental surgery. There is no excuse for any dentist not doing good root canal work, even if he has only the education which he received from a dental college. While a medical education is of great aid to the dentist in his diagnostic work and in his collaboration with the medical man and in research work, yet I do not wish to see the responsibility lifted from the general dental practitioner who has only a dental degree, and I do not want the public and the medical profession to think that the something that was not given him in the dental college is the reason why we have this poor root work. They have sufficient technical education to do good root work, and if they do not do it, the fault is with the individual man. If a tooth is devitalized and the roots have never been filled, and still the Roentgen ray does not reveal any shaded area or subnormal area beneath the root, that is not an assurance that there is no infection there. If the Roentgen ray shows a devitalized tooth that has not had proper root treatment, then that tooth should be opened and an attempt made to treat it. If the dentist cannot go through to the apical foramen of each and every root of that tooth, then that tooth should be extracted. My reason for that is the fact that in a case of arthritis a few weeks ago there were two such teeth, lower molars, on both sides of the jaw, that it had been impossible for myself and one other dentist to get through. I insisted on extraction, and my bacteriologic confrère reported in a few days that he had *Streptococcus viridans* from the apexes of both molars. The roentgenograms in this case were read by our most expert men, and they could not find any shading at the ends. The general practitioner was looking for a focus of infection, and we found two areas in those root sockets.

DR. JOHN E. NYMAN, Chicago: Local infections of the mouth which cause systemic derangements may be divided into two classes. First, the open discharging variety, those that produce systemic derangement by reason of their influence on and through the digestive tract, such as discharging pockets of pyorrhea unaccompanied by pain or soreness about the teeth, and resulting in a slow systemic toxemia. Second, the enclosed form of focal infection, producing systemic derangement directly through lymph and blood vessels. The first form of infection may give rise to digestive derangement; the frequent hyperchlorhydrias without definite cause, resulting later, perhaps, in gastric ulcer; or in spastic constriction in the colon, predisposing to acute or chronic subacute attacks of appendicitis. These toxemias are sometimes related to mental derangements. I think Dr. Craig of New York reported some twenty cases of melancholia which showed no improvement until pyorrheal conditions had been eradicated. The other form, that of metastatic infection through the lymph and blood channels, may result in such conditions as chronic arthritis, single or multiple, also in cardiac derangements with an intermittent angina, or cardiac insufficiency. Through my association with men who are in the practice of medicine I can relate a list of diseases which were really definitely relieved, even cured, by correcting the abnormal conditions in the mouth. This list comprises arthritis, cardiac derangement, angina, hyperchlorhydria, spastic constriction of the colon, reflex neuroses, insomnia, and all forms of phobias. My experience has been that many phobias and insomnias have been due to mechanical disturbance by impacted unemptied teeth. Recently I had three cases which have been cleared up by removal of badly impacted teeth. Even if no definite systemic disturbance of any kind is reported coincident with pathologic conditions in the mouth, the continuance of these conditions in due course of time has its

effect on the tissues of the body, resulting in a form of cell depreciation, so that the individual is more susceptible to an acute invasion. I am glad Dr. Irons spoke as he did concerning vaccines. There is always danger in the use of vaccines of developing a state of "sensitization" or a form of anaphylaxis. In subacute chronic arthritis we have not a disease to deal with which is ordinarily dangerous or acutely distressing to the individual, and we may, in administering a vaccine for the purpose of quickly eradicating that condition, "sensitize" the patient so that if some dangerous condition develops through meningitis, diphtheria or tetanus which requires the administration of a specific serum the injection may result in a fatality.

DR. W. A. PRICE, Cleveland: I recently asked the pathologist in a hospital what proportion of the teeth he saw extracted were related, directly or indirectly, with the lesion for which they were extracted, and he said, "Not 25 per cent." Again, one of our leading medical pathologists stated that every tooth with a devitalized pulp was a sequestrum. Therefore, devitalized teeth must be extracted. In the researches we have been making in the Research Institute of the National Dental Association we have not been able to sterilize one single canal, so that where there was not a fistula we could not aspirate a culture from beyond that apex after the treatment. More than that, we have never been able to produce a condition in which we could not get the culture from a canal, without a fistula, where there was an apical infection, within six days. This was the case, no matter what medicine was used. We tried everything from sulphuric acid to formalin, and various medicines which we knew should not have been used in ordinary conditions, but which we used as part of the experiment. So far as I am concerned, I cannot sterilize the area beyond the tooth apex by any means, but I do believe we dentists can so change the balance of safety for that patient that we will reduce the infection and give nature a chance to destroy that infection.

DR. FRANK BILLINGS, Chicago: I thought I stated distinctly that the reaction of pathogenic organisms invading the tissues anywhere would produce a serous, a fibrinous or a purulent exudate, and I named some other conditions. Apparently the difference in the reaction of the tissues depends on the virulence of the specific infectious agent. In the one event it is virulent enough to cause a positive chemotaxis, and leukocytes wander through the local tissues and if in sufficient numbers, we call it suppuration. If less virulent, it allows less reaction, fibrinous in character, and walls off the micro-organism. In a less virulent type and on the surface of the serous and mucous membranes, a serous exudate is caused, which may wash away the infectious agents. Therefore, a degree of pathogenesis, as we understand it, is the thing which characterizes the reaction which takes place in these tissues. Then, when we go further, and with the members of the streptococcus group attempt to say that this one does this and that one does the other thing, because it produces certain characteristic conditions on a culture medium, we are going far astray. Schottmüller classified the streptococci which are pathogenic for man. He found that one type destroyed the blood corpuscles of the medium; therefore, was hemolytic; another one produces mucous conditions, and he called it the *Streptococcus mucosus*; another one produces green halos about the colonies, with some destruction of the red cells, and he called it *Streptococcus viridans*. The theory that the *Streptococcus viridans* is the least virulent of all streptococci cannot hold, because the different strains which have the power to produce green in the culture medium have not the same virulence or pathogenicity. Nor can we say that the one that destroys blood is always a pus-producing one, because the *Streptococcus erysipelatus* does not usually produce suppuration. It has an affinity for the subcutaneous tissues and does not usually produce pus. *Streptococcus viridans*, having its source in some focal infection, may have that tropism which I mentioned, which makes it pathogenic for the endocardium. If the endocardium is scarred by an old disease, it may therefore make a better soil, and enormous vegetations are produced on the valves. There will be a constant bacteremia. It will immunize itself against the host. Another type of *Streptococcus viridans* may produce changes

in joints and muscles and have no affinity whatever for the endocardium. All these organisms are the so-called endotoxic bacteria, and we are in doubt as to whether the toxin is the specific agent that produces the tissue reactions, whether it is the protein combined with the toxin that produces the reaction, or whether it is some split product of the protein, as Vaughan believes. There is something specific about it, otherwise we would not have the one producing pus, the other an erysipelas, the other infection of the heart, another acute rheumatism, another chronic affections of the muscles and joints. Therefore, when you ask about vaccines you must first of all make the bacteriologic diagnosis, to know that you are using the specific agent that causes the disease. We have attempted to study the possible value of so-called autogenous vaccines. In over five hundred cases of chronic arthritis we have compared the results of the vaccinated patients with those not vaccinated but receiving the same hygienic treatment, and the result was apparently just as good without as with the vaccines. Furthermore, where one would sometimes note a local reaction from a vaccine, the same reaction would also result from a nonspecific protein.

Swallowed bacteria meet with resistance of the intact mucous membrane throughout the intestinal canal. They meet with destructive influences of the gastric juice, and it is a question always as to how many pass on into the intestine. To say that they are destroyed there and the toxins absorbed to produce general disease is going away back to our old ideas of autoinfection or autointoxication. If intestinal infection does occur, it must mean that the organisms are viable enough, resistant enough, to pass the barrier of the stomach, reach the intestine and pass into the mucosa, and from that into the lymphoid structures of the mesentery, and there form a new focus. Practically, general infection occurs hematogenously or lymphogenously. Even if the lymphogenous infection occurs first, the infectious agents pass from the lymph nodes into the blood stream, and finally, therefore, the route of infection is hematogenous. We must get away from our old ideas of toxin absorption from a focal infection or from the gastro-intestinal tract as causing general disease.

Finally, when we come to therapy dentists need not feel at all mortified about what they do. It is not a question always, I think, of technic in dental practice. It is a question as to how you are going to get rid of existing conditions. The condition of the host is important, not only in primary infection, but in the continued infections as well. If the dentist does not recognize that the condition of that patient whose mouth he is treating requires that he should go to some doctor who is wise enough to build up his natural defences by hygienic measures, then the dentist is not doing his part for the patient. If the doctor to whom the patient is sent by the dentist, because he finds focal infection about the jaws, does not recognize that focal infection is more dangerous in individuals who are debilitated and does not do his part, he should not blame the dentist because he does not eradicate the focus.

DR. F. B. MOOREHEAD, Chicago: The one vital thing that the dentist must face in this matter of chronic infections is this: He alone is responsible for the removal of infection from the mouth. It is a demonstrable fact that certain well defined infections may result from foci about the teeth. Whether at the time the patient may be sick or well there is always a margin of doubt, a margin of contingent disability that the patient must be guarded against. The dentist, therefore, must make certain that the tissues have been placed in a state of health before the patient leaves his hands. In the hands of highly trained men certain conservative measures may be undertaken, but the general practitioner, the average man, may not assume the rôle of a specialist. The issues of the mouth should not be looked on with an unwarranted suspicion. Infections about the teeth should be regarded in the same light as infections involving the appendix, gallbladder or the tonsil. It would seem to be a matter of plain, ordinary common sense to remove infection wherever it may be found.

METHODS AND RESULTS IN GASTRIC SURGERY*

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CLEVELAND

The basis for this paper is a critical study of 472 operations on the stomach performed by my associates, Drs. Bunts and Lower, and myself, and in the records of Lakeside Hospital. Of these, 132 were performed by Dr. Lower and myself in accordance with the principle of anociation, these cases including explorations in cases of inoperable cancer, resections, and gastro-enterostomies for cancer and ulcer. Among these 132 cases there have been three deaths, a reduction from the former mortality rate in like cases of not less than 3:1. In but one other field is anociation so strikingly beneficial—in the surgical treatment of exophthalmic goiter.

Originating in the great school of Vienna, fostered in Germany, its progress accelerated by Mayo-Robson, given a classic status by Moynihan, mechanized by Murphy, and culminating in the Mayo Clinic, the great field of gastric surgery through trial and error, progress and extension has become established; yet in bad risks the mortality is still too high.

That the high mortality rate of gastric operations has been due not to faults in operative technic but to some unappreciated underlying factor is evidenced by the always comparatively low mortality rate of operations on the pelvic organs. Why have the excisions of large pelvic tumors, for example, always caused fewer deaths than major operations on the stomach or on the intestines? It is because the functions of the stomach and intestines govern so completely the balance of material for constructive metabolism.

This fact not only gives us the key to the fundamental cause of the high hazard in major gastric operations, but also suggests a plan of attack by means of which the mortality of these operations may approach the low mortality of pelvic surgery.

Whether the case be a resection for cancer or a gastro-enterostomy for ulcer, the reserves of the starved patient must be built up by the introduction of water, sodium bicarbonate and glucose and especially by an adequate amount of sleep and rest; and acid formation must be diminished by the elimination, as far as possible, of worry, fear, anxiety, exertion, loss of sleep, trauma and anesthesia.

In the case of ulcer, the fate of the ulcer-bearing area is the chief consideration, for the evidence on many sides, especially that presented by the Mayo Clinic, shows the tendency to cancer growth in ulcers of the stomach, though happily not in duodenal ulcers. Our lamented President, Dr. Rodman, made a logical departure in the complete excision of the ulcer-bearing area, but even this is not enough. At this point we must join hands with our medical confrères and for a period of many months—six or more—the patient should be kept under strict dietetic care, such, for example, as the Sippy regimen. If the patient is dismissed from the surgeon's care to the same habits of life, and the same dietetic carelessness that existed when the ulcer originated, and if in certain cases mouth infections and teeth defects are uncorrected, then there is bound to result a certain percentage of

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failures. It is just as illogical to exercise no care over a postoperative ulcer patient as it would be to dismiss a postoperative exophthalmic goiter patient without therapeutic instructions and prolonged oversight.

After surgical treatment for ulcer, as after a thyroidectomy, the immediate relief is so marked that it is difficult to make the patient believe in the necessity for special care during a long period.

The clinical results of the surgical treatment of duodenal ulcers are even more striking than in cases of gastric ulcer. The rapid disappearance of gastric ulcer masses is illustrated by cases reported by Lilienthal and Willy Meyer in which ulcer masses supposed to be carcinoma have disappeared within a week or more after gastro-enterostomy, as proved at the second phase of a two stage operation. I myself have seen three such surprising results.

TECHNIC

As has already been stated, the principle of anociation is applied throughout the operation—minimum handling; feather edge dissection; avoidance of pulling and tearing manipulations; the injection of novocain before the division of skin, fascia, muscle and peritoneum; and a massive infiltration with quinin and urea hydrochlorid, at a distance from the line of incision, immediately after the abdomen is opened.

Shall the pylorus be occluded? By what technic? In the light of our experience occlusion of the pylorus is rarely required, as the relief without is about equal to that secured with occlusion. When the pylorus is occluded, a simple method, such as a circular tying with a suture reinforced by interrupted stitches of silk, answers well.

The Jejunal Loop.

The most important mechanical problems are the length of the jejunal loop and its direction. The length should be most carefully considered. If the loop is too short there will be intermittent interference with the desired current of the jejunal content which at times will accumulate in the stomach. If the loop is too long a vicious circle may become established. The correct position and the length is that which equalizes the pull on the supports of the stomach and the jejunum. This adjustment can only be secured empirically and cannot well be described.

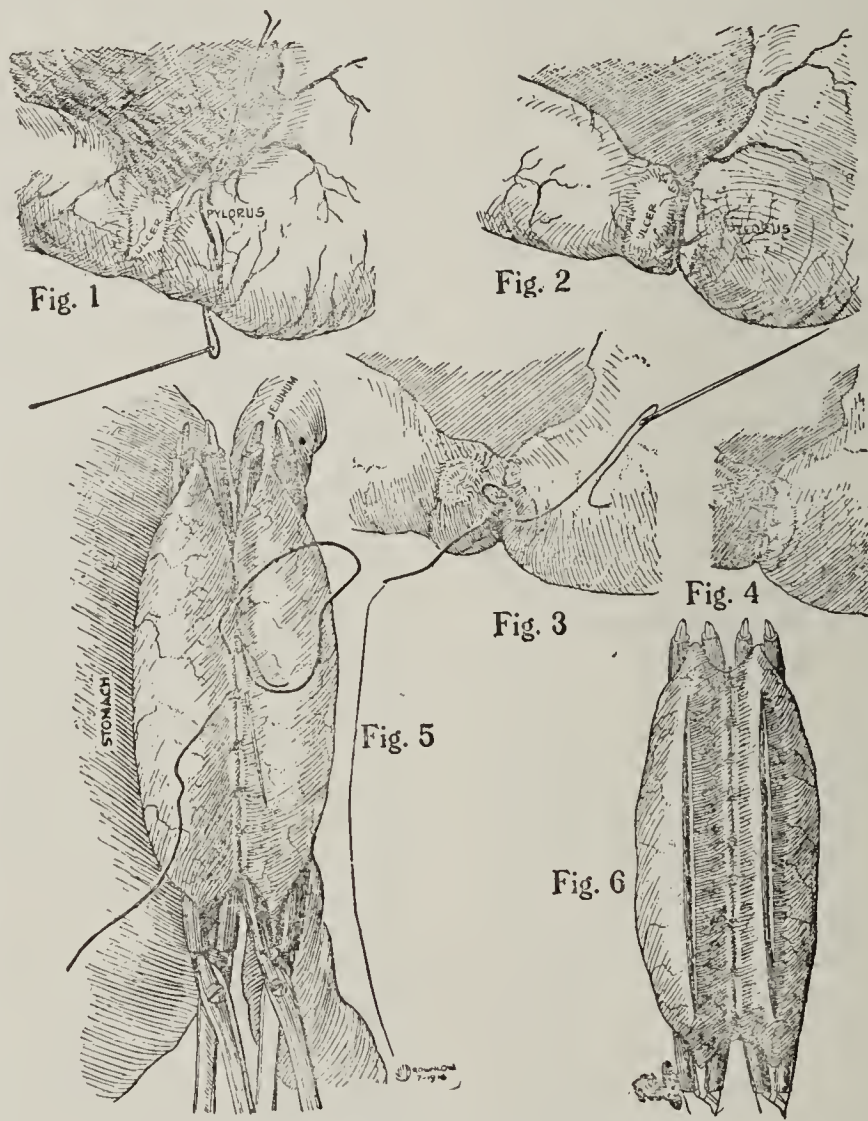
Shall the loop run from right to left or vice versa? The direction should be that which mechanically is the more comfortable. If the stoma is placed near the pylorus, then usually the loop runs from left to right; if the stoma is well toward the left, then the loop runs from right to left.

The Stoma.—The work of Cannon and Blake and of others shows that food propulsion is under functional control rather than the control of gravity. Therefore a stoma near the pylorus is sanctioned for physiologic as well as practical reasons; a stoma far from the pylorus may cause serious stasis. Since the stoma exerts no control over the propulsion of food in either the stomach or the duodenum, its direction, whether oblique, transverse or longitudinal, is unimportant. The stoma tends in time to become oval or round with a sharp margin. Even a large stoma does not materially interfere with the retention of stomach contents during the early hours of digestion; and a very small stoma, like a very small pylorus, may allow enough food to pass through.

In two outside cases I enlarged a stenosed stoma, but in none of my own cases has the stoma shown an impairing contraction, whether the pylorus was closed or open, apparently making no difference.

The Incision Through the Mesocolon.—Owing to its extreme elasticity, it matters little whether the incision through the mesocolon in a posterior gastro-enterostomy be vertical, horizontal or oblique; but it should not divide large arteries. The incision may be enlarged in several directions, but always by division with a sharp knife, and not by tearing.

The Suture.—The suture must prevent bleeding and leakage and must maintain absolute coaptation of the serosa. For securing these ends the cobbler stitch inserted with Bartlett needles is ideal. Mayo has pointed out a serious objection to the use of silk for the inner suture—it may remain indefinitely and cause ulcers. We have found it the best procedure to use chromic cat-



Figs. 1-4.—Occlusion of pylorus, Steps 1-4.
Fig. 5.—Right-angled stitch including muscularis.
Fig. 6.—Incisions in stomach and jejunum.

gut for the first row of sutures, these being reinforced by interrupted right-angled silk sutures including the muscularis. In no case has there been serious hemorrhage.

The Jejunal Angles and the Opening in the Mesocolon.—Unless guarded against, acute angulation of the jejunum at its junction with the stoma may occur. This may be prevented by the insertion of several silk sutures to hold the afferent and the efferent loops closely against the stomach. A more serious occurrence is a mass herniation of the small intestine through the opening in the mesocolon. This in turn is prevented by suturing the margin of the mesocolon opening to the stomach approximately an inch above the margin of the stoma.

This procedure also gives freedom to the stoma and the jejunal loop.

SUMMARY

In starved cases of gastric cancer or ulcer the reserve alkalinity of the body has been reduced. Nutrition is impaired, the reserve stores of water and of potential energy are diminished. Surgical treatment, therefore, includes the preoperative and postoperative introduction of water, of alkalies and of glucose in large quantities; the management of the patient by interns and nurses in such a manner as to avoid such acid forming activations as anxiety, loss of sleep and exertion; the application of the principle of anociation throughout the operation itself, and in cases of ulcer, a prolonged postoperative period—six months at least—under therapeutic direction, especially as regards diet.

ABSTRACT OF DISCUSSION

DR. ALBERT J. OCHSNER, Chicago: With the ordinary stomach operation with the patient in a fairly good condition there should be no mortality. But in this class of cases there is a considerable number of individuals who have lost this reasonable amount of margin of safety and here we find the mortality. The other cases in this class have no mortality and surgical judgment is the element that reduces the mortality. There are certain things that can be avoided which if not will narrow this margin of safety to a dangerous degree. If the traumatism and the strain on the nervous system are reduced to the very slightest amount then you have removed the portion that is lacking in these patients and you place these particular patients that give the mortality ordinarily in the same favorable class with the rest. Dr. Crile's way of excluding the pylorus seems very attractive. I think that it will be necessary, however, to place the sutures rather more deeply than most surgeons would be inclined to place them because if they are not placed more deeply the communication will be reestablished afterward, and judging from the illustrations shown the sutures were evidently placed more deeply than they are ordinarily placed. I wish to direct attention to another point in which he also increases the margin of safety, namely, in the careful suturing of the wound between the intestine and the stomach so that there cannot possibly be any loss of blood after operation because little loss of blood in this class of cases is of the greatest importance.

DR. R. C. COFFEY, Portland, Ore.: Dr. Crile has failed to emphasize sufficiently one of the principal reasons for his splendid results, namely, that he uses two stages or sittings when he is doing an excision operation.

In our experience the adoption of the two-stage operation has been the most important single step we have taken in abdominal surgery of any kind for some time. In excising portions of the pylorus our mortality has certainly been decreased at least two or three times when compared with results in similar cases done at a single sitting. We have

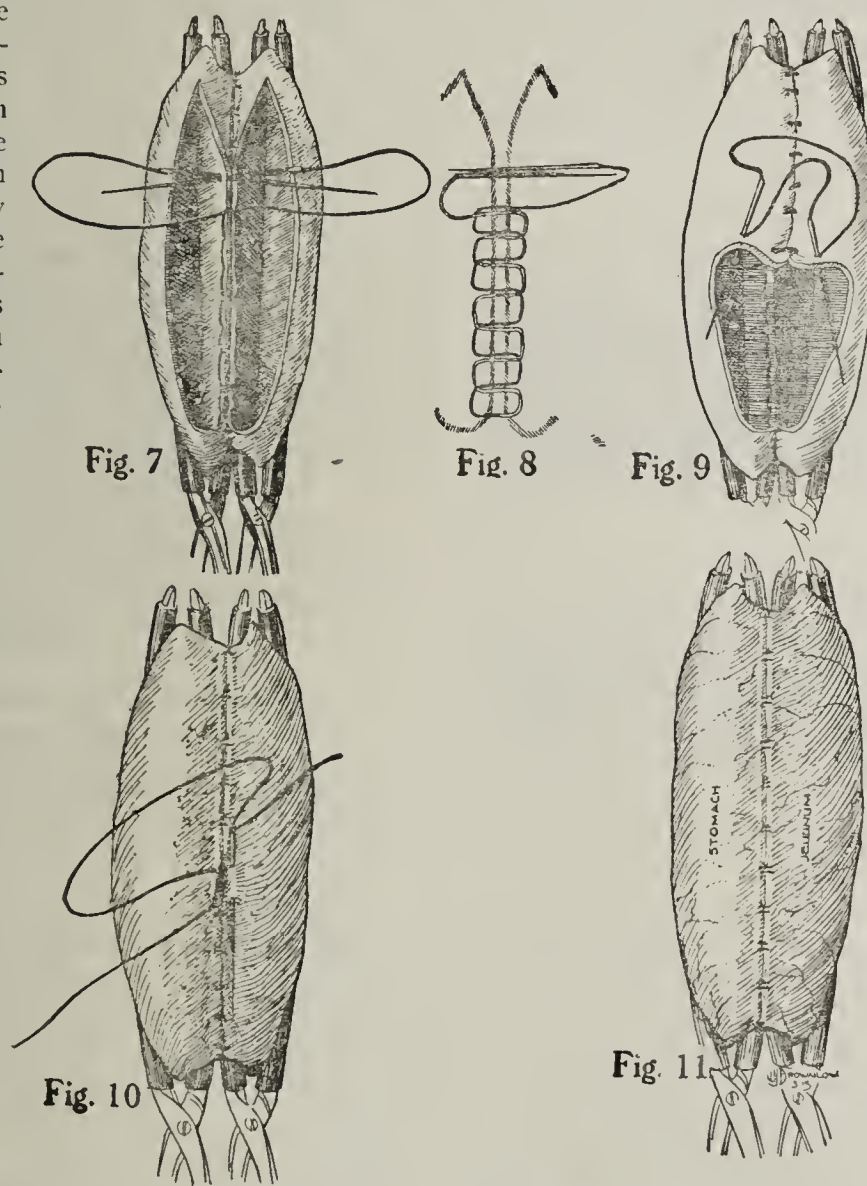
not had a single fatality from the second stage of the operation for four years. The mortality we have had in gastric surgery has been confined to the primary gastro-enterostomy. In other words, the two-stage operation reduces the mortality in an excision to practically the same as a simple gastro-enterostomy. I would like to ask Dr. Crile to explain his view of the cause of the improved results following the two-stage operation. Is the first operation intrinsically more serious, or does it produce a sort of immunity for the second operation? The question as to the cause of secondary ulcer has not been settled. Dr. Mayo believes it is due practically always to the linen or silk suture. We have not been entirely convinced. We have had four ulcers of this type. It is true we have found linen suture at the base of the ulcer in three instances, but the ulcers have extended 2 to 3 inches away from the suture and in one case in which we used catgut entirely we had an ulcer of the same kind. Curiously enough the four ulcers occurred in two patients. In each case the ulcer recurred and in one of these cases at least it recurred after the second removal that we know of in spite of the fact that catgut was used throughout. There is a point we learned

in experimental surgery. An interrupted silk or linen suture that penetrates all the coats of the stomach and intestine is eliminated in a few days into the lumen. A suture that does not penetrate the deep tissues remains encysted. A continuous suture which penetrates the lumen at some points and is only peritoneal at other points can neither eliminate itself into the lumen nor can it become encysted. It is in this class that we have found the suture still hanging in the wound. This is undoubtedly the type of suture that is frequently found in these cases of secondary or recurring gastro-jejunal ulcer and may be simply an innocent bystander.

DR. HENRY O. MARCY, Boston: Twenty-five years ago I demonstrated that buried absorbable sutures should be used in operations of this type and slowly came to the conclusion on experimental evidence that catgut was defective and kangaroo tendon sutures were greatly to be preferred. They were prepared in a careful way by chromicizing and thus made durable. Again, the way in which they were applied. Dr. Coffey said that it is unwise to penetrate all the coats of the intestine. Of course, since the intestinal contents are infective

one must be sure to have the strong connective tissue layer of the intestine included. For over twenty-five years I have used the continued double tendon suture, the so-called cobbler stitch. I use a needle with an eye near the point. It is rethreaded with the opposite end and thus carries the suture through one and the same opening. The superficial layer of sutures is carried through the external coat only but must itself be buried. In other words, it is absolutely buried. In this way, as Dr. Crile has emphasized, one damages the parts a great deal less than in any other and saves the lesions that are so likely to occur, to make adhesions and give subsequent trouble.

DR. JOHN B. DEEVER, Philadelphia: As to anociassociation, I will say little as I know practically nothing about it, but from the fact that it is recommended by Dr. Crile we must



Figs. 7-9.—The cobbler stitch.
Figs. 10-11.—Interrupted right-angled stitch over cobbler stitch.

take it that it is valuable. I would take exception to what Dr. Crile says in reference to pyloric occlusion. This is only a makeshift. It is not permanent. I have operated in cases the second time that I had originally operated myself and I know that with few exceptions pyloric occlusion is not particularly satisfactory. When the pylorus is tied off tightly the tissues are devitalized and as a result we have ulceration, separation and restoration of the lumen. I strongly emphasize cutting out the ulcer when it is possible; this is my practice. In the last forty cases I have done at the German Hospital, among which were many pylorotomies, there was no fatality. The majority of ulcers of the duodenum are situated in the first portion anteriorly; and when the induration is not too pronounced the ulcer can be excised; when induration is considerable amputation of the duodenum and posterior gastro-enterostomy, in other words pylorotomy, are indicated. Where the ulcer involves the lower portion of the first part of the duodenum coming in close proximity to the head of the pancreas it is my practice to dissect the duodenum away from the pancreas, purse-string it, invaginate and so forth. Where induration is extensive and where it is impossible to purse-string, I oversew the duodenum and sew the stump into the head of the pancreas. As to the subsequent course of these cases I am prepared to say that they go along nicely if they are not medicated. A small number are nauseated; some vomit, which is relieved usually by one lavage or by lavage repeated two or three times. Lavage is of most importance in the after-treatment of these cases.

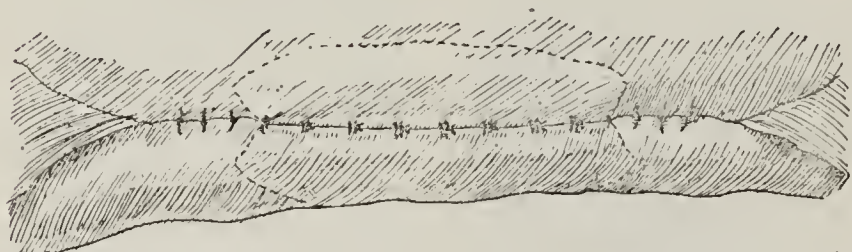
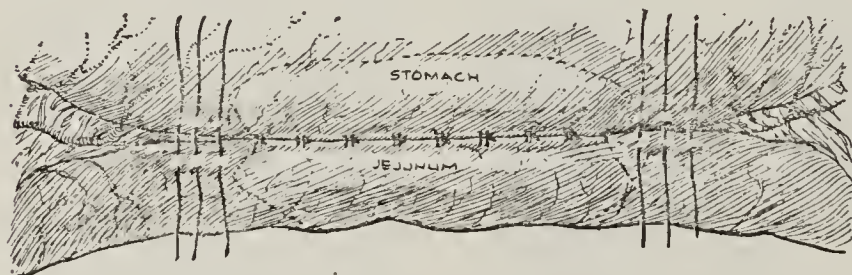


Fig. 12.—Stay sutures inserted at each end of completed anastomosis: above, untied; below, tied.

DR. ALFRED A. STRAUSS, Chicago: Dr. Crile has advanced the technic of gastro-enterostomy, but I do not believe that he has advanced the work on pyloric closure when he uses a silk ligature method, which is only a temporary closure for a chronic indurated ulcer. Ulcer of the pylorus and duodenum is primarily a medical disease, and careful medical treatment will heal many of these ulcers. When the ulcer has become chronic and indurated, surgical interference is indicated. I do not believe that a temporary closure with a silk ligature, which does not hold the pylorus closed any longer than from ten to thirty days, is of any value in a chronic ulcer of the pylorus or duodenum, which takes weeks and months to heal. I have recently fluoroscoped a number of such cases in which the pylorus was closed over by a silk ligature the size of an umbilical tape. In one case the pylorus was opened and the bismuth meal passed through at the end of ten days, in another case at the end of eighteen days, and practically all of them were open at the end of twenty-one days. In addition, two of these cases had almost fatal hemorrhages. What value has such a temporary closure on a chronic indurated ulcer? We know from fluoroscopic and Roentgen ray work that from 40 to 50 per cent. of the food passes through the pylorus, no matter how well the gastro-enterostomy has been performed and placed. Therefore, the irritation to the ulcer surely cannot be lessened sufficiently to produce healing. The only way in which gastro-enterostomy alone helps is from the fact that the bile

secretions regurgitate through the opening into the stomach and alkalize the secretions. This surely cannot be constant, for if 50 per cent. of the food passes through the pylorus anyway, this food as it passes over the duodenum neutralizes the bile. So the only time bile can flow in any quantity through the gastro-enterostomy is when the stomach is empty or no food is passing over the pylorus. Therefore, if a pyloric closure is indicated at all, a permanent closure is indicated, such as von Eiselsberg's unilateral exclusion, or the simple submucous fascial transplant method which I devised. This fascial transplant closure has been shown to be absolutely permanent, and certainly is not an additional risk to the patient. There is no chance of hemorrhage or infection. I have so far seen no case of leakage following this procedure.

DR. G. W. CRILE, Cleveland: The discussion has focussed largely on a procedure we rarely do—namely, the occlusion of the pylorus. We have found out from experience that without any occlusion of the pylorus the symptoms disappear, and the jejunal lesion heals promptly. I am inclined to agree with Paterson that in all gastro-jejunostomies a certain amount of alkaline fluid comes through the new stoma into the stomach and reduces the acidity; this probably is as much a curative factor as any other feature of the procedure. Dr. Coffey raised a very interesting point. I think the reason the first contact with the very bad risk patient is so menacing is because of the narrow margin of safety due to starvation. Dr. Deaver's more radical views show that in a large measure each surgeon must be his own monitor. In these starved cases we must sometimes resort to the technic of Von Eiselsberg, viz.: at first merely bring up the jejunum under local anesthesia and feed through a tube in order that the reserves of the patient may be increased. In this short paper it has been impossible to explain the reasons for many of the steps suggested. Our purpose has been rather to sum up in a very practical way the present status of gastric surgery in the Lakeside Clinic.

A ROENTGENOLOGIC STUDY OF THE GASTRO-INTESTINAL TRACT IN DIABETES

A REPORT ON SEVENTY-TWO CASES *

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BATTLE CREEK, MICH.

A toxemia of alimentary origin has long been considered one of the probable factors in the causation of diabetes. The purpose of this paper is not to affirm or deny the validity of such a claim but to summarize the statistics in seventy-two cases recently examined through the courtesy of my colleagues, Drs. C. C. Hubly and C. S. Staines, of the staff of the Battle Creek Sanitarium.

The majority of diabetics give a history of constipation or, what is worse, constipation alternating with diarrhea. Although most authorities urge the necessity of careful attention to intestinal hygiene as a part of the treatment of this malady, the literature contains very few articles dealing specifically with intestinal stasis as a cause of diabetes.

Brosch¹ reported the necropsy findings in a patient of 60 who had died comatose and uremic with slight jaundice. The urine had shown large quantities of sugar and albumin. On opening the abdomen at post-mortem it was evident that the pancreas had been compressed by the chronically distended large bowel.

* Read before the Section on Pathology and Physiology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Brosch: Virchows Arch. f. path. Anat., 1912, ccviii, 426.

The lower ileum contained fecal matter of light brownish color and of rather dense consistency. As a result of his necropsy studies in this case, Brosch was convinced that the dilated part of the intestine above the obstruction exerted pressure on the descending part of the duodenum and that there had followed changes in the pancreas itself and in other neighboring organs.

A. C. Jordan² feels sure there is a very definite relation between diabetes mellitus and chronic intestinal stasis. He cites two interesting cases, both of which show marked ileac delay associated with kinking of the terminal ileum. The so-called "writhing" duodenum was observed in one of the cases, in which there was also found gastric delay considerably longer than six hours.

N. Mutch³ believes the determining factor in the production of diabetes mellitus is a chronic inflammation of the duodenum, generally associated with ileac stasis, which aggravates the condition in proportion to its severity. By Roentgen examination and orthodiagraphic measurements, he found that the average vertical length of the duodenal shadow in healthy adults was $3\frac{1}{2}$ inches, or the space of two lumbar vertebrae with their intervening disks. In eleven cases of diabetes mellitus he found that this vertical length varied from 3 to $3\frac{1}{2}$ vertebrae, or from $4\frac{1}{2}$ to $5\frac{1}{2}$ inches, and was accompanied by an increase in the diameter of the tube as well. In one case examined after death, he found that the walls of the duodenum were thicker than normal, and that these changes extended down into the jejunum. He believes that chronic duodenitis is the determining factor in the production of diabetes mellitus, and that ileac delay increases the severity of the disease by causing stagnation in the duodenum.

Croftan⁴ expresses the opinion that intestinal toxemia, causing prolonged injury to the liver and pancreas with the production of alimentary glycosuria, may be one of the factors in the production of permanent diabetes.

Roentgen studies in the seventy-two cases on which this paper is based were carried out according to the definite routine which I established some years ago in the Roentgen department of the Battle Creek Sanitarium. According to this routine the patient reports at the Roentgen department at 8 o'clock in the morning, having abstained from food or drink since arising; thus one is assured that he finds the patient with an empty stomach, and hence any residue in the stomach must mean gastric delay or hypersecretion. No laxatives have been ordered, the patient having been instructed to refrain from laxative drugs or laxative means of any sort for the twenty-four hours preceding the examination; in other words, one attempts to examine the patient under the ordinary conditions of life.

The test meal consists of 2 ounces of barium sulphate (especially tested for Roentgen-ray purposes) stirred into 14 ounces of Oriental buttermilk. This the patient takes while being watched with the fluorescent screen. Manipulation is carried out in both the horizontal and vertical positions, after which the patient is dismissed with instructions to return at the second, fifth, ninth and twenty-sixth hours for observation. If the barium has not been evacuated at the twenty-sixth hour he is asked to return as many times as may be necessary to find the bowel completely

emptied of barium residues. These observations are made at the fiftieth and seventy-fourth, and if necessary at the ninety-eighth hour. When the colon is seen to be emptied of the barium residues, the patient is told to return at 7 on the following morning, at which time the colon is emptied by means of three cleansing enemas, each of 1 pint, given one after the other, each one being retained for five minutes and expelled before the administration of the next. After an interval of about two hours to allow the expulsion or absorption of water residues, the patient is given a colon injection consisting of 3 ounces of barium sulphate in a suitable vehicle, the total enema amounting to $2\frac{1}{2}$ pints. Rarely 3 full pints may be needed. Thus the patient will have been seen on from eight to eleven different occasions, the findings being noted down from time to time by an attendant.

The tests having been completed, the examiner is now ready to make his report. This is dictated from the records made at the time of these various tests, with such aid as may be afforded by special roentgenographic records ordered at appropriate intervals during the examination.

As a preliminary to the foregoing examination, before any barium has been given, the patient is sent to the roentgenographic room for two or three plates of the gallbladder region in the hope that gallstones, if present, may be identified. In 1913, before the surgical section of this Association, I made the statement that gallstones could be recognized roentgenologically in 40 or 50 per cent. of cases. I based this statement on the finding of forty-eight cases of gallstones in 1,000 consecutive bismuth meal examinations. I later analyzed a series of 300 consecutive laparotomies performed in the Battle Creek Sanitarium Hospital by Drs. Kellogg, Harris and myself, in all of which a preoperative Roentgen examination had been made, finding that the Roentgen-ray report had been positive for gallstones in half the cases in which gallstones were found at operation. In a series of 5,000 consecutive examinations in which the gallbladder was included (examinations of the alimentary tract, gallbladder, right kidney or lumbar spine), gallstones were identified roentgenologically in 5 per cent. of all the cases.

In our series of seventy-two diabetics, gallstones were found definitely in six cases, or 8 per cent., and in eight more cases there were very suspicious shadows, some of which were proved to be gallstones at subsequent operation. Some criticism has been offered concerning our practice of reporting suspicious shadows. Certain surgeons remarked that they did not operate on suspicion. The only reply to such criticism is that we can see nothing else in an exploratory laparotomy than operation on suspicion. We feel that these suspicious shadows should be reported, for if note is made of them, the surgeon will be more likely to exercise special care in palpating the gallbladder at operation. Of course no operation should be based on the strength of Roentgen findings which are only suspicious unless clinical findings tend to confirm the suspicion. Evidence of gallbladder region adhesions existed in twenty-six of our cases. Hence we have a relatively high proportion of diabetic patients in whom the Roentgen evidence shows gallbladder region disease.

In view of the close relationship between gallbladder and pancreatic affections, the significance of this high percentage of gallbladder findings in diabetes is obvi-

2. Jordan, A. C.: *Proc. Roy. Soc. Med.*, 1915, viii, Electrotherapeutical Section, p. 87.

3. Mutch, N.: *Practitioner*, London, May, 1915, p. 712.

4. Croftan: *Med. Rec.*, New York, 1914, ii, 1087.

ous. It may be remarked in passing that in a number of diabetics with gallbladder lesions, operation was performed for removal of stones or for chronic gallbladder infection, with very satisfactory results, several of the patients becoming entirely sugar free and remaining so.

As might be expected in a series of cases presenting gallbladder region adhesions, we find a correspondingly large percentage of transverse stomachs, the unusual position being due in part to hepatofixation. It should be remembered, however, that one frequently finds a transversely placed stomach in the more or less obese persons who comprise the major proportion of our diabetic cases. Carcinoma of the stomach was found in two cases, not including two other cases in which carcinoma of the pancreas was determined.

The emptying time of the stomach was unusually rapid, being considerably less than four hours in forty-six cases; less than five hours in sixty cases, and less than six hours in seventy cases. In the two remaining cases the emptying time was seven and seven and one half hours, respectively. In both there was found tumor of the pancreas, one of which at least proved to be carcinomatous.

These findings in relation to the motor functions of the stomach agree very well with the clinical studies of various investigators. Gilbride⁵ found that the motility of the stomach is usually increased and gastric secretion diminished. It is commonly known that with diabetics one cannot wait the usual forty-five minutes to aspirate the stomach contents after the Ewald test breakfast. In order to obtain any stomach contents the aspiration must be performed in thirty minutes, and in some cases at the end of twenty minutes. It is possible that the low hydrochloric acid content of the gastric juice in diabetes is in some way responsible for the development of this disease.

In view of the work of Mutch and Jordan, already referred to, considerable interest centers in the question of duodenal stasis. In our series duodenal stasis was observed in only one instance, although a special effort was made to confirm the findings reported by the authorities just named. Perhaps the discrepancy in our findings is due to a difference in definition of duodenal stasis. It would seem that duodenal stasis should imply the retention of barium residues in the duodenum for a time perceptibly longer than that required to empty the stomach; but, as stated above, such delay was noted in our series in only one case. In many instances the duodenum was widely filled; but so also was the jejunum, the wide filling being no greater on the proximal side of the duodenojejunal junction than on the distal side. To find the upper small bowel, both duodenum and jejunum, well visualized is common where the gastric juice shows low hydrochloric acid values; it seems to be due to the rapid outpouring of material through the pylorus characteristic of this condition.

In occasional instances (about twenty-five cases in 5,000 consecutive barium meals) we have found barium in the ampulla of Vater. Sometimes the shadow of the ampulla thus visualized was no larger than a pea; in other instances the shadow measured as much as 4 cm. in diameter, and the barium has been retained from three to four days. Elsewhere I have discussed the probable significance of this visualization of Vater's ampulla.⁶

It would seem that if duodenal stasis were common in diabetes we should find among them a large proportion of cases of visualized ampulla of Vater; but in our series of seventy-two cases the visualized ampulla, though carefully searched for, was not recognized in a single instance. Conversely, none of the twenty-five or more cases in which the dilated ampulla was observed were diabetics.

Diverticulum of the duodenum is a rather uncommon finding under any circumstances, and up to 1911 only eighty cases were to be found in all the literature, including postmortem records. In the reference last given,⁶ I reported eight cases discovered roentgenologically. Up to the present writing I have detected diverticulum of the duodenum other than the dilated diverticulum of Vater in thirteen patients; but none of them have been diabetics.

Careful observation of the duodenal shadow has failed to impress us that there is any characteristic change in the dimensions of the duodenum of diabetics as compared with normal individuals.

The finding of barium residues in the terminal ileum at the ninth hour may be considered as signifying abnormal delay. There is, of course, a normal retardation of chyme in the terminal ileum for a short period before the cecum begins to fill, this normal delay being comparable to the delay of food in the stomach. Just as food is held in the stomach to be served out in small quantities through the pylorus, so the chyme is detained in the terminal ileum to be served out at appropriate intervals through the ileocecal sphincter; but if the delay in the terminal ileum exceeds the ninth hour, we may say that the patient exhibits ileac stasis—slight, if only a few inches be filled; marked, if 2 or 3 feet of the ileum still retain barium shadows; extreme, if barium residues are found in the terminal ileum at the twenty-sixth hour. The accompanying tabulation will permit a ready appreciation of the degree of ileac stasis in a series of mild cases and in a series of severe cases of diabetes.

DEGREE OF ILEAC STASIS IN BOTH MILD AND SEVERE CASES OF DIABETES

Mild Cases		Severe Cases	
Degree of Ileac Stasis		Degree of Ileac Stasis	
Case No.		Case No.	
5.....	0	3.....	++
8.....	0	4.....	++
9.....	0	14.....	++
15.....	0	16.....	++
26.....	0	17.....	+++
28.....	0	18.....	+++
31.....	++	23.....	+
34.....	0	25.....	0
35.....	0	30.....	0
47.....	0	40.....	+
50.....	0	42.....	0
52.....	0	46.....	+
53.....	0	60.....	0
58.....	0	61.....	++
59.....	0	63.....	++
66.....	0	68.....	+
67.....	++	69.....	+
		71.....	0

Of the mild cases, the patient in Case 67 became sugar free very quickly, and she was able to remain so even on a fairly liberal diet. Case 31 was complicated by a serious neurologic condition attending syphilis.

Of the severe cases, the patient in Case 30 suffered from diarrhea. Case 42 had gallstones; Case 60 also had gallstones. The patient in Case 71 died suddenly, not in coma, the exact cause of death not being explained. The carbon dioxid tension was very low.

It is strikingly apparent that ileac stasis is a characteristic of severe cases of diabetes. It is probable that my conservative definition of ileac stasis explains why the stasis is not more apparent even in the mild cases

5. Gilbride, J. J.: The Functions of the Stomach in Diabetes Mellitus, THE JOURNAL A. M. A., Feb. 18, 1911, p. 497.
6. Case, J. T.: Am. Jour. Roentgenol., June, 1916.

A tabulation showing the competency or incompetency of the ileocecal valve in this series reveals nothing characteristic for the mild as contrasted with the severe cases. The majority of patients, both mild and severe cases, show incompetency of the ileocecal valve. Of the twenty worst diabetics the ileocecal valve was incompetent in thirteen and competent in seven. Of the twenty mildest cases the ileocecal valve was competent in ten and incompetent in ten. We have not arrived at any satisfactory means of determining the degree of incompetency except that it has been noted that in these cases with most marked ileac stasis, incompetency of the ileocecal valve permitted the enema to fill an unusually large portion of the terminal ileum; and following the meal there was often observed a regurgitation of ingested food from the cecum back into the ileum after the ileum had once been emptied.

Adhesions of the terminal ileum were found in eighteen of the seventy-two cases, or exactly 25 per cent. A careful scrutiny of the protocols fails to show any constant relation between the severity of the diabetes or the degree of ileac stasis and the presence or absence of adhesions of the terminal ileum.

Eight of the cases of terminal ileum adhesions were found in the twenty worst diabetics; four in the twenty mildest diabetics.

Marked spasticity of the distal colon was found in forty-six of the seventy-two cases. Proximal colon stasis was especially marked in fourteen cases. Adhesions about the appendix were found in a somewhat larger proportion of severe cases than of mild cases, but here again there is no constant relation between the severity of the disease and the severity of the appendical involvement as shown with the Roentgen ray, except that a slightly larger proportion of appendical involvements occur in the severe cases.

The average emptying time of the colon in the twenty worst cases was forty-eight hours. The average emptying time of the colon in the twenty mildest cases was thirty-six hours. Under the circumstances of our tests the emptying time of the normal colon should be about thirty-four hours.

Carcinoma of the colon was found in two cases and removed surgically in both cases. One patient died in coma about ten days after the operation; the other is still alive and is sugar free.

The foregoing studies were not undertaken with the idea of criticizing the work of any one else, but rather to make a tabulation of the actual findings in the large series of cases which fortunately was available for this investigation. In summarizing the findings, special emphasis is drawn to the following points:

1. Gallbladder involvements are very common in diabetes, especially gallbladder lesions attended by pericholecystic adhesions.

2. The stomach empties itself with unusual rapidity in the average case of diabetes.

3. In our series duodenal stasis was a rare finding, being observed only once.

4. An increase in the dimensions of the duodenum, either in length or caliber, was not observed.

5. There is a striking relation between the severity of the disease and the degree of ileac stasis.

6. Ileocecal valve incompetency is a common finding in diabetics, but we were unable to discover any definite relation between the degree of ileocecal valve incompetency and severity of the disease.

7. Adhesions of the terminal ileum, stasis in the cecum and evidences of appendical disease were somewhat more frequent in the severe cases than in the mild cases of our series.

8. The average emptying time of the colon in diabetics is delayed in about the same proportion of cases as one would expect from a perusal of the clinical histories. A majority of the patients show a low grade of colonic stasis. Extreme colonic stasis was found in only two instances, and both of these showed carcinoma of the distal colon.

DIRECT AND INDIRECT HAY-FEVER

PRELIMINARY REPORT OF THE RESEARCH DEPARTMENT
OF THE AMERICAN HAY-FEVER-PREVENTION ASSO-
CIATION ON THE ETIOLOGY OF HAY-FEVER

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NEW ORLEANS

In previous reports,¹ it was stated that the reaction of hay-fever was influenced by the physical formation of the pollen. I did not, however, dwell on this part of the subject, as the object of both of these reports was to emphasize the relation of pollen to hay-fever with a view of developing interest in its prevention.

As the form of hay-fever and the cause of the reaction, however, have an important bearing on the treatment of this disease, it has been decided to report, at this time, the results of our investigations on this subject, leaving the question of the therapy based on these investigations, which are not yet completed, for a future report.

HAY-FEVER REACTIONS

In testing subjects for the hay-fever reaction, it has been frequently observed that the reactions produced by different pollens vary in character, this being attributed to different degrees of susceptibility of the patient to various plants. In the course of these investigations, in which many hundreds of tests were made, it was soon noted that there appeared to be a marked uniformity of this variation in most subjects, indicating that the difference might be in the pollens and not in the patient.

Two Classes of Pollen.—Further investigations demonstrated that this was the case. Microscopic examinations show that there are two physically distinct classes of pollen: the first, in which the outer coat (extine) is covered with minute spicules (Fig. 1), and the other in which these are absent (Fig. 2).

The spiculated pollen grains are usually spherical, as in the ragweeds (*Ambrosia elatior*, *trifida* [Fig. 1], *psilostachya*, etc.), cocklebur (*Xanthium americanum*, *pennsylvanicum*, *spinosum*, etc.), false wormwood (*Parthenium hysterophorus*) and marsh elder (*Iva ciliata*, *axillaris*, etc.). Sometimes, however, these are ellipsoidal, as in the black-eyed Susan (*Rudbeckia hirta*), mayweed (*Anthelmis cotula*), horseweed (*Erigeron canadensis*), etc. They vary in size from the common ragweed (*Ambrosia elatior*) 15 microns² in diameter to the hibiscus (*Hibiscus palustris*), which measures 170 microns.

1. Scheppegrell, W.: Hay-Fever and Its Prevention, Pub. Health Rep., July 21, 1916, p. 1907; The Cause, Prevention and Treatment of Hay-Fever, Med. Rec., New York, 1916, xc, 95.

2. Micron is 0.001 millimeter.

The unspiculated³ pollens vary greatly in size. The smallest that we have tested is the pollen of the Carolina plum (*Prunus caroliensis*), which measures 2 microns in diameter. The largest is the corn pollen, which measures 80 microns. They also vary greatly in shape, being usually more or less ellipsoidal but frequently spherical (Fig. 2), as in most of the grasses, four or five-sided as in the sedges, or complex in shape, as in the evening primrose.

Reaction of Spiculated Pollen.—A series of tests demonstrated that all spiculated pollens, of which the ragweeds (*Ambrosia elatior*, *trifida* and *psilostachya*) form the type, invariably produce a reaction when inhaled by hay-fever subjects sensitive to any one of these spiculated pollens. In over 100 varieties of pollens that have been tested, not a spiculated pollen failed to give a reaction in such a subject.

The only question to be decided with spiculated pollens is whether or not they are wind-pollinated, that is, found naturally in the atmosphere.⁴ If this is the case, it is a cause of hay-fever for such sensitive subjects coming within the radius of the air which is infected. Among the plants which have been tested, and which are wind pollinated and have spiculated pollen, are the following: common ragweed (*Ambrosia elatior*), giant ragweed (*Ambrosia trifida*), rough wild elder (*Iva ciliata*), cocklebur (*Xanthium americanum*), false wormwood (*Parthenium hysterophorus*), etc.

The reaction from spiculated pollens in a sensitive subject is prompt, active and usually within two minutes. When it does not take place in three minutes, the patient is either not sensitive to the pollen, or the pollen has not reached the nasal mucus and the test should be repeated.

The character of the reaction bears a direct relation to the length of the spicules of these pollens. In the common ragweed (*Ambrosia elatior*), in which the spicules are 2.1 microns in length, and the giant ragweed (*Ambrosia trifida*), in which they are 2.8 microns, the reaction is prompt and active. In the cocklebur (*Xanthium americanum*) and the rough wild elder (*Iva ciliata*), the spicules are shorter, being 0.7 and 0.5 microns, and the reaction is proportionately less active than with the ragweeds (ambrosias).

Reaction of Unspiculated Pollens.—The reactions from unspiculated pollens are delayed and less marked, although they may be quite prolonged. They are caused not by local irritation but by the absorption of the protein contents of the pollen. In the grass pollens, which have a high percentage of protein, the reaction is positive. In the sedges, pine, palmetto, etc., in which the pollens are smooth, but contain an inappreciable amount of protein, the reaction is negative. In the careless weed (*Amaranthus spinosus*), goose foot (*Chenopodium anthelminticum*), yellow dock (*Rumex*

crispus), and other weeds of this class, the protein is low and the reaction is correspondingly mild.

The tests also demonstrate that all pollens high in protein (unspiculated), of which the grasses form the type, invariably produce a reaction when inhaled by a hay-fever subject sensitive to any one of such pollens.

Sensitization to both spiculated pollens and to (unspiculated) pollens high in protein is general, but varies with individuals, most persons being more sensitive to the former but some to the latter. The development of the disease from one or the other, however, usually depends on the proximity of the infecting weeds or grasses.

After the foregoing facts had been established, the character of the reaction could be predicted from the microscopic examinations of the pollen. The microscopic examinations should always precede the biologic test of pollens. Recently (August 20) a wild rose was sent from North Carolina to be tested and was found to contain seven times as many spiculated ragweed pollens as its own smooth pollens. During the active pollinating season of the ragweeds, the infection of other flowers with the ragweed pollen is of common occurrence, and a biologic test without a microscopic examination may be misleading.

Reagents for Protein.

In making the protein test in pollens, many reagents have been tried and also the polariscope. Eventually, however, the iodine test was found the most simple and practicable. As iodine is almost insoluble in water, the following solution is used:

Iodin crystals..... 5 grains
Potassium iodid....10 grains
Distilled water.... 1 fluidounce

A drop of this is applied by means of a pipet to the edge of the cover.

The iodine reaction should be tested by means of condensed reflected light, a white porcelain plate being used as a substage.

In this way, the diffusion of transmitted light through the pollen is avoided, and the contrasting colors are more easily detected.

Protein Reaction in Grass Pollens.—The iodine test shows that all the grasses (*Gramineae*) including corn, rye and rice,⁵ are rich in protein. With this stain, the pollens rapidly become light blue, which gradually darkens until they become almost black (Fig. 2). Pollens without an appreciable amount of protein show only the yellow-brown stain of the iodine. Pollens with a low percentage of protein, as the careless weed (*Amaranthus spinosus*), yellow dock (*Rumex crispus*), goose foot (*Chenopodium anthelminticum*), etc., are stained violet, the shade indicating the degree to which protein is present. In some pollens, such as the western water hemp (*Acnida tamarascina*), however, the blue is confined to a small part of the pollen, showing quite distinctly from the remaining protein.

5. With these exceptions, the cereals are not wind-pollinated and do not cause hay-fever. The rarity of corn as a cause of hay-fever is partly due to its being uncommon in the cities and suburbs, and partly to the size of its pollen (80 microns). Under the same conditions that the common ragweed pollen will be carried by the wind one-half mile, the corn pollen will travel only 43 feet. (From our table of potential areas of hay-fever plants.)

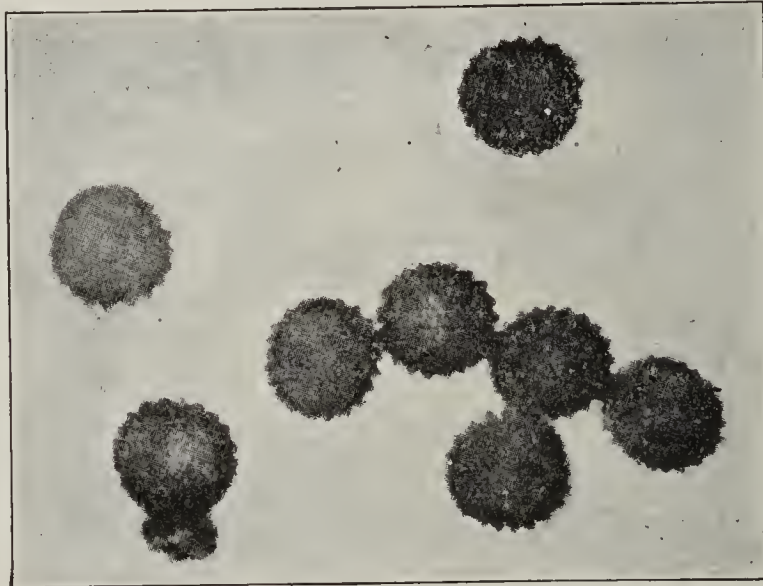


Fig. 1.—Spiculated pollens of ragweeds (ambrosias) low in protein.

3. "Smooth pollen" in these cases would not be exact, as many of the unspiculated pollens have lines, grooves and other irregularities.

4. An instrument called the anemophilometer has been devised by this department in which the wind pollination of plants can be artificially tested.

Negative Tests for Protein in Ragweed Pollens.—With spiculated pollens, the iodine tests have invariably been negative, indicating an inappreciable amount of protein. A large number of tests have been made with these pollens, as the primary irritation from the spicules did not preclude the possibility of a secondary reaction from protein. In every case, however, the iodine test gave a negative result.

All pollens are furnished with some means by which their ripened contents may be expelled. In most cases, this is accomplished by means of small holes, called "pores," through which the pollen tube, which is the development of the interior coat (intine) of the pollen, is projected for fertilizing the pistil, or fertile part of the flower. In other cases, small lids are pushed up by the pressure of the contained matter, and in others, the thinner walls allow the projection of the germinating tube.

In order to ascertain, however, that the iodine reaction is not interfered with by the coats of the ragweed pollens, some of these were crushed in order to express the fovilla, the protoplasmic contents of the pollen grain.

This, however, proved to be difficult on account of the high resistance of these pollen grains. While the grass pollens have so light a coat that they are frequently crushed in the ordinary process of mounting, the ragweed (ambrosias) pollen grains resist pressure between two glass slides carried to the point of crushing the glass. Eventually, the pollens were broken by forcibly rubbing them with the handle of an instrument, and even this resulted only in an occasional pollen grain being crushed. The iodine test was then again applied, but the expressed contents of the pollen showed no difference with the iodine test.

Reagents for Glycerin Plates.—The iodine test forms a routine method in the examination of glycerin plates. These are placed in various localities and altitudes in order to ascertain the number and varieties of pollen present in the air. The iodine stains the glass pollen blue, the spiculated pollen yellow-brown, the pollen of low protein bluish-brown and the innocuous smooth pollens yellow-brown. As the glycerin plate is passed across the optical field by means of the mechanical stage, these stains greatly simplify the quantitative and qualitative count.

Two Forms of Active Pollen.—As the result of these investigations, we find that there are two forms of active pollens. The first and most important form is the spiculated pollen, low in protein, and the second, unspiculated pollen rich in protein. Other pollens without spicules and with but a small percentage of protein form a minor and less important division of the second class.

In the ragweeds (*Ambrosia elatior* and *trifida*), which are the cause of 85 per cent. of the autumnal and most severe form of hay-fever in the section of

the United States east of Kansas,⁶ the spicules are well developed. In the former (*Ambrosia elatior*), 15 microns in diameter, the spicules are 2 microns, and in the *Ambrosia trifida*, 20 microns in diameter, the spicules are 2.8 microns in length. The effect of these spicules is prompt, active reaction in a sensitive nostril. The severity and duration of this reaction depend on the degree of sensitiveness of the mucous membrane and the number of pollen grains inhaled. In most sensitive nostrils, the effect of the inhalation of from five to ten pollen grains will pass off in thirty minutes, but several hundred pollen grains, which form an almost invisible cluster, will cause a reaction lasting from one to fifteen hours.

In an atmosphere in which there are many pollen grains which are kept floating by means of the wind, enough are usually inhaled to prolong the attack until the end of the season, unless this is interrupted by a rain, destruction of the weeds producing the pollen, by removing the infected area, or by raising the resistance of the patient.

Increased Susceptibility Versus Anaphylaxis.—The increased susceptibility of the patient to pollen after the first inhalation of spiculated pollen is not due to anaphylaxis but to the increased sensitiveness of the nostril resulting from this irritation. The sensitiveness which causes him to react to the first pollen inhaled probably also persists and conduces to this susceptibility.

Influence of Size of Spicules.—In the cocklebur, which is next in importance to the ragweed of the spiculated pollen, the spicules are relatively and actually shorter than those of the ragweed pollen, being 0.7 microns in length, the shorter length resulting in a much less

pronounced reaction and one of shorter duration. The less extended distribution of the cocklebur, as compared with the ragweed, also makes it of less importance than the ragweeds, except in sections in which the cocklebur is found but not the ragweed. In some of these places the development of hay-fever followed the advent of the cocklebur.

The small number of cases due to the cocklebur also results from the large size of this pollen. It is 36 microns in diameter as compared with the 15 microns of the common ragweed. The result of this is that the pollen of the cocklebur will be carried on level ground 700 feet in a wind of 20 miles an hour, while the ragweed under the same condition will be carried 3,015 feet.⁷

The marsh elder (*Iva ciliata*) also has a spiculated pollen grain whose length is much shorter than those of the ragweed, being 0.5 microns in length. As with the cocklebur, the reaction on this account is less

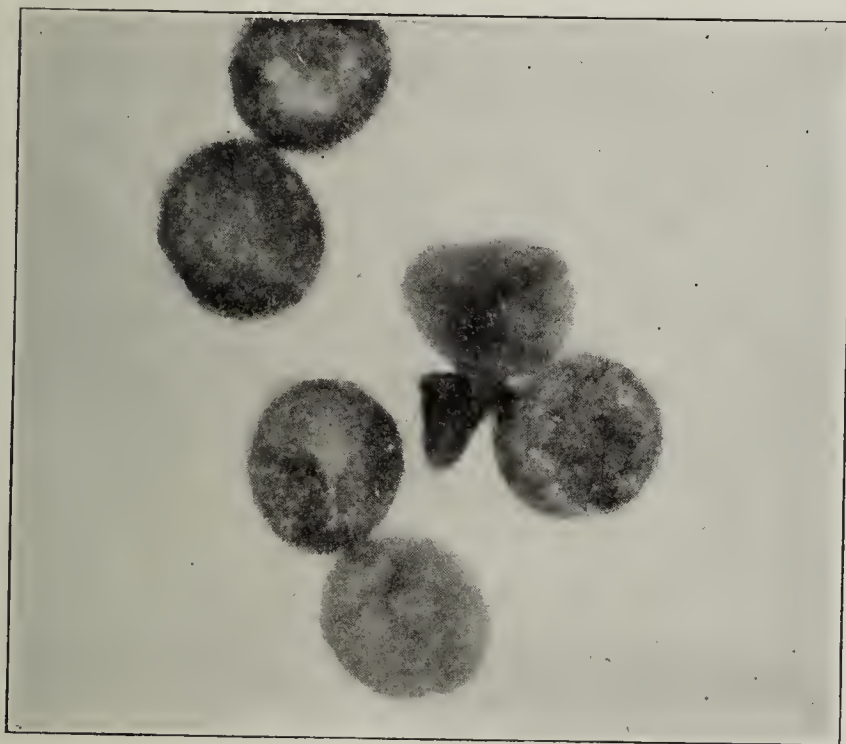


Fig. 2.—Unspiculated pollens of grasses (spherical) high in protein, and sedges (prismatic) low in protein.

6. West of Kansas the ragweeds are replaced by the *Iva xanthafolia*, called the giant ragweed, and the western ragweed (*Ambrosia psilostachya*).

7. A table giving the distances that wind-borne pollens will be carried by winds of different velocities will be given in another report.

marked and prolonged than the ragweeds. Its distribution is still less extended than that of the cocklebur, and this plant is therefore of less importance in connection with hay-fever. From the Dakotas to Nebraska, New Mexico and California, this is represented by the *Iva axillaris* (small flower marsh elder, or poverty weed), in which territory it forms an important cause of hay-fever.

Spiculated Pollen in Non-Wind-Pollinated Plants.—There are many plants which have spiculated pollen, but, not being wind-pollinated, do not cause true hay-fever in the sense that the pollen is inhaled naturally from the atmosphere. As these will, however, cause an acute attack if applied directly to the nostril, as sometimes happens in children, a large number of these have been tested.

Among these is the common sunflower (*Helianthus annuus*, Fig. 3), which has large spiculated pollen grains (40 microns), the spicules being 5.6 microns. On account of the size of the spicules, it gives a violent reaction. The sunflower, however, while apparently giving a great deal of pollen, is insect-pollinated and gives little pollen as compared with the real wind-pollinated plants, such as the ragweeds (*Ambrosia elatior* and *trifida*), careless weed (*Amaranthus spinosus*), cocklebur (*Xanthium americanum*), etc. Its large size also further reduces its potential radius, so that it is not a frequent cause of hay-fever.

Among the other plants, with spiculated pollens, which will cause a reaction only by direct inhalation, are: golden rod (*Solidago odorata* et al., 25 microns), iron weed (*Vernonia noveboracensis*, 40 microns), rosin weed (*Grindelia squarrosa*, 20 microns), horse weed (*Erigeron canadensis*, 20 by 24 microns), marshmallow (*Hibiscus palustris*, 170 microns), sow thistle (*Sonchus asper*, 30 microns), dandelion (*Leontodon taraxacum*, 46 microns), sneezeweed (*Helenium tridentatum*, 25 microns), Shasta daisy, 50 microns, mayweed (*Anthelmis cotula*, 20 by 25 microns), and black-eyed Susan (*Dracopis amplexicaulis*, 25 by 30 microns).

Each of these pollens has proved positive in the biologic test. The anemophilometer, however, shows that the pollen does not leave these plants at all (rosin weed,⁸ etc.) in a wind of from 10 to 20 miles an hour, or not in sufficient numbers to be of importance in hay-fever (sneezeweed, *Helenium quadridentatum*).

Influence of the Extine.—The character of the extine of the pollen also has an important bearing in protein absorption. In the spiculated pollen, probably

for the support of the projections, the extine is dense. It is so strong that it can be broken only with the greatest difficulty. This is also the case with the pollen of the sedges, which is markedly cuticular, possibly for the purpose of conserving the moisture in these pollens.

In the grasses (*Gramineae*), however, the extine is so light and friable that the slightest pressure causes the contents (fovilla) to be discharged. Even, therefore, if the spiculated pollen and sedge pollen had a large amount of protein, the density of the extine would inhibit to a large extent the absorption of their contents. As has already been explained, the contained protein is extremely low and negligible.

Potential Area of the Grass Pollens.—The grass pollens have a marked uniformity in the amount of protein and in the corresponding reaction. The number of cases from any special grass corresponds with the prevalence of these grasses. In some sections, the bull grass (*Paspalum dilatatum*) is the most frequent cause, in others, the timothy (*Phleum pratense*) or the meadow grass (*Poa trivialis*), the number of cases corre-

sponding with the prevalence of these grasses as demonstrated by the exposed glycerin plates.

When a large variety of grasses are pollinating, the potential area of the various pollens is influenced by the size of the grains. Most of the grass pollens are large as compared with the ragweed pollen, the average being about 40 microns in diameter. This varies, however, from the dwarf meadow grass (*Poa annua*), which is one of the smallest tested (7 microns) to the yellow foxtail grass (*Chactochloa glauca*), which is 55 microns

in diameter. The result of these extreme differences in size is that the meadow grass on level ground travels 3,000 feet in a wind of 10 miles an hour, while the foxtail grass will be carried only 62 feet under the same conditions. On account of the greater size and smoothness of these pollens generally and the smaller number of grains discharged, the potential area of grasses is much less than that of the ragweeds.

TREATMENT

While the treatment based on these investigations is still under consideration, and does not form a part of this report, a few suggestions at this time may be of advantage.

The special object in the treatment is to increase the patient's resistance to hay-fever and the elimination or decrease of the infecting pollens. In the former, the general condition of the patient should, of course, be considered,* but exercise in an infected atmosphere should be avoided. Nasal irregularities which cause a concentration of pollen in either nostril should be corrected as a prophylactic, but not a

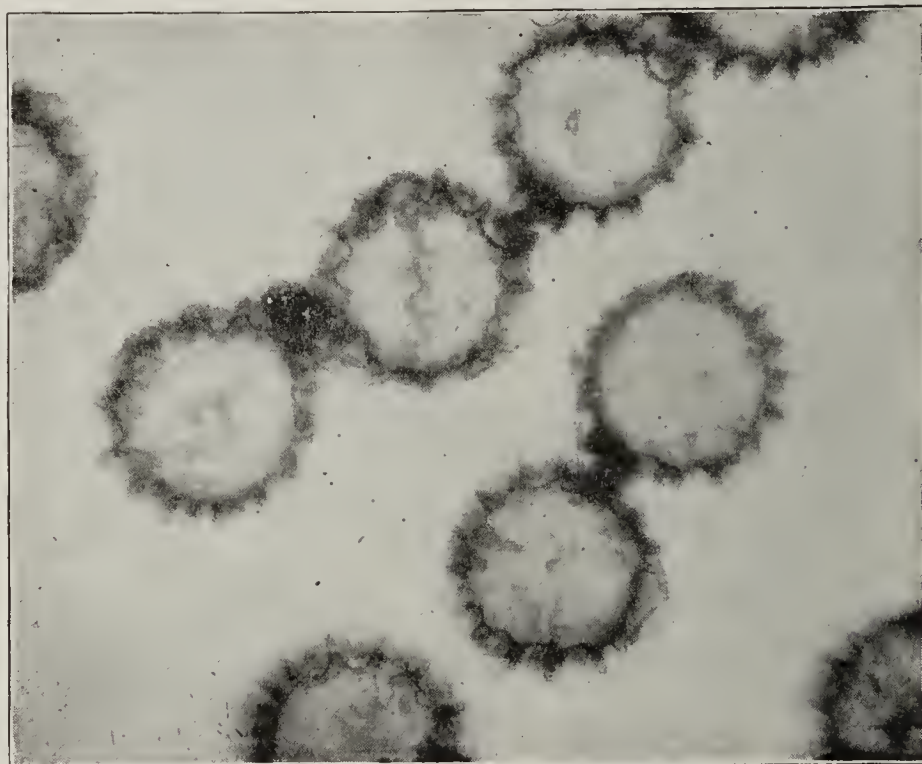


Fig. 3.—Pollen of sunflower (*Helianthus annuus*). The long spicules (5.6 microns) produce a violent reaction, but the flowers are not wind-pollinated.

8. The rosin weed (*Grindelia squarrosa*) is generally supposed to be the cause of hay-fever in Wyoming and the surrounding territory. Its pollen is spiculated but not wind-pollinated, and is therefore not the cause of hay-fever.

curative measure. Sprays with an oil of low specific gravity (0.850) are of special benefit in autumnal hay-fever, as the oil softens the spicules of the pollen and diminishes their irritation. Menthol and other drugs in this oil are to be avoided, as they are of little benefit and limit the free use of the oily spray.

Reduction of Infected Area.—The cutting of the weeds in the neighborhood of the patient's residence is of the first importance. In a neighborhood in New Orleans, the cutting of the weeds in one neglected square resulted in four known hay-fever patients in this immediate neighborhood being entirely without hay-fever the following season.

In the treatment of hay-fever, the patient is first given a glycerin plate to collect the infecting pollen for identification, and to determine whether it is spiculated or unspiculated. An inspector is then sent who makes a "thirty-six square inspection," which includes three squares in each direction from the residence of the patient. In most cases examined thus far, the infecting weeds were found in this survey. The lots having neglected grass and weeds are then reported to the health officer, who files affidavits for violations of the grassweeds ordinance.

These suggestions regarding treatment have given uniform satisfactory results, a full report of which will be given at the end of the season.

CONCLUSIONS

There are two forms of pollen causing hay-fever, the first, spiculated in form and low in protein, causing direct hay-fever; the second, unspiculated in form and high in protein, causing hay-fever by absorption of the protein (indirect hay-fever).

In direct hay-fever, the severity of the attack and its duration depend on the number of pollen grains in the atmosphere, and the length of the pollen spicules. The ragweeds form the type and the principal cause of this form of hay-fever.

In indirect hay-fever the severity of the attack and its duration depend on the amount of protein contained in the pollen and on the number in the atmosphere. The grass pollens have the highest percentage of protein, and form the type and the principal cause of this form of hay-fever.

Pollens without spicules and with an inappreciable amount of protein are innocuous in hay-fever.

The Field of Chemistry.—Modern chemistry has had a manifold origin and tends toward a many-sided destiny. Into the fabric of this science men have woven the thought of ancient Greek philosophers, the magic of Arabian alchemists, the practical discoveries of artisans and ingenious chemical experimenters, the doctrine of physicists, the stern and uncompromising logic of mathematicians, and the vision of metaphysical dreamers seeking to grasp truths far beyond the reach of mortal sense. The complex fabric enfolds the earth—indeed, the universe—with its far-reaching threads. —T. W. Richards, *Ideals of Chemical Investigation*.

BRACHIAL PLEXUS SURGERY*

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MINNEAPOLIS

The present European war, with its colossal total of wounds, many of which inevitably involve the peripheral nerves, has aroused an added interest and stimulated additional research in the surgery of this system.

Brachial plexus injuries in the adult, aside from those resulting from gunshot or stab wounds, or secondary to skeletal injuries, are rare, as was shown in 1911 by Frazier and Skillern,¹ who were able to collect reports of only twenty-one cases which had been verified by operation. Anatomically the brachial plexus, located almost subcutaneously in the root of the neck and unprotected by the skeleton, is vulnerable to direct injury. Direct trauma used to be considered the most frequent cause of injury to these nerves until experimentation by Horsley² and Taylor,³ and a closer study

of etiologic mechanics convinced observers that injury of the plexus did not frequently result from pinching them between the clavicle and first rib, but rather from their forcible avulsion, which tore the cords out by the roots, in the intravertebral and intervertebral cases, and ruptured them anywhere between the spine and axilla in the supraclavicular or infraclavicular types.

The relatively large number of so-called cases of "birth palsies" in infants, which at present are being reported, lend confirmatory evidence that avulsion of the

brachial plexus trunks comes from indirect violence, for here the upper cords of the plexus are torn asunder or out of the foramina themselves, by extreme traction of the shoulder away from the head in the birth of the child. When the lower cords are injured, this results from breech presentations in which the arm is stretched up over the shoulder and the lower cords are put severely on the stretch, probably over the head of the humerus. Again, there are the reported cases in adults when heavy objects like trees or timbers fall on the shoulder and pull it away from the neck, as in Murphy's case;⁴ or when men are thrown onto their shoulders, violently separating the neck from the shoulder as in Peck's case;⁵ or in falling from a height and clutching at something to break their fall, their arm is violently abducted and

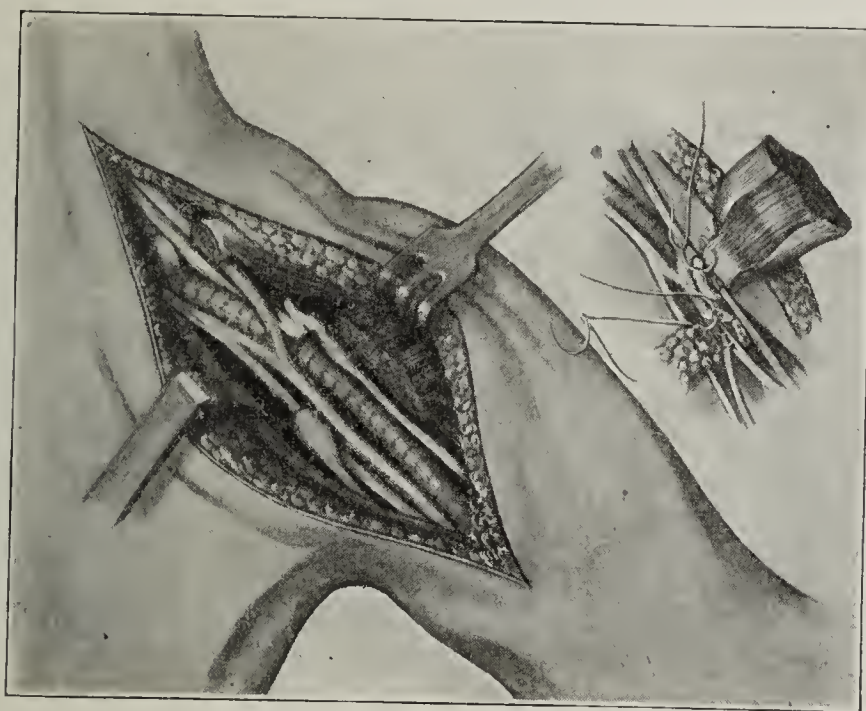


Fig. 1 (Case 1).—Avulsion of musculocutaneous and musculospiral nerves. Inset shows end-to-end and end-to-side or crossed anastomosis.

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Frazier, C. H., and Skillern, P. G.: Supraclavicular Subcutaneous Lesions of the Brachial Plexus Not Associated with Skeletal Injuries, *The Journal A. M. A.*, Dec. 16, 1911, p. 1957.

2. Horsley, Sir Victor: *Practitioner*, London, 1899, lxiii, 136.

3. Taylor, R. W.: *Med. News*, 1905, lxxxvi, 1013.

4. Murphy, J. B.: *Surgical Clinics*, 1912, i, 339.

5. Peck: *Ann. Surg.*, 1911, liii, 858.

pulled above the head, as reported by Brislow;⁶ or, as happened in both of my cases, the patient's arms are caught in belts and they are pulled into and whipped forcibly over pulleys, the arms being jerked away from the bodies, and in one instance the man being thrown heavily against a post, striking on the root of his neck. All of this accumulated evidence disproves the theory of direct violence.

Successful surgery of the brachial plexus, as of any of the peripheral nerves, is dependent on the application of our present day relatively exact knowledge of the phenomena of regeneration in the peripheral segments of severed spinal nerves, which occurs when that segment is united to the viable central segment, and furthermore on an appreciation of the property which nonmedullated neuraxons have of projecting themselves through space and reaching across a gap separating the severed nerve stumps, when properly guided and conducted by some method of tubulization, preferably of fascia, as in my⁷ case in which the musculospiral nerve completely regenerated across a space of 3 inches through a fascia lata tube. Lewis⁸ recently reported observations as to how the non-medullated neuraxons are conducted by and follow protoplasmic bands, which span this gap and originate from both stumps, are added evidence which opens up a fascinating realm of surgical opportunity and offers relief in the class of cases which have heretofore been considered hopeless.

After the severance of a nerve, both stumps undergo neuromatous degeneration, and scar tissue infiltrates the retracted clubbed ends and for a greater or less distance invades the nerve trunks. Serial sections of these clubbed ends ultimately expose the brush ends of the nerve fibers. If, then, these exposed and cleanly cut across fibers are approximated end to end and protected from the ingrowth of connective tissue by wrapping the union with a fascial or fat flap, we expect complete regeneration of the peripheral nerve, provided the central ganglionic cells are intact.

It is illuminating to know that it is entirely possible to make one highly specialized motor nerve carry impulses to a paralyzed group of muscles served by another injured or degenerated nerve, provided the paralyzed peripheral nerve segment is anastomosed with the proximal segment of the healthy nerve. This restoration of function is possible through a reeducation of the cortical centers (adjacent to or remote from one another) which enables them to meet the needs and respond to the peripheral necessity. Much research by many observers has clinched the conviction that this reeducation is entirely feasible, as is shown in the observations of Flourens⁹ on the crossed anastomosis of the brachial plexus in cocks, those of Rawa¹⁰ on cats,

and of Kennedy¹¹ and Murphy¹² on dogs, most of these observers reporting practically perfect results. Schiff¹³ crossed the hypoglossal and vagus nerves and found return of motion in the muscles of the tongue. In the experimental surgical laboratory of the University of Minnesota, Dr. Corbett and I cross anastomosed the various nerves of the brachial plexus in five dogs, wrapping the line of union with fascial flaps or vein cuffs. So perfect was the reeducation that at the end of five months it was difficult to determine which side had been operated on.

The clinical application of these laboratory findings has yielded excellent results, as demonstrated by the spinofacial and spinohypoglossal anastomoses, as originally suggested by Ballance and Stewart,¹⁴ and carried out so successfully by Cushing¹⁵ and other surgeons. Here restoration of function of the muscles of facial expression is more or less perfectly accomplished by reeducation of the brain centers; until that occurs and sometimes permanently, associated movements of the shoulder and face or of the face and tongue persist. Grant's¹⁶ remarkable result following spinofacial anastomosis, with the attendant anastomosis of the distal accessory fragment to the descendens hypoglossi, opened a new field of endeavor, for here the motor nerves arising from the first and second cervicals and running in the sheath of the hypoglossal with their centers, were reeducated to control the trapezius and do away with associated shoulder and face movements.

The success of these anastomoses and the reported success of the anastomosis between the anterior tibial and musculocutaneous nerves by Spiller and Frazier¹⁷ and Young,¹⁸ and between the external and

internal popliteal by Murphy¹⁹ and Kader²⁰ in cases of infantile paralysis, give more than enough evidence to warrant the expectation of more or less perfect restoration of function, whether the nerves crossed be a part of the brachial or lumbar plexus or any of the peripheral nerves of highly specialized function.

Nerves which are forcibly avulsed are injured in a vastly different manner than those which are deliberately or accidentally cut cleanly across by a sharp instrument. In the avulsed trunks the bundles of neuraxons are torn at different levels and are frayed and pulled apart and severely traumatized, the endoneurial blood vessels are torn, hemorrhage occurs in the sheath, and this with the trauma of the accident and the hemorrhage about the nerves results in the

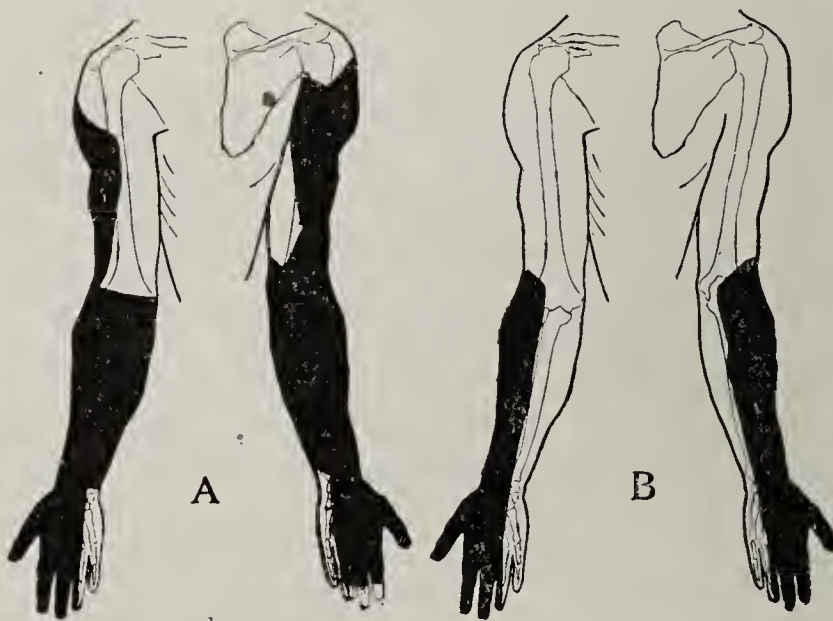


Fig. 2 (Case 1).—Dark areas indicate extent of anesthesia! A, before operation, and B, thirteen months later.

11. Kennedy, Robert: Phil. Tr. Roy. Soc. London, 1901, Series B, cxiv, 127.

12. Murphy, J. B.: Surg., Gynec. and Obst., 1907, iv, 454.

13. Schiff: Arch. d. sc. phys. et nat., Geneva, 1885.

14. Ballance and Stewart: Brit. Med. Jour., May, 1903.

15. Cushing, Harvey: Ann. Surg., May, 1903.

16. Grant, W. W.: Traumatic Facial Paralysis, THE JOURNAL A. M. A., Oct. 22, 1910, p. 1438.

17. Spiller, W. G., and Frazier, C. H.: The Treatment of Acute Anterior Poliomyelitis by Nerve Transplantation, THE JOURNAL A. M. A., Jan. 21, 1905, p. 169.

18. Young, J. K.: Internat. Clin., iv, Series 14, p. 154.

19. Murphy, J. B.: Surg., Gynec. and Obst., 1907, iv, 470.

20. Kader: Chipaults état actuel de la chirurgie nerveuse, ii, 202.

6. Brislow, A. F.: Ann. Surg., 1902, xxxvi, 411.

7. Law, A. A.: Some Modern Phases of Neural Surgery, St. Paul Med. Jour., September, 1915.

8. Lewis, Dean: Tr. Am. Surg. Assn., May 9, 1916.

9. Flourens: Recherches expérimentales sur les fonctions du système nerveux, 1824, p. 272.

10. Rawa: Arch. f. Physiol., 1864, p. 421.

secondary formation of scar tissue, either in the nerve sheaths themselves or about them. Later, scar contraction results in multiple neuromatous nodules of the trunks, which prevents the projection of the proximal axones into the distal segments, or the contraction of the perineural connective tissue strangulates the fibers to the extent of partially or wholly interfering with conduction, which inevitably is followed by trophic changes and motor and sensory paralysis.

One type of injury or neuritis which has been thoroughly studied by surgeons and neurologists is that caused by pressure on the lower cords of the brachial plexus by supernumerary ribs. This results in a pinching of the nerves in the angle formed by the scalenus anticus muscle and the cervical rib, this pinching being accentuated by the constant hammering from respiratory movements. A phase of this type of injury which seems to have escaped attention is caused, not by an adventitious rib, but by a supernumerary band or ligament taking the place of the rib and springing from the seventh cervical transverse process, projected forward and inserted either into the first rib with the scalenus anticus, as occurred in one of my cases, or into the interclavicular ligament, as happened in the other.

In both of my cases at operation, accessory ribs were absent. The seventh cervical transverse processes, however, seemed in the roentgenograms to be drawn down closer to the first dorsal transverse process on the affected side. In both instances these ligaments were extremely taut, and tightly stretched over them and sharply angulated were the eighth cervical and first dorsal cords of the brachial plexus, the tension on which was immediately relieved when the ligaments were cut. This condition gave the typical peripheral symptoms in the hand, which are so characteristic of cervical ribs and the coincident brachial neuritis. In one of these cases, the trophic changes in the phalanges of the middle finger on the affected side were interesting to note. Comparative roentgenograms of both hands showed marked rarefaction of these bones, which was apparently identical with the picture of disuse atrophy.

Symptoms of brachial plexus injury or rupture are of course dependent on where the cords are injured. In the upper arm or "Erb-Duchenne" type, this injury generally occurs to the fifth and sixth branches proximal to the origin of the suprascapular nerve, and therefore the supraspinatus and infraspinatus are paralyzed. The characteristic atrophy of these muscles occurs along with inward rotation of the shoulder and arm until the hand and forearm is in extreme pronation. Winging of the scapula when the arm is held horizontal and pushed on is shown when the injury is high enough to be above the origin of the long thoracic nerve, and is caused by paralysis of the serratus magnus muscle. Coincident with the paralysis of the

shoulder girdle may be paralysis over the distribution of the posterior cord arising from the seventh cervical with branches from the fifth and sixth. Here, of course, the deltoid, biceps, coracobrachialis, triceps, brachialis anticus, supinators of the forearm and extensors of the wrist and fingers may be involved.

In the "Klumpke" or lower arm type, the eighth cervical and first dorsal branches are involved, and the symptoms are manifested in the areas supplied by the median ulnar, cutaneous and lesser internal cutaneous nerves, while the enervation to the upper arm and shoulder may be intact. This type is more uncommon than the former, and is liable to be accompanied by injury to the sympathetic system owing to loss of the celiospinal fibers which join it, coming from the first and second dorsal nerves and occasionally from the eighth cervical.

Injury to these fibers results in a typical series of symptoms, namely, narrowing of the palpebral fissure, or pseudoptosis, from paralysis of the nonstriated muscle fibers of Muller²¹ in the upper lid, and enophthalmos, or sinking of the eye from paralysis of the nonstriated microscopic muscle fibers, described by Landstrom,²² which are found in the fascia behind the

eyeball and attached to the capsule of Tenon: also a contraction of the pupil on that side due to predominance of the motor oculus. Anhidrosis of this side of the face and neck may be observed from loss of sympathetic control of the sweat glands. These symptoms are generally an indication of an intradural avulsion.

In the cases in which all the cords have been avulsed high within the dura

or foramina, the persistence of sensation on the inner side of the upper arm is explained by the loops of communication between the nerves of Wrisberg and the intercostohumerals with the first, second and third intercostal nerves, which cannot be injured by avulsion.

In addition to the twenty-one cases of avulsion in adults verified by operation and collected up to 1911, we have found two other cases reported by Hartwell²³ and Murphy.⁴ These with my own two cases with operation swell the total to twenty-five. These injuries in adults are so rare that it is not given to any one surgeon to see a large series. Therefore I am constrained to report my cases somewhat in detail:

REPORT OF CASES

CASE 1.—G. H., man, aged 23, Dec. 5, 1914, while working in a flour mill, got his left arm caught in a large belt which picked him up and whipped him over a pulley before he was thrown off. This injury resulted in an immediate paralysis of all extensors of fingers and wrist, and of the supinators and the triceps. The biceps, coracobrachialis and brachialis anticus were paralyzed as well. Anesthesia existed on the

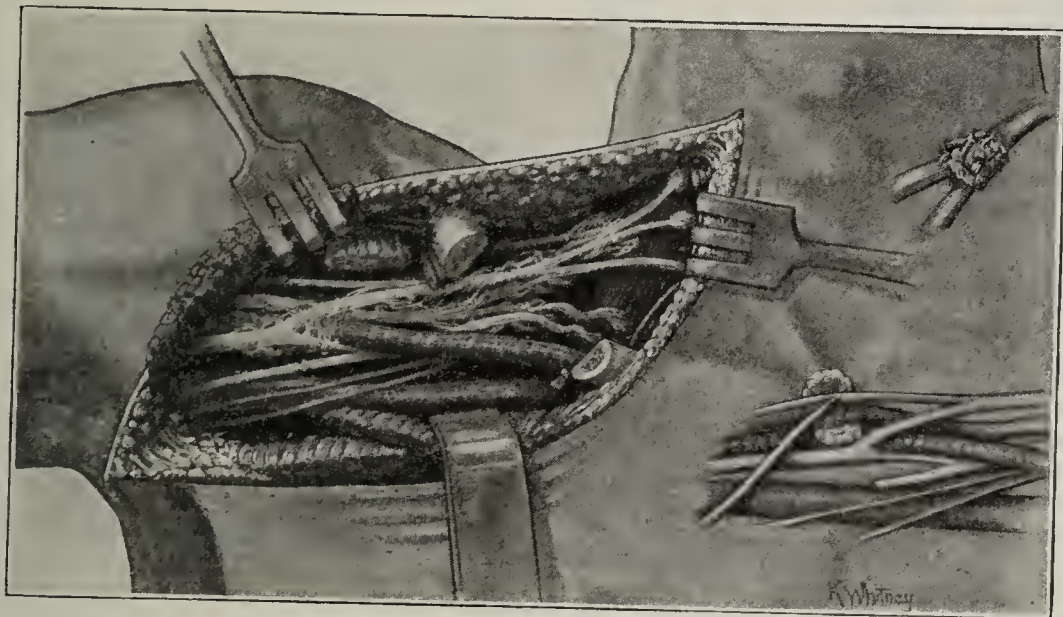


Fig. 3 (Case 2).—Avulsed nerves of brachial plexus, neuromatous nodules and scar tissue about plexus. Insets show transposition, suture and wrapping of the line of union with free fascial flaps.

21. Muller: *Ztschr. f. Zool.*, 1858; *Worzb. Verhandl.*, 1859.
22. Landstrom: *Ueber Morbus Basedowii*, 1907.
23. Hartwell, J. A.: *Ann. Surg.*, 1914, ix, 516.

anterior and posterior aspects of the upper arm from the middle of the deltoid to and including the elbow and over all of the forearm and hand, save on the ulnar side of the hand from the midline of the ring finger, front and back, and extending up to the wrist. There was sensation over the first phalanges of the first, second and third fingers on the dorsum. There was sensation on the inner side of the upper arm, beginning 2 inches above the elbow. The shoulder girdle was intact with the exception of the deltoid, which was

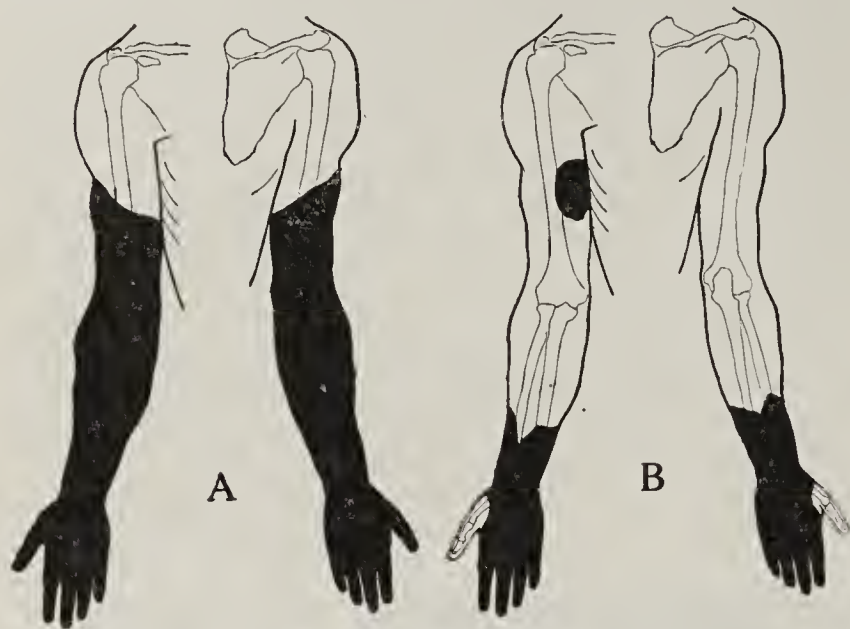


Fig. 4 (Case 2).—Dark areas indicate anesthesia: A, before operation, and B, four months later.

paralyzed. This injury, then, was of the mixed type, and obviously involved the musculocutaneous below the outer head of the median, and the musculospiral above the origin of the circumflex.

There were no symptoms of sympathetic involvement, and all the muscles involved showed the reaction of degeneration prior to operation. April 29, 1915, or four and one-half months after the injury, the clavicle was sawed in two and an anatomic dissection of the brachial plexus made. This revealed a tortuous neuromatous scar of the musculocutaneous nerve, beginning just distal to the outer head of the median. The proximal stump of the musculospiral could not be recognized, and the distal stump was clubbed and retracted 3 inches from its normal origin. All other cords and their branches, save the musculocutaneous and musculospiral, responded normally to a faradic exciter. The neuroma of the musculocutaneous was resected by serial sections for 3 cm. until the normal fasciculi of both stumps were determined, when the stumps were approximated with fine chromic gut sutures. The line of union was then wrapped with a pedicled fascial flap from the stump of the pectoralis major. The clubbed distal end of the musculospiral was resected and this nerve implanted by end-to-side anastomosis into a slit in the side of the median nerve and anchored there with chromic gut, the line of union being wrapped with a pedicled flap of axillary fat. The sectioned clavicle was drilled and united with kangaroo tendon.

Now, thirteen months later, by reeducation, this man has nearly a normal return of all of the functions of the deltoid, coracobrachialis, biceps, brachialis anticus and triceps; he can extend, supinate and pronate the forearm fairly well, flex the wrist very well, and he flexes the second, third and fourth fingers well, the index finger very slightly, and the thumb not at all. The wrist extensors are but feebly functioning, and those of the thumb and index fingers not at all. Those of the last three fingers show about 75 per cent. of function. Sensation has returned save over the radial half of the forearm and hand, or corresponding to the distribution of the muscle spiral, musculocutaneous and radial nerves. The trophic changes in the limb show a marked improvement, save in the thumb and index finger. From an arm that was worthless this man now has a limb which, although it is far from normal, is extremely useful, and which in view of the fact that it frequently takes many months or even years completely to regenerate and reeducate nerves, gives

promise of still further improvement. Should the function of extension of the wrist not return, we shall ultimately transplant the tendon of the flexor carpi radialis into the common extensor tendons.

CASE 2.—A. W., man, aged 42, Dec. 23, 1913, while working in the flour mills, had his right arm caught between a belt and pulley, and he was thrown violently, striking a post with the root of his neck. There was immediate paralysis of his entire right arm and shoulder girdle, together with right-sided enophthalmos, pseudoptosis and contracted pupil, indicating involvement of the sympathetic or ciliospinal fibers. The trapezius, levator anguli scapulae and rhomboidei were functioning: the serratus was paralyzed, but the pectorals were feebly acting. Sensation was lost from 3 inches below the axilla.

From these observations we concluded that all the cords of the brachial plexus were involved and that the lesions were high up, as the suprascapular and long thoracic nerves were injured, as were the sympathetic fibers in the eighth cervical and first dorsal roots.

At operation, Feb. 1, 1916, after the splitting of the clavicle, an anatomic dissection of the brachial plexus was made, and revealed that all of the cords were bound down by scar tissue near the middle of the plexus, that the first and second cords just after they emerged from the foramina showed definite neuromatous nodular enlargements, and that the eighth cervical and first dorsal nerves were buckled on themselves and relaxed, although they still were adherent by connective tissue to the foramina.

After all scar tissue about the plexus was dissected off, faradic stimulation of the various cords revealed a slight response from the muscles supplied by the suprascapular and musculocutaneous nerves, slight from the musculospiral and median but none at all from the ulnar nerve. Apparently the roots of the eighth cervical and first dorsal were torn off the cord, while all the other nerves had conduction interfered with by scar tissue either within or without the sheaths. The ulnar nerve was sectioned high, and by the end-to-side

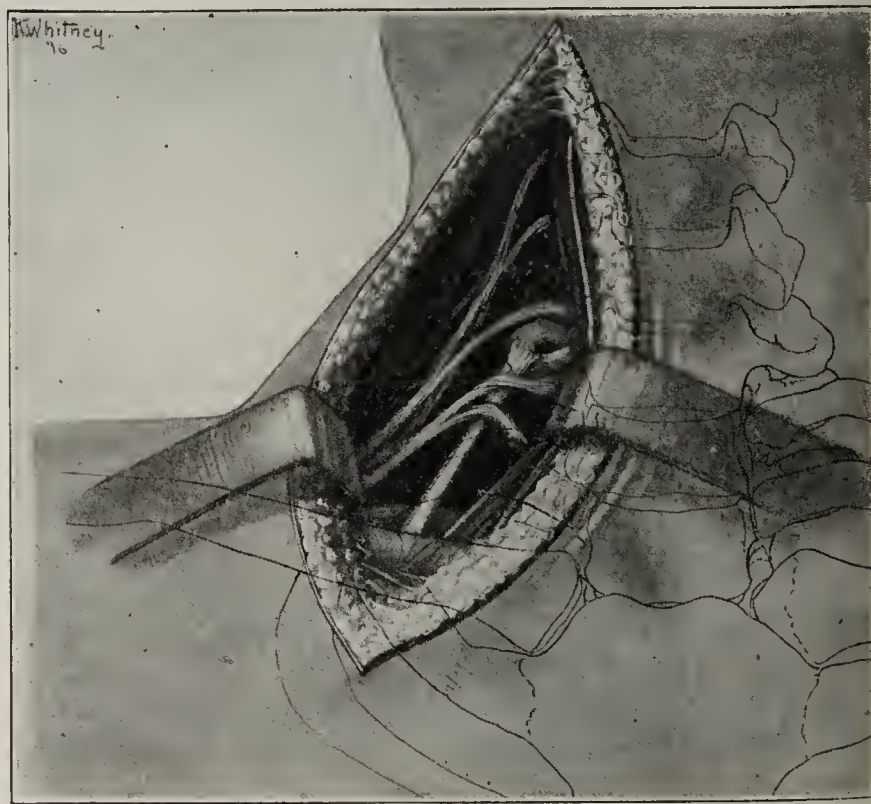


Fig. 5 (Case 3).—Adventitious ligament taking the place of a cervical rib; brachial plexus stretched over it.

method united to a notch in the musculocutaneous, that being the trunk giving the greatest faradic response, and the line of union was wrapped with a free fascial flap. The entire brachial plexus was then covered by a pedicled flap of axillary fat to prevent reformation of scar tissue. Now, four and one-half months later, the trophic improvement in the limb is marked, sensation has returned in the arm and forearm down to within 2 inches of the wrist, and there is also sensation in the thumb.

There is slight voluntary action of the biceps, triceps and deltoid muscles, and there is feeble extension of the wrist. This man's injury was so high and so extensive that there is no certainty of great improvement; yet the amount of regeneration to date is significant.

CONCLUSIONS

While none of the reported cases of avulsion in the adult in which operation was performed showed complete recovery, still enough function was regained to justify interference. Such interference should include nerve transposition when indicated, our warrant being the clinical and experimental evidence, which has proved the certainty of reeducation.

420 Syndicate Building.

ABSTRACT OF DISCUSSION

DR. DEAN D. LEWIS, Chicago: Surgery dealing with injuries of the peripheral nerves has been far from satisfactory. If we look over statistics dealing with a large number of cases of peripheral nerve suture we will be surprised to find that only about 36 per cent. of them can be regarded as distinct successes. It is also surprising to find that secondary nerve suture gives about the same results as primary. I believe that failure in peripheral nerve suture is often due to the fear of removing a sufficient length of the nerve to get well beyond the scar tissue, so that healthy axis cylinders are exposed which is essential to success. Studies on peripheral nerve regeneration have shown the marked ability of the fibers to regenerate. Regeneration of the axis cylinders is preceded by protoplasmic band formation which takes place from both ends of the divided nerves. These bands form conducting paths for the developing axis cylinders. I believe that fascia is the best material for tubulizing divided nerves. In some experimental work which Dr. Kirk and I did, we found that fascia is better than blood vessels for this purpose. The developing axis cylinders readily invade the serum in such a tube and the use of agar, as recently suggested by Edinger, does not seem necessary. An autotransplant gives the best results, as determined by histologic studies, and the method of nerve transference recently suggested by Hofmeister seems to be a distinct advance in this class of work. Dr. Law is to be congratulated on the results he has had in these two cases because the technic required in dealing with injuries of the brachial plexus is difficult, and consequently the functional results are often disappointing.

DR. ARTHUR A. LAW, Minneapolis: We did some experiments at the University of Minnesota to disprove the theory of positive neurotropism that Forsman brought out. It did not seem like good pathology. In a series of animals we sectioned the musculospiral nerve and avulsed the distal segments so they could exert no attraction for the proximal segment. We then inserted the proximal nerves into little fascial bags and stitched them there. We found that this little fascial sac ultimately was filled with nerve fibers, notwithstanding that they lacked the influence of chemotropism of the distal fragments.

Longevity and Race.—There is reason to believe that certain races live longer than others, and undoubtedly inhabitants of temperate climates live longer than tropical races. Humphry pointed out that old age is a product of civilization because the savage when his strength decays cannot live. Moreover, civilization provides pensions for those who are too old to work, and by the cultivation of the humaner feelings has made the maintenance of the aged a duty which is generally cheerfully performed. But the savage is free from most of the diseases which attack civilized man, and consequently that state of society in which there is enough civilization to temper the lot of the aged and not enough to corrupt the young is the most favorable for the attainment of a long life.—Saundby.

THE INTEREST OF THE COMMUNITY
IN CANCER *

LOUIS I. DUBLIN, PH.D.

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NEW YORK

The interest of the community in cancer can best be characterized, perhaps, by contrasting this disease with another that is still more familiar, namely, tuberculosis. The average age at death from tuberculosis is about 37 years; from cancer it is about twenty years greater. Tuberculosis affects primarily the economic interest of the community. The decedent is usually at the highest point of his efficiency; his productive period is still largely in the future; his children are either very young or still unborn. In cancer, on the other hand, the productive period is for the most part in the past; the children have been born, and the family unit is only slightly disturbed economically by the death, since in the majority of cases the offspring have reached the age of self-support and independence. It is, therefore, the emotional interest that is uppermost. The long suffering patient, and the utter hopelessness of the condition in its advanced stages, appeal tremendously to the humanitarian feeling of the community. The economic interest in cancer, although important, must remain secondary.

Our interest is accelerated by the mystery that still surrounds the disease. The prevalence of cancer has been noted in the earliest history of civilized man. Today it is responsible for one death out of every fourteen among men, and for one death out of every nine among women, after the age of 50. Yet, in spite of the wealth of clinical material and the concentration of effort, it has withstood every attempt of the physician and scientist to unravel its secret. The world is still baffled as to the cause of cancer. Only a beginning has been made in its study; the heart of the problem is still sealed to us. The scientific spirit of present-day medicine demands an explanation, and the community as a whole supports this demand insistently and wholeheartedly.

Additional interest results from the disquieting fact that the cancer rate may be increasing. The chief sources of information on their face indicate an increase. This holds true not only for the Registration Area of the United States and for those of our states whose records are most reliable, but also for the United Kingdom, for Switzerland, for Germany and, indeed, generally throughout the civilized world. I shall not go into the complex statistical problem involved in determining whether this increase is real or only apparent. Equally good authorities have divided on this important question. My own judgment is that there may very well be an increase. I am struck, however, with the number of possibilities of serious error in using figures which are usually quoted to prove an increase, especially in our own country. The figures are too striking to be true. In the ten-year period from 1901 to 1910, there was an increase of 30 per cent. in the male cancer rate, and of 22 per cent. in the female cancer rate, at all ages beginning with the age of 25, in the state included in the Registration Area in 1900. At certain age periods this increase was very considerable—as much as 40 per cent. The unreliability of these figures is at once apparent when we think of cancer as

* Read before the New York Academy of Medicine, in association with the American Society for the Control of Cancer, May 18, 1916.

a disease of long standing in our civilization. By projecting such increases in the rates forward or backward a few generations, we are led at once to an absurdity; for if cancer were capable of increasing at such a pace it would either have been a negligible disease in the recent past or would seriously threaten the very existence of the race in the near future.

We must consider, in seeking for an explanation of the increasing rates, first, the marked improvement of registration in general in our country during the last fifteen years, and second, the greater certainty in the diagnosis of cancer by physicians, which has resulted from the increase in the number of operations and laboratory examinations. We shall have to wait at least ten years under present conditions of registration in our country to know definitely what has happened. There are already indications that the cancer rate has reached its highest point, and that in certain communities it is beginning to decline.

But whether or not cancer is on the increase is really secondary to the much more important fact that the rate at present is extremely high. The condition today is a real menace. In order that we may determine the extent of the problem that is before us, it is necessary to refer to a few basic figures. The accompanying tables are constructed from the experience of the Industrial Department of the Metropolitan Life Insurance Company. They are valuable because of their intrinsic accuracy, a quality which most cancer rates, unfortunately, do not possess. The figures have also the merit of being based on a large exposure. In the Metropolitan experience there are represented over 10,000,000 persons, both white and colored—men, women and children of all ages above 1. The number of persons exposed and the corresponding number of deaths are known with a high degree of accuracy. The rates have furthermore the particular value of applying to the working classes of the United States and Canada.

TABLE 1.—DEATH RATES FROM CANCER (ALL FORMS) PER HUNDRED THOUSAND EXPOSED, CLASSIFIED BY COLOR, SEX AND AGE PERIOD *

Age Period	All Persons	White Males	White Females	Colored Males	Colored Females
All ages.....	69.7	49.9	88.4	30.0	87.5
1- 5.....	4.2	4.1	4.4	2.9	2.9
5- 9.....	1.5	1.6	1.7	0.5	0.5
10-14.....	1.3	1.5	1.2	0.5	0.9
15-19.....	2.7	2.6	2.9	1.9	3.1
20-24.....	4.2	4.6	3.9	1.5	5.3
25-34.....	15.9	8.2	19.0	8.1	33.6
35-44.....	77.0	38.1	100.8	27.9	121.8
45-54.....	198.8	141.0	240.7	92.7	247.9
55-64.....	381.9	361.4	420.6	174.6	354.6
65-74.....	603.1	600.6	656.6	213.8	431.0
75 and over.....	817.5	815.2	862.0	308.0	680.1

* Metropolitan Life Insurance Company—Industrial Department—mortality experience, 1911-1914.

The first column in Table 1 shows the death rates from cancer for all persons, without distinction of sex or color. The rate at all ages is 69.7 per hundred thousand exposed. This rate is based on a total of 23,660 cancer deaths which occurred in the four years 1911 to 1914. In the remaining columns, rates for white and for colored persons of each sex are given.

Without devoting attention to the numerous interesting aspects of this table, I may nevertheless point out a few striking derivations. First, the cancer rate is much higher among females than among males. Second, the rate begins to be significant only with the decade from 25 to 34. Third, the rates are lower for colored than

for white persons; however, this applies much more to males than to females. At ages 25 to 34 the rate per hundred thousand for white males is 8.2, and thereafter it increases very rapidly, reaching its maximum, 815.2, at ages 75 and over. White females have a rate of 19.0 at ages 25 to 34—more than twice as much as the corresponding figure for males. As the curve rises there is a tendency for the differences between the sexes to become less, so that in the last age class the rate for white females is 862.0—only a slight percentage in excess of the corresponding figure for males. Colored males uniformly show the lowest rates of the four classes. In the first significant age class they have a mortality of 8.1. With advancing years the difference in their favor becomes greater, so that in the last age class they exhibit a rate of only 308.0—less than half that of the next higher class. Colored females show a very high mortality in the early significant age classes. At 25 to 34 they have a rate of 33.6, almost twice that of white females, and more than four times that of white males. In the later age classes, however, this disadvantage disappears, so that at ages 75 and over they have a mortality of only 680.1 less than that of both classes of whites.

It has often been said that cancer is a disease of the well-to-do. If our figures show anything it is that the industrial classes enjoy no advantage. The rates which I have just quoted indicate this point clearly on comparison with those for the Registration Area, which embraces all classes of the population. The rates for the various age groups of the white male industrial population uniformly exceed by 10 per cent. or more the corresponding figures for the population as a whole; the rates for the female industrial population fluctuate about the corresponding figures for the Registration Area, being sometimes a little above and sometimes a little below. To be sure, this may be due to the greater accuracy of the insurance data. Be that as it may, we can distinctly state that no large groups in the community enjoy any special immunity. This has been confirmed by an investigation which I have recently conducted into the mortality rates of the principal races of our population. I have found that there is little to justify assertions which have been made in the literature that certain of the races enjoy especial or partial immunity. The Jews, for example, have been singled out in this respect. As a matter of fact, the rate for Jews is sometimes higher than for the native-born Americans of the corresponding age periods. In 1910, for example, there was a cancer mortality of 150.0 per hundred thousand at ages 45 to 64, among the native American male population of New York State. On the other hand, the Russian-born male population—an overwhelming majority of which are Jews—had a rate of 277.5 in the same age class.

In Table 2, I have attempted to indicate the relative importance of the several forms of cancer which occur among males and females of the two races. It will be noted that among white males about half of the cancers affect the stomach or liver. About 20 per cent. more relate to other parts of the digestive system, namely, the buccal cavity, the peritoneum, the intestines or the rectum. Together over 70 per cent. of the cancers among males are so accounted for. Among females, cancer of the genital organs and cancer of the breast are very prominent. The former was responsible for 43.1 per cent. of all the cancer deaths occurring among the colored; 15.9 per cent. in addition were

due to breast cancers. Cancers of the skin are much more numerous among males than among females; the rate is extremely low for colored persons, being virtually negligible among colored females.

TABLE 2.—DEATHS FROM CANCER OF SPECIFIED ORGANS PER HUNDRED DEATHS FROM CANCER OF ALL FORMS, CLASSIFIED BY COLOR AND SEX *

Cancer of Specified Organs	All Persons	White Males	White Females	Colored Males	Colored Females
Cancer, all forms.....	100.0	100.0	100.0	100.0	100.0
Cancer of buccal cavity.....	3.7	9.6	1.1	7.3	1.5
Cancer of stomach and liver....	37.8	49.6	33.9	53.5	21.5
Cancer of the peritoneum, intestines and rectum.....	11.7	13.0	11.6	10.2	8.3
Cancer of the female genital organs.....	21.1	....	28.8	....	43.1
Cancer of the breast.....	9.3	0.3	12.9	1.0	15.9
Cancer of the skin.....	2.6	4.5	1.9	3.2	6.9
Cancer of other organs or of organs not specified.....	13.9	23.0	9.8	24.9	8.8

* Metropolitan Life Insurance Company—Industrial Department—mortality experience, 1911-1914.

In general, there is clearly a larger proportion of surgically accessible cases among females than among males. Hospital statistics show that the cancers which are responsible for a large part of the female mortality—those of the genital organs and of the breast—are most susceptible to treatment. At Johns Hopkins Hospital, 11.1 per cent. of the operations for cancers of the female genital organs proved fatal, and only 5.5 per cent. of the cancers of the breast. We may, therefore, expect a large reduction in the female cancer mortality from organized efforts to bring cases to early treatment.

The third table presents the average ages at death of the persons who have died of cancer of the various forms. It is evident that the average age of females at death from cancer of all forms is about two and one-half years lower than that of males: 54.8 years as against 57.2 years. Among males the average age at death from the different causes varies between 53.7 (for cancer of other organs) and 61.8 (for cancer of the breast and cancer of the skin). Among females the variation is within wider limits, the minimum age

TABLE 3.—AVERAGE AGE AT DEATH FROM CANCER OF SPECIFIED ORGANS, CLASSIFIED BY SEX *

Cancer of Specified Organs	Average Ages of		
	All Persons	Males	Females
Cancer, all forms.....	55.5	57.2	54.8
Cancer of the buccal cavity.....	58.9	59.4	57.3
Cancer of the stomach and liver.....	58.3	58.3	58.4
Cancer of the peritoneum, intestines and rectum.....	56.1	55.8	56.3
Cancer of the female genital organs.....	51.1	....	51.1
Cancer of the breast.....	53.9	61.8	53.8
Cancer of the skin.....	62.7	61.8	63.7
Cancer of other organs or of organs not specified.....	52.9	53.7	52.1

* Metropolitan Life Insurance Company—Industrial Department—mortality experience, 1911-1914.

at death being 51.1 (for cancer of the female genital organs) and the maximum being 63.7 (for cancer of the skin). The age at death for cancer of the buccal cavity, cancer of the breast and cancer of other organs is higher among males than among females. There are slight differences in favor of the females, on the other hand, in connection with cancer of the stomach and liver, cancer of the peritoneum, intestines, and rectum, and cancer of the skin.

A consideration of the average ages at death is important, because they indicate the loss to the community that is occasioned by cancer deaths. At 55 the expectation of life at the present time in New York City is over fourteen years; at 60 it is almost twelve years. If, for the sake of argument, we assume an average loss to the community of fifteen years of life for each cancer death, it will at once be seen how huge is the loss to the community as a whole. At the present time a conservative estimate places the total number of cancer deaths in the United States at 80,000 a year. This means a loss to the community of an aggregate of 1,200,000 years of life. It is futile to consider the monetary value of this loss; as I have already pointed out, the interest of the community in this disease is not primarily economic. Our great desire is to allay the suffering of the many thousands of persons who annually succumb, and, if possible, to extend to persons of middle life and early old age a few additional years of peaceful enjoyment. This will be a gain to civilization of no mean value. We shall have accomplished much if we assure those who are just entering the portals of old age that the declining years of their life will not be beset by the gaunt specter of cancer. That the happiness of thousands of families will be preserved, and that thousands of individuals will be spared unbearable pain, surely means more to the community than can be estimated in terms of dollars and cents.

To accomplish this end, two lines of effort are clearly indicated. The first is immediate and undeniable. It is to reduce, by the best means at our disposal, the suffering and premature death of cancer patients. At the present time the greatest promise of success is held out by the surgeon. The average duration of the disease, from the first symptom to death, varies considerably with the form and location of the cancer; but, taken together for all forms of cancer, the period is about two years. The records of surgical interference, especially those of the Mayo Clinic, indicate a marked extension of life of the patients after operation. While no absolute figure may be quoted, there is an indication that an expansion of life of about three to five years is accomplished for about half of the cases. The extent of the additional years depends on the timeliness of the operation, the failures being the advanced cases. If, therefore, it can be arranged that early diagnosis be followed by immediate operation, the average duration of life of cancer patients can be appreciably prolonged. If an average of five years could be added to these lives, this would be equivalent to a reduction of more than one third of the total loss. This is clearly the community's immediate program.

The second line of effort lies in investigating into the basic facts of cancer—the etiology of the disease, its method of dissemination, the problem of inheritance, and, finally, the measures of relief. This is the field of the pathologist and the surgeon, rather than of the statistician, the sociologist, or the lay investigator. I wish to devote brief attention, however, to a contribution to this effort which is being made by the life insurance companies, and which promises to cast valuable light on the entire problem.

At the request of the American Society for the Control of Cancer, a committee¹ representing the

1. Mr. Arthur Hunter, New York Life, chairman; Dr. F. C. Wells, Equitable Life; Dr. W. A. Jaquith, Prudential; Dr. Brandreth Symonds, Mutual Life, and Louis I. Dublin, Metropolitan Life.

largest life insurance companies has made all the necessary preparations to carry on a special study of the life insurance returns for two forms of cancer which are readily diagnosed, namely, cancer of the buccal cavity and cancer of the breast. Special forms have been drawn up for this purpose, covering the following points:

INQUIRY BLANK FOR THE STUDY OF CANCER OF THE BREAST (OR OF THE BUCCAL CAVITY)

Name of patient; address; department; claim number.
 Personal and social facts about deceased: color; sex; nearest age at death; place of birth; birthplace of deceased's mother (if readily ascertainable). Was deceased single, married, widowed or divorced?
 Occupation: general nature of industry or business; trade or particular kind of work.
 Family history of deceased: Have other members of deceased's immediate family died from cancer of the breast (or buccal cancer)? Have other members of deceased's immediate family died from other forms of cancer? Have other members of deceased's immediate family had and survived any form of cancer? If so, state relationship; also give type of cancer.
 History of breast lesions: Any history of blow, wound, irritation or other injury to breast? Please specify. Type of mammary gland (large, small, adipose?). Lactation: first and last date of lactation if possible. Any difficulty with lactation? Any history of mastitis?
 Habits: Was deceased a vegetarian? A heavy meat eater?
 History of buccal lesions: Any history of irritation from teeth? Any history of other irritation or injury to buccal cavity? Any history of syphilis? Leukoplakia? Habits: Did deceased use alcoholic beverages? Abstainer? Moderate user? Excessive user? Did deceased use tobacco? Pipe? Cigar? Cigaret? Chew? Was deceased a vegetarian? A heavy meat eater?
 Cancer history: Date when first symptoms were observed. Type of tumor when first observed. Location of initial tumor. Metastasis to —.
 Type of tumor at time of death. Location of tumor at time of death.
 Cancer treatment: Give approximate dates, kind of treatment and results: (a) medical treatment; (b) surgical treatment; (c) other treatment (Roentgen-ray, radium or other).
 Other diseases or conditions intercurrent with cancer.
 Pathologic report: Gross appearance of tumor (if of the breast, was the skin or muscle, or both involved?). Microscopic report (if of the breast, give details of structure of growth).
 Necropsy report: Please give findings.
 Any other information of value.
 Date, and signature of physician.

The plan is to send one of these blanks to each of the physicians who sign the death certificates on the claim papers returned to the life insurance companies, and to ask for more information with reference to the case. By these means the companies hope to obtain all the important facts with reference to the history of the deceased and of his or her family. The history of the lesion is gone into fully, to determine whether there has been any blow, wound or irritation; the cancer history is listed, as well as the nature of the treatment. Record of necropsy or of pathologist's report is called for. We hope to receive this information in a large proportion of cases, and at the end of a requisite period the entire material will be analyzed as a unit and a report will be issued. Thus we trust that we shall be able to add materially to the amount of exact knowledge with reference to cancer.

The insurance companies, as well as the American Society for the Control of Cancer, hope and trust that these forms will receive the careful attention of specialists and general practitioners, and the enthusiastic cooperation of the medical profession is confidently counted on as one of the essential instruments in this investigation.

HEMOGLOBINURIC FEVER

TREATED BY INFUSIONS CONTAINING QUININ

WILLIAM O. OTT, M.D.

NEW ORLEANS

A white man, aged 35, telegraph operator, was admitted to the medical service of Dr. J. M. Elliott in the Charity Hospital, Dec. 13, 1915, with hemoglobinuric fever. The patient had lived in a malarial district for the past six months; since September, 1915, at Angola, La., and before that time, near Jackson, Miss. Both places are in malarial districts. The patient had several attacks of malaria the preceding August while living near Jackson, and had had chills with fever every ten or fifteen days since moving to Angola. For the past two months the patient had been somewhat jaundiced and very much run down. He had taken quinin irregularly since summer, and large amounts of it at times.

The present illness began Sunday, Dec. 12, 1915. The patient was feeling bad when he returned from work Sunday morning (night operator), and he took several capsules of quinin at about 8 a. m. He was up most of that day, but felt feverish in the afternoon. At about 4 p. m. he had a severe chill with high fever. He began to vomit and pass bloody urine shortly after the chill. He was very restless that night, with frequent vomiting and a distressing hiccup. The fever remained high all that night, and he had another severe chill in the early part of the night. Monday morning it was noticed that he had become deeply jaundiced. The temperature was 104 at this time, and he continued to pass almost black urine in small amounts. The vomiting, hiccup and high temperature, with the extreme restlessness, continued all that day. At 7:30 p. m. he was admitted to the Charity Hospital with a temperature of 103. He was evidently a very sick man. He was restless and vomited a yellowish fluid at short intervals. The urine was dark red, almost coffee colored, and was passed in small amounts. He complained of tenderness and pain in the epigastric region from the prolonged vomiting. The patient was well developed and well nourished and deeply jaundiced, with the sclera lemon yellow. The mucous membranes were pale. The spleen was soft, tender to pressure, and reached 3 inches below the costal margin. The liver was not palpable. There was tenderness over the entire upper abdomen. Otherwise, the physical examination was negative.

At 9:30 and 11:30 p. m., 10 grains of quinin sulphate were given by mouth. This was not retained and it was discontinued. An opiate was given at 12:30 a. m. for the extreme restlessness. The patient vomited several times during the remainder of the night, but slept at intervals. In the forenoon of December 14, the condition became much worse. Vomiting was almost continuous and the restlessness extreme. There was no absorption from proctoelysis. A small amount of almost black urine was passed during the forenoon. The prostration of the patient increased, and death seemed imminent. It was decided to give quinin, and at 11:30 10 grains of quinin dihydrochlorid in 300 c.c. of saline solution were given intravenously. The condition of the patient seemed better shortly after the infusion. In the afternoon the restlessness and vomiting decreased, and the patient was much more comfortable, and was voiding more freely. The saline infusion containing 10 grains of quinin dihydrochlorid was repeated at 4:30 and 10:30 p. m. By 6 p. m. the temperature had dropped to 99, and the appearance of the patient was greatly improved. The night of December 14 was passed fairly comfortably, although no liquids were retained and an opiate was required for restlessness. December 15, the quinin infusion was given at 11 a. m. and 4 p. m. The patient was much improved, and there was absorption from proctoelysis on this date. Liquids were not retained by mouth. The jaundice was not so intense. There was free secretion of urine, and it was of a light wine color. At 2 p. m., December 16, one quinin infusion was given. The patient retained liquids. Urine secretion was free and lighter in color. December 17, the urine was entirely clear,

The Child a Barometer of Its Health.—Just as hot house plants are exceedingly sensitive to their surroundings and only thrive when placed in the most favorable surroundings as regards light, warmth and soil, and quickly show by drooping, the slightest departure from favorable conditions, so do infants respond favorably or unfavorably to feeding, housing and general environment, according as these are good or bad.—Ashby.

the jaundice had almost disappeared, and the spleen reached $1\frac{1}{2}$ inches below the costal margin, and was firm. Quinin sulphate, 10 grains, three times a day, was taken by mouth on this date and retained. This was repeated daily until the patient was discharged.

The urine and blood findings are those characteristic of hemoglobinuric fever. The first urine on admittance was dark red, almost black, and contained albumin, hyaline and granular casts, no red blood cells, but hemoglobin, and a large amount of a dirty, brownish granular detritus. By December 18 the urine was clear of albumin, casts and hemoglobin. No plasmodia were found in the blood on admittance, or subsequently. December 21, the blood examination showed: total whites, 6,050; total reds, 2,800,000; lymphocytes, 47 per cent.; large mononuclears, 1 per cent.; transitionals, 4 per cent.; neutrophilic leukocytes, 46 per cent.; myelocytes, 2 per cent., and hemoglobin, 55 per cent.

In answer to a letter two months after discharge, the patient stated that his improvement was uninterrupted after his return home, and that he felt better now than at any time in the last five years. He had been free from attacks of malaria, and had gained weight rapidly.

COMMENT

The question as to whether the marked improvement after the infusion was due simply to supplying fluids to the body, or to the quinin contained in it, presents itself. Recently, Bruce-Porter¹ observed marked improvement with repeated saline infusions containing no quinin. Burkett² used Roger's hypertonic solution, and he believes that the improvement noted in a case so treated was due to overcoming acidosis. In our case, the rapid fall in temperature with only a slight subsequent rise, and the rapid amelioration of the vomiting, singultus and abdominal distress after the infusion, makes one feel that the improvement which followed was dependent, to some extent at least, on the quinin. Certainly no ill effects resulted from its administration. On the contrary, there was a rapid drop in temperature after the intravenous quinin, and a great improvement in the patient's condition. The improvement continued uninterruptedly until he was discharged from the hospital.

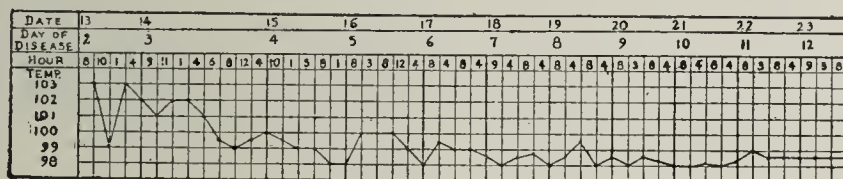
The treatment of hemoglobinuric fever with large doses of quinin is not the generally accepted one at present. The physicians of the Isthmian Canal Commission, notably Brem,³ and Deeks and James,⁴ advise against its use during an attack of hemoglobinuria. The latter authors, however, recommend its cautious use if parasites are present. Stephens⁵ advises withholding quinin during the attacks of hemoglobinuria, unless parasites are present in such numbers that the symptoms can in part be attributed to them.

The exact cause of hemoglobinuric fever is unknown, and for this reason the rationality of any treatment of this condition must still remain in doubt in spite of the large advance that has recently been made in the study of this disease. The association of blackwater fever with malaria has long been known,

and strong evidence is at hand pointing to its malarial origin. Stephens,⁶ in collecting reports of a series of cases, gives the percentage of positive blood examinations the day before onset, the day of the onset and the day after the onset of blackwater, as 73, 47.5 and 23, respectively. This confirms the observation first made by Panse,⁷ that the parasites disappear from the peripheral circulation with the outset of hemoglobinuria. Ross, Thompson and Simpson,⁸ in explaining Panse's law, suggest that in blackwater fever the old worn out red cells are hemolyzed, and new ones containing no plasmodia rapidly take their place. The asexual plasmodia, being unable to live free in the plasma, are destroyed. In this way, a large percentage of the asexual parasites are destroyed. This explains why many patients are relieved of their malaria for months by an attack of hemoglobinuric fever. It is believed by some that hemoglobinuric fever is a self-limited disease, and that the hemolysis, with its consequent hemoglobinuria, is an expression of nature to rid the body of the infection. The severe symptoms present are thought to be the result, in part at least, of setting free this large amount of hemoglobin in the plasma. This belief is supported by observations of Barratt and Yorke⁹ and of Yorke and Nauss,¹⁰ who produced severe symptoms, anuria, and even death in animals, by injecting a hemoglobin solution.

Without entering into a discussion of the cause of the very remarkable hemolysis that takes place in this condition, for the whole subject is still in obscurity, certain facts that bear on the treatment stand out. In the first place the sequence of the administration of quinin, and the onset of hemoglobinuria several hours

afterward, is a well established fact. On the other hand, there are many cases on record in which quinin as a causative factor in initiating the onset can be eliminated. Quinin is also thought to increase the hemolysis, and consequently the severity of the symptoms in some cases, when given during an attack. Barratt and Yorke,⁹ who conducted experiments to determine the hemolytic action of quinin, conclude that quinin has no more hemolytic action on the red cells of hemoglobinuric fever patients than on those of normal persons. They also conclude that it does not act directly in the circulation, for to do this would require a fatal dose. Ross, Thompson and Simpson⁸ observed a case in which the fall in hemoglobin began forty-eight hours before the onset of hemoglobinuria and twenty-four hours before the paroxysms of chill and fever. The presence of malarial plasmodia is a fairly constant finding at the beginning of the attack, the blood being positive in 73 per cent. of the cases the day before the onset of the blackwater. If the fall in hemoglobin content of the blood occurs forty-eight hours before the onset of symptoms, as it did in the case cited above, plasmodia are present in something



Temperature chart.

1. Bruce-Porter: Intravenous Injections in Blackwater Fever, *Practitioner*, London, 1914, xxi, 261.
2. Burkett, R. W. P.: Blackwater Fever, *Lancet*, London, Nov. 20, 1915, p. 1138.
3. Brem, Walter: Studies of Malaria in Panama, II, Treatment of Blackwater Fever, Pernicious Malaria with Hemoglobinuria and Erythrolytic Hemoglobinuria, *Arch. Int. Med.*, February, 1911, vii, p. 153.
4. Deeks, W. E., and James, W. M.: A Report on Hemoglobinuric fever in the Canal Zone; A Study of Its Etiology and Treatment, 1911, Count Hope, C. Z., p. 177.
5. Stephens, J. W. W.: *Modern Medicine*, Osler and McCrae, ii, 115.

6. Stephens, J. W. W.: Blackwater Fever, *Proc. XVII Internat. Cong. Med.*, London, 1913, Section XXI, Tropical Medicine and Hygiene, Part II, p. 217.
7. Panse, O.: Schwarzwasserfieber, *Ztschr. Hyg. Inf.*, 1902, xii, 1.
8. Ross, R.; Thompson, D., and Simpson, G. C. E.: *Ann. Trop. Med. and Parasitol.*, 1910, iv, 307.
9. Barratt and Yorke: An Investigation into the Mechanism of Production of Blackwater, *Ann. Trop. Med. and Parasitol.*, 1909, iii, 1.
10. Yorke, M., and Nauss, R. W.: The Mechanism of the Production of Suppression of Urine in Blackwater Fever, *Ann. Trop. Med. and Parasitol.*, 1911, v, 287.

over 73 per cent. of the cases at the onset of the hemolysis. This is certainly presumptive evidence, at least, of the malarial plasmodia as a causative factor, and would seem to justify the use of quinin. The question of the possibility of doing harm to the patient with this drug must, of course, be borne in mind.

Quinin is best given in an infusion, since it is not retained by mouth. Besides this, the infusion is not an unimportant part of the treatment, for the demand for fluids is urgent. Yorke and Nauss¹⁰ observed that anuria and death were less likely to supervene in rabbits injected with a hemoglobin solution if the rabbit had been previously supplied with fluids, than if it had been deprived of fluids. Hemoglobinuric fever patients usually vomit all fluids, and proctoclysis will often not be absorbed. From 300 to 500 c.c. of saline solution in which not more than from 5 to 10 grains of quinin dihydrochlorid have been dissolved may be given and repeated every six to eight hours so that the patient gets from 15 to 30 grains of quinin in twenty-four hours.

Don'ts to Be Observed in the Management of Hypertensive Cardiovascular Disease.—

1. Don't tell the patient with moderate hypertension, few symptoms and whose kidneys are functioning well to stop eating meat, or go on a milk diet.
2. Don't tell him to immediately give up his business; try to readjust his life so that unnecessary cardiovascular strain is reduced to a minimum.
3. Don't tell him his kidneys are "all right," just because his urine exhibits neither albumin nor casts.
4. Don't miss the significance of nocturnal polyuria and a persistently low gravity.
5. Don't give nitroglycerin tablets to your patient the moment you discover that he has hypertension. Perhaps he requires a high pressure to get the blood through his small inelastic vessels.
6. Don't be satisfied with the systolic pressure—the diastolic is often of more significance.
7. Don't attribute the insomnia, nervousness and headaches in the middle aged woman to "the change"—take her blood pressure and examine her eye grounds.
8. Don't make a diagnosis of neurasthenia till after a blood pressure estimation and a Wassermann test. It may save subsequent embarrassment and even be of advantage to the patient.
9. Don't think you are doing your whole duty to your pregnant patient when you have examined her urine. She may have hypertension but no albumin today and eclampsia next week.
10. Don't consider hypertension solely a condition of middle life; it is occasionally present in childhood.
11. Don't forget the old man's enlarged prostate. It may be the cause of the nephritic syndrome.
12. Don't hesitate to give digitalis when symptoms of cardiac failure are evident. It will not raise the blood pressure.
13. Don't wait until the patient is water logged and the heart dilated before suspecting a failing myocardium.
14. Don't deny your sleepless gasping patient, whose course is nearly run, the relief that only morphin will give.
15. Don't make a prognosis solely on the blood pressure or phenolsulphonephthalein test. Each tells but part of the story.
16. Don't overlook the fact that cardiovascular disease is to a certain degree a familial condition sometimes present in several generations; nor neglect to explain the importance of a yearly blood pressure estimation of all members of the family.
17. Don't exclude syphilis, especially a parental infection, as the cause of the hypertension solely because the Wassermann is negative. Study the family history; examine the brothers and sisters, and your patient's children for signs of hereditary syphilis.
18. Don't fancy that the management of hypertension consists in watching a column of mercury or that success is measured in millimeters.—HENRY FARNUM STOLL, M.D., Hartford, Conn.

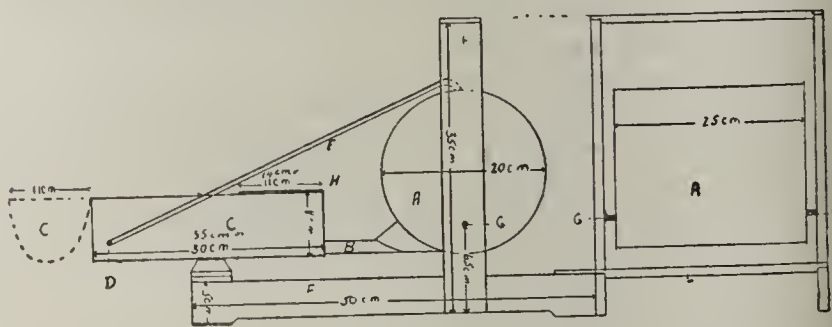
New Instruments and Suggestions

A PORTABLE SHELLACKING DEVICE FOR KYMOGRAPH RECORDS*

R. G. HOSKINS, PH.D., CHICAGO

A shellacking device should have the following characteristics: It should be compact, should contain a fairly large quantity of the fluid adequately protected from evaporation, and should be as nearly as possible automatic in action. The use of rubber tubing should be avoided. With these requirements in mind, the apparatus herein described has been devised. Several months' use has proved its practicability.

It consists essentially of a cylindric reservoir, *A*, with an outflow, *B*, leading to an open trough, *C*, in which the records are dipped. The height of the fluid in the trough is determined by the position of the mouth, *D*, of the vent tube, *E*. The reservoir is mounted eccentrically in a wooden supporting frame, *F F*, by the pinions, *G G*. The purpose of this mounting is to make the apparatus stable either in the horizontal position, as shown, or with the trough elevated. When so elevated by rotation on the pinions, the fluid flows into the reservoir. The proximal part of the trough is covered by the lid, *H*, soldered on to form a receptacle for the fluid, when the apparatus is first moved into the elevated position. From this receptacle it drains quickly back into the reservoir while an equal quantity of air is displaced through the vent, *E*. (For wide records the larger dimensions of *C* should be used.) The reservoir trough and outlet tube, *A*, *B* and *C*, are made of galvanized iron. The vent tube is of brass, 1 cm.



Lateral projection of portable shellacking device for kymograph records.

outside diameter. When the apparatus is not to be used for some time, the opening of the outlet tube is closed by a cork stopper mounted on a wire handle.

The formula for the fixing fluid used in this laboratory is:

Gum dammar.....	300 gm.
Benzol (benzene, C_6H_6).....	2,000 c.c.

This gives a hard elastic semigloss finish. It is said that a similar result may be obtained by diluting ordinary "hard oil finish" with benzene.

A SEPTAL SPLINT†

CLIFFORD B. WALKER, M.D., BOSTON

Cotton or gauze plugs wrapped with Cargile membrane make a very satisfactory nasal packing as regards hemostasis, easy withdrawal and prevention of adhesions. It is very uncomfortable for the patient, however, in that it occludes the breathing space and distends the nose painfully. Further, it is almost impossible to pack the septum truly in the midline. A proper septal splint, therefore, would be desirable.

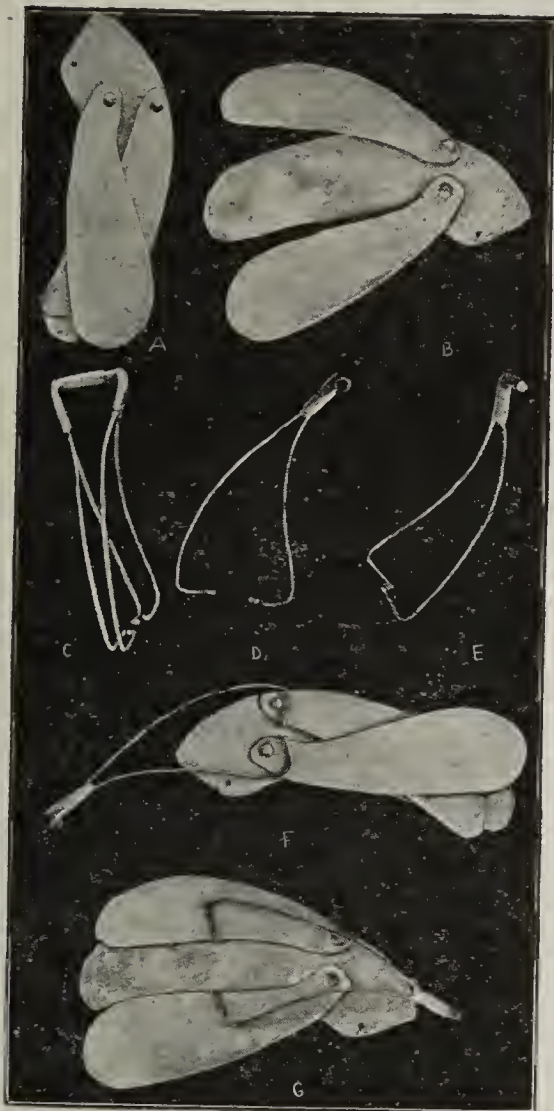
The vertical opening of the lower nares is only about one third of the vertical extent of the septum, yet septal splints have always been limited to the size of the lower nares. Experimenting with a variety of expanding splints, I have found wire unsatisfactory in that it readily embeds in the soft tissue and allows an edematous or hematomaous ballooning between wires, making removal difficult unless

* From the Laboratory of Physiology of the Northwestern University Medical School.

† From the Peter Bent Brigham Hospital.

they are straight like the ribs of a fan, without loops or meshes. The same thing occurs with blades having large perforations. Devices having the two members on a fixed spring are difficult to place and move and difficult to withdraw, because of the enlarged external portion of the septum. Finally, a splint satisfying our demands was made as described below.

After a study of the size and shape of the area to be splinted in the average nose of a sagittally sectioned cadaver head, a splint blade having three wings and shaped as at *B* in the accompanying illustration was cut from 0.5 mm. aluminum sheeting and pivoted together with single flat rivets. When these wings are collapsed (as at *A*), they readily enter the lower nares, the wings shifting somewhat in accommodation to the constricting point in transit. After passing into the nose, the anterior member may be held either with a forceps or with a thread passed through a small perforation (as in the illustration), while the wings are moved by use of a probe or forceps into position to cover the entire septum. The wings of the splint being very light, adhere sufficiently to the moist membranes while the adjustment of the retaining springs is accomplished.



Septal splint: *A*, aluminum wings collapsed; *B*, wings widely opened to show shape; *C*, retaining springs locked; *D*, one member of springs open; *E*, spring closed to pass through lower nares; *F*, position for combination insertion; *G*, approximate final position in nose.

The retaining springs (*C*, *D*, and *E*), act in two ways: first to spread the wings gently to the extent of the septum, and second to press them lightly against the septum when the lower or external portions are united. This union is made up of a male and female sliding lock acting at right angles to the spring. By this device the springs may be made to press together with any desired pressure and the pressure thus developed automatically locks the parts in position.

The distal ends of the springs are bent so that their pressure will be distributed from about the center of the upper and the lower wings, and they are provided with claws to engage the margin of the wings, which are slightly everted to receive them. At the same time the claws may slide along these margins (*G*) so that the external portion may fit snugly and neatly into the angle between the upper lip and the external portion of the septum. These claws are also used to assist in placing the springs in position, since they are so designed that they can be caught in each other, as shown at *E*. Then the spring is reduced to a size which will readily pass through the lower nares. When in the proper position between the upper and lower blades, a slight push on the upper distal portion of the spring will release the claws, and they will immediately engage on the ridges of the wings, if at the same time the claws are pressed against the middle plate. If by chance either claw fails to engage, it is easily pushed into position with the forceps.

It is not necessary, however, to put the spring on as a second step. Indeed, it has usually been found easier first to attach the spring near the rivets, as shown at *F*, and then, after the blades have been passed into the nose, the spring is pushed in a sufficient distance and locked with its fellow.

If turbinates have been cut at the operation sufficiently to demand packing, Cargile membrane may be easily placed properly in the nose, since the splint occupies a negligible amount of space. Thus the septum may be kept symmetrically centered, whether or not packing is used. The splint is very easily removed, disclosing a beautifully smooth unruffled septum. The splint may be removed in from twelve to thirty-six hours, but it can be left in for three days, or after removal it may be reapplied the next day if from trauma or other cause the septum should bleed or become distorted. The instrument, finished much better than the original model here shown, may be obtained from E. B. Meyrowitz, New York.

697 Huntington Avenue.

AN ASPIRATING APPARATUS FOR OFFICE AND HOSPITAL USE IN OBTAINING GASTRIC CONTENTS

PHILIP ATLEE SHEAFF, M.D., PHILADELPHIA

The device shown in the illustration may be assembled at small cost by any plumber; it is an improvement over the usual method of obtaining gastric contents by the use of the bulb or Politzer bag. The large vertical portion is composed of 1¼ inch pipe and fittings and measures 38 inches over all, with a half-inch water gage attached to its upper half. Both extremities terminate in quarter-inch pipe, one end being connected by rubber tubing to an aspirating bottle, and the other end equipped with a cock and discharging into the wash stand basin, being a permanent fixture in proximity to it.

Before use, the standpipe is filled with water to the level of *A* by connecting *B* and the wash stand faucet with a piece of rubber tubing. When in use the stomach tube is slipped over the glass tubing at *C*, its free end passed into the patient's stomach, cock *B* is opened, the column of water descends, and the gastric contents flow into the bottle.

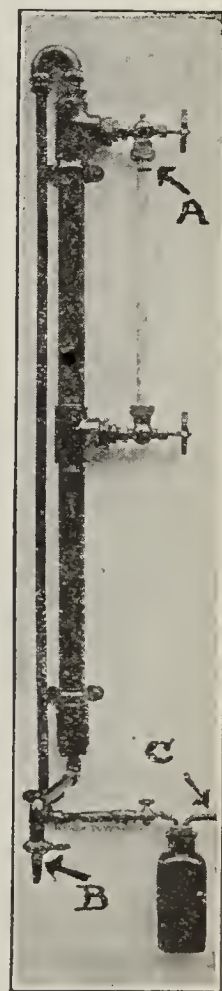
4005 Baring Street.

A SUGGESTION FOR THE DIAGNOSIS OF HAY-FEVER

A. PARKER HITCHENS, M.D.,
GLENOLDEN, PA.

Diagnosis in hay-fever is in some ways more difficult than diagnosis in the case of bacterial infections. Indeed, if we include all the conditions concerned in periodic attacks of sneezing and periodic conjunctivitis, identification of the causative agent may be much more difficult; for plant pollens are not by any means the only source of protein substances in the atmosphere to which certain individuals may be hypersusceptible.

We are not yet acquainted with the complete catalogue of pollens concerned in hay-fever. Of the very common causes, the list is probably small; in fact, we shall relieve a very great majority of our patients if we can render them insusceptible to a few of the grass pollens in the spring; and in the fall, if we eliminate ragweed, the number of persons with a severe type of the disease will be small.

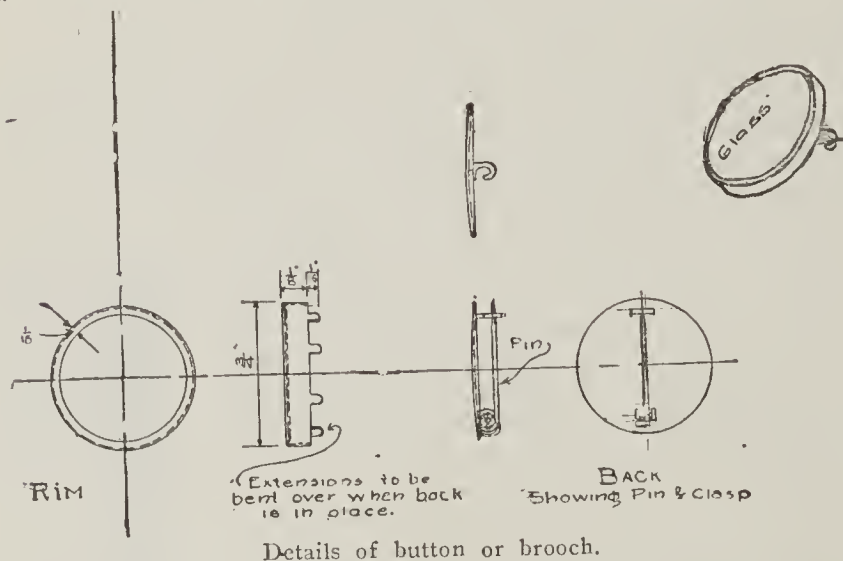


Apparatus for aspirating gastric contents.

In undertaking a rational therapy, specificity is at present believed to be a matter of great importance. Goodale¹ has been especially interested in determining whether or not a person susceptible to the pollen of one member of a genus or even of a natural order, might be susceptible to all the other members of the group, and furthermore, how far specificity is requisite with regard to treatment.

Whatever may be the limits of specificity, the fact that an individual suffering from the spring type of hay-fever may not be affected at all in the fall, and vice versa, suggests that the successful vaccine should contain an extract of pollen homologous at least with regard to the natural order, if not indeed to genus and species. It is important, therefore, to ascertain which pollens are inhaled by the patient during his hay-fever season.

Ophthalmic reactions have been suggested as one means of making such a diagnosis. This method, however, is not unattended by danger. Cutaneous reactions are equally trustworthy, and have the advantage of being entirely harmless. According to this system, a patient not entirely relieved by a vaccine containing the ordinary pollens of the season may be safely tested successively with a long list of extracts, those to which he reacts being noted and included in his vaccine. As suggested in the paper by Dr. Brown and myself,² a botanical survey of the patient's surroundings, especially of



the neighborhood where his most violent symptoms occur, may reduce the pollens probably responsible to a very small number.

In collecting the pollen, the glycerin coated slides used by Phoebus,³ Blackley,⁴ Dunbar⁵ and others have suggested a little device which may be of practical assistance in ascertaining the varieties of pollen with which the patient comes in contact. This device is in the form of a button or brooch consisting of a circular metal frame with prongs attached at the back edge. An ordinary round coverslip is placed in the frame, then a pad of some kind to prevent fracture, and finally the solid metal back with the pin attached, which is held in place by the prongs mentioned above. After the coverslip is coated with the glycerin mixture suggested by Blackley,⁶ the brooch may be worn on the coat or waist for a certain number of hours and then sent to the laboratory, where the coverglass is removed, mounted and examined under the microscope.

If the patient notes that in a certain locality his symptoms become especially severe, the brooch may be removed and left in a properly protected place for a sufficient period to collect the pollens in that particular neighborhood.

1. Goodale: Pollen Therapy in Hay-Fever, Boston Med. and Surg. Jour., 1915, clxxiii, 42.

2. Hitchens and Brown: Hay-Fever and Certain Other Local Anaphylactic Phenomena Referable to the Respiratory Mucous Membranes, Jour. Lab. and Clin. Med., 1916, 1, No. 7, p. 457.

3. Phoebus: Der typhische Fruhsommer-Katarrh oder das sogenannte Heufieber, Heuasthma, Giessen, Ricker, 1862, p. 136.

4. Blackley: Catarrhus Aestivus, London, Bailliere, Tindell and Cox, 1873, p. 75.

5. Dunbar: The Present State of Our Knowledge of Hay-Fever, Jour. Hyg., 1913, xii, 105.

6. Blackley's Mixture consists of:

Water	1 part
Alcohol	2 parts
Glycerin	1 part
Phenol (carbolic acid)	1 per cent.

Therapeutics

HYPERTENSION

(Continued from page 811)

DRUGS IN HYPERTENSION

The drugs that are mostly used to lower blood pressure are nitrites or drugs which are like nitrites, and these are nitroglycerin, sodium nitrite, erythroltetranitrate and amyl nitrite, and the frequency of their use is in the order named. Other drugs used to lower blood pressure are iodids, thyroid, alkalies, chloral, bromids and aconite, the latter rarely.

Amyl nitrite is required only when a sudden immediate effect is desired in angina pectoris or in some other serious spasmodic condition. Sodium nitrite is more likely to upset the stomach than is nitroglycerin. It acts, however, a little longer, but not enough to warrant its frequent selection. The dose of sodium nitrite is from 0.03 to 0.06 gm. ($\frac{1}{2}$ grain to a grain), best in tablet form and given with plenty of water. The tablet should of course be dissolved or crushed with the teeth. It should not be given on an empty stomach, as it may cause considerable irritation and pain. It more or less actively lowers the blood pressure for about an hour.

Erythrol tetranitrate is preferred by some clinicians who find that its effect lasts somewhat longer. There is probably, however, no better nitrite or nitrate than nitroglycerin. While it acts but a short time, it acts effectively, and although no nitrite has vasodilating effects for any length of time from one dose, when the doses are given repeatedly and for days at a time, the blood pressure will generally be more or less reduced. The dose is from $\frac{1}{500}$ to $\frac{1}{100}$ grain, three or four times a day, or every three hours, as desired. The best form in which to use it is in a very soluble tablet, and the tablet should not be dissolved unless intense immediate action is desired. It acts when absorbed from the tongue almost as rapidly as when given hypodermically; it acts in two or three minutes, and the blood pressure may drop from 20 to 30 mm. In experimental tests the action does not last more than from fifteen minutes to half an hour, but clinically the effect of repeated doses is much more satisfactory. Spirit of glyceryl trinitrate or spirit of nitroglycerin, dose 1 minim, keeps well if care is taken to guard against evaporation of alcohol; tablets if well made and kept in bottles properly corked, will retain their activity for months.

The closer a physician is to the laboratory, the less he believes in the value of nitroglycerin in hypertension. The nearer he is to clinical work the more he believes in it. It is a fact that in some instances, even with a dose as small as $\frac{1}{200}$ grain of nitroglycerin, three or four times in twenty-four hours, the blood pressure will be lower, whatever the diet is and whatever the other treatments are, than if the patient does not take the nitroglycerin. Also the value of these short relaxation periods from the standpoint of a strained and tired heart should not be underestimated, the same as the value of a night's rest, or the value of a recreation period of an hour or two. If a patient has hypotension and a systolic pressure of 110, and is given nitroglycerin, the very unpleasant results from its administration will be immediately noticed. Hence nitroglycerin is one of the most valuable drugs that we possess for the treatment of hypertension, and some patients are even benefited by as small a dose as $\frac{1}{500}$

grain. Lawrence⁶³ found that the fall of diastolic pressure from nitrites was about half of the fall of systolic pressure. When there is no kidney lesion a very high systolic pressure falls more under nitroglycerin than does a medium high systolic pressure.

Alkalies, whether potassium or sodium citrate or sodium bicarbonate, are often of advantage in so changing and aiding metabolism, or perhaps reducing the irritation from hyperacidity or a mild condition of acidosis, that their administration causes a lowering of blood pressure.

While iodids may not be direct vasodilators and do not render the blood more aplastic or diminish its viscosity, as shown by Capps,⁶⁴ still, iodids in small doses, 0.1 to 0.2 gm. (1½ to 3 grains) given from once to three times a day, after meals (these small doses do not disturb the stomach), will stimulate the thyroid gland to greater activity, and when this gland secretes properly, the blood pressure is somewhat lowered. Of course, in syphilitic sclerosis large doses of iodids are indicated and are valuable.

In obese patients with hypertension, in the hypertension of women at the menopause, and in hypertension with insufficient kidneys, thyroid medication is often of great value. Sometimes a small dose of from 0.1 to 0.2 gm. (1½ to 3 grains) once a day is all that is needed. At other times, especially when there is no marked arteriosclerosis and no marked kidney or liver lesion, very high blood pressures are reduced only by very large doses, even as much as 10 grains a day. Such treatment is often of very great benefit. Of course, if one of the persons under consideration has symptoms of hyperthyroidism, or if small doses of thyroid cause palpitation, the treatment is not indicated, on the one hand, and should be stopped, on the other. Sometimes when the blood pressure cannot be reduced, in these cases without apparent organic lesions, and thyroid treatment is more or less successful, but at the same time causes great excitation, it may be combined with bromid medication, and then the benefit is sometimes very great.

A patient who cannot sleep and who has hypertension may receive bromids if he is very irritable or if there are symptoms of thyroid irritability; but the most successful sleep and lowering of blood pressure is caused by chloral. A dose of 0.5 gm. (7½ grains) at night is generally sufficient and need not be long continued. Chloral has been frequently given to reduce pressure in 0.2 to 0.25 gm. (3 or 4 grain) doses, three times a day, after meals.

Bromids, of course, will lower the blood pressure, but they depress all metabolism, interfere with digestion, and are not advisable for any length of time. However, in some cases they cause a marked improvement in the patient's condition.

Patients under treatment with chloral, bromids, and thyroid especially, should be carefully watched and the treatment modified to meet the varying conditions. Patients under iodid need not be seen so frequently; those under nitroglycerin or alkalies still less frequently. But all patients under the active management of hypertension should be seen at from one to three week intervals, and the urine should be repeatedly examined and the blood pressure carefully recorded.

HYPOTENSION

A low systolic pressure and a low diastolic pressure may not cause any symptoms or give any cause for anxiety. It does show, especially if the systolic pressure is below normal for the age of the person, a lack of reserve power, and such patients will not well stand serious illnesses, operations, injuries or serious physical and mental strains. If there is a low systolic pressure and a high diastolic pressure, this shows impairment of the heart, whether or not any other organic lesion is present.

Generally speaking, a low systolic pressure shows a weak acting heart muscle, and a very low diastolic pressure shows a dilated condition of the arterioles. In aortic regurgitation this low diastolic pressure is constantly in evidence, and, if the systolic pressure is not below normal, does not signify that the circulation is insufficient. If the systolic pressure is not very low but the diastolic is high, vasodilator drugs, by lowering the diastolic and increasing the pulse pressure, are often of benefit. If there is increased venous congestion and increased venous pressure and a high diastolic pressure with a low systolic pressure, digitalis not only will often raise the systolic pressure, but also will lower diastolic by improving the general circulation and removing venous congestion.

While intestinal indigestion and absorption of toxins often tend to raise the blood pressure, some toxins thus absorbed, especially of the ptomain variety, lower blood pressure and cause shock, perhaps by weakening the muscle of the heart or by acting on the vasodilator vessels; or they may cause dilation of the vessels of the abdomen and in this manner lower blood pressure.

Very low blood pressure after exertion, after severe physical exercise, or after competitive athletic tests shows that the heart cannot sustain such strains and should not be again subjected to them. In severe mental and physical strains the suprarenals may be inhibited in their activities, and a hypotension, more or less prolonged, may result.

Sewall⁶⁵ believes that hypotension is frequently due to splanchnic stasis, and that sluggish circulation in this region, especially when the person is in the erect posture, is an important factor in general physiologic disturbances or lack of general tone. When the splanchnic vessels are dilated there is also a lack of proper tone to the cerebral vessels, and this may be a cause of mental weariness and neurasthenia. While ptosis of organs in the abdomen and a flaccid condition of the musculature of the abdomen are frequent causes of this splanchnic stasis, and therefore hypotension, especially in women, it is quite possible that suprarenal insufficiency will allow this condition of the splanchnic vessels to occur frequently.

Serious illness and infections will lower the blood pressure sometimes to a dangerous point. Of course, hemorrhages lower the blood pressure. Shock and collapse cause lowering of blood pressure, frequently to a fatal point, and Cornwall⁶⁶ finds that a patient may live several hours with a systolic pressure below 60, and several days when it is below 70; that he may walk around with a systolic pressure of 90, provided the pressure pulse is sufficiently large, that is, that the diastolic pressure is low enough to cause a circulation of blood. Of course, if the difference between the systolic and the diastolic pressure is diminished to the

63. Lawrence, C. H.: The Effect of Pressure-Lowering Drugs and Therapeutic Measures on Systolic and Diastolic Pressure in Man, *Arch. Int. Med.*, April, 1912, p. 409.

64. Capps, J. A.: Effect of Iodids on the Circulation and Blood Vessels in Arteriosclerosis, *THE JOURNAL A. M. A.*, Oct. 12, 1912, 1350.

65. Sewall: *Am. Jour. Med. Sc.*, April, 1916, p. 491.

66. Cornwall: *New York Med. Jour.*, March 7, 1914, p. 470.

vanishing point, the patient cannot stand it, and dies. It should be remembered that just before death venous pressure is likely to rise, and this may raise the diastolic pressure.

With the progressive toxemia of typhoid fever the blood pressure will become lowered from the myocardial degeneration. Of course, the blood pressure will drop suddenly from a hemorrhage, but Piersol⁶⁷ finds that with perforation the peritoneal irritation may cause a rise of blood pressure, and he thinks that this sign may precede for several hours more positive signs of the accident.

As in other infections, the blood pressure will fall in scarlet fever; but if it suddenly rises, a kidney complication is to be looked for. The blood pressure always falls in diphtheria, and always falls in acute rheumatism; consequently, strenuous sweating measures in the treatment of rheumatism should not be used as soon as the blood pressure has become low.

Failing circulation in pneumonia, if accompanied by low blood pressure, requires different treatment from the failure of circulation in these cases when the blood pressure is high. Hence the relationship of the systolic to the diastolic pressure in pneumonia is of very great importance in deciding on the proper treatment. In one instance the blood pressure must be lowered; in the other, the heart must be stimulated.

While tobacco, in ordinary conditions, raises the blood pressure, after the heart has been seriously injured by the nicotin, the blood pressure is likely to be found lower, and such patients are quickly benefited by the withdrawal of the tobacco and the administration of digitalis.

Anemia almost invariably causes low blood pressure. Also in a patient who has hypotension without any distinct evidence of disease, especially if there has been any possible exposure to tuberculosis, that disease should be suspected and every test made to eliminate such a cause.

Serious cachexia, such as that caused by carcinoma or other growths, gives low blood pressure. Diabetes causes low blood pressure, provided there are no nephritis and no marked suprarenal stimulation.

Excessive use of alcohol, while tending to promote hypertension by the disturbances that it causes, may give, by causing a weak heart muscle, a permanent low blood pressure. A single large dose of alcohol always lowers the blood pressure.

Arteriosclerosis frequently reaches a stage when the blood pressure is low, and with atheroma of the arteries of the arms a true blood pressure is difficult to obtain. Addison's disease, or any other organic lesion of the suprarenals, will lower the pressure, while stimulation of the suprarenals increases the pressure. Any great drain on the system, whether from diabetes without nephritis, or from profuse diarrhea of any type, will cause hypotension. Occasionally a girl with chlorosis who is not menstruating may have an increased blood pressure. Many of the hemorrhagic or purpuric conditions will show a hypotension.

Meningitis in various forms may show a hypertension from cerebral and nervous irritation. Neurasthenic patients quite generally have hypotension, although occasionally with suprarenal disturbance they may have an increased tension.

In the hypotension of surgical shock and in shock during anesthesia, Henderson's findings⁶⁸ that hyper-

oxygenation and insufficient carbon dioxide may be partially responsible for the condition should be remembered, and it has long been known that carbon dioxide congestion, as caused by laughing gas anesthesia, for instance, increases the blood pressure.

A systolic pressure of 110 mm. or lower in an adult should be considered hypotension, anything below 105 mm. calls for treatment, and a systolic pressure of 100 or lower in an adult calls for rest from all active duties.

These patients are weary, they have mental and physical tire, may get short breathed, may have palpitation of the heart, and often have headaches and dizziness from imperfect circulation in the head. There may be edemas of the legs and ankles toward night. If such patients have the systolic blood pressure raised even a small amount, or if the diastolic pressure, which is very low, is raised even a small amount, they immediately feel better.

If the kidneys are normal, they should have meat as part of their diet. If they are not nervous and irritable, coffee and tea should be allowed, except at the evening meal. While sleep may tend to lower pressure somewhat, these patients' hearts require a long bed rest; in other words, they should go to bed at an early hour. They should rise early, however, in the morning, and, as recommended by Goodman,⁶⁹ they should perform mild calisthenic exercises before dressing.

The increased muscle tone thus caused raises the blood pressure somewhat, and the great depression before breakfast is not experienced. These patients rely on their morning coffee for bracing. If they have much indigestion at night which keeps them awake so that they do not get good comfortable rest, their largest meals should be the morning and noon meals, and the evening meal should be very light.

Pendent abdomens or ptosed abdominal organs should be held up by proper abdominal bandages or corsets.

If the bowels are constipated, only the vegetable laxatives should be used, if a drug is needed at all. Salines should not be allowed, or other cathartics which cause profuse watery discharges. If a brisk purge is required, castor oil is the best.

Plenty of fresh air, and mild exercises in the open air all tend to increase the pressure. Graded walking, climbing, or other more interesting exercises are advisable, as all tending to raise the pressure, provided that at no time are they carried to the point of exhaustion.

Forced feeding may be useful. Cool sponging in the morning, if there is proper reaction, is often of benefit. Iron may be indicated; bitter tonics may be indicated. Digitalis and strychnin are often of advantage. Caffein may be used as a drug as well as given in coffee and tea. Atropin may be of value in some forms of hypotension.

At times with a low systolic pressure, but a relatively high diastolic pressure, nitroglycerin is valuable.

More or less acute hypotension may occur in hot weather or with overheating, often termed heat exhaustion. Such patients should, if possible, go to a cooler region, whether to the seashore or to the mountains is unimportant. The treatment of dangerous sudden low blood pressure, as shock, will be discussed elsewhere.

67. Piersol: *Pennsylvania Med. Jour.*, May, 1914, p. 625.
68. Henderson: *Am. Jour. Physiol.*, 1910, xxvii, 158.

69. Goodman: *Am. Jour. Med. Sc.*, April, 1914, p. 503.

New and Nonofficial Remedies

ARSENOBENZOL (DERMATOLOGICAL RESEARCH LABORATORIES, PHILADELPHIA POLYCLINIC) AND DIARSENOL (SYNTHETIC DRUG COMPANY)

Report of the Council on Pharmacy and Chemistry

Arsenobenzol is made by the Dermatological Research Laboratories, Philadelphia Polyclinic, Philadelphia; Diarsenol is made by the Synthetic Drug Company, Toronto, Canada. Each of these preparations, like salvarsan, consists of the hydrochlorid of 3-diamino-4-dihydroxyl-1-arseno-benzene, with small admixtures of unimportant impurities. The Council found these products to be substantially identical with salvarsan in composition and equal to salvarsan in therapeutic efficiency. Both would have been regarded as entirely eligible for New and Nonofficial Remedies had it not been for a doubt on the subject of their legal status.

The Dermatological Research Laboratories and the Synthetic Drug Company were therefore asked whether in their opinion the sale in the United States of Arsenobenzol (Dermatological Research Laboratories) and Diarsenol (Synthetic Drug Company) was illegal, and if physicians using them are liable to legal proceedings by the owners of the salvarsan patent.

Dr. Schamberg, on behalf of the Dermatological Research Laboratories, replied:

"... in all probability our product Arsenobenzol would be regarded by a court as an infringement on the salvarsan patents. We have had a sort of gentlemen's agreement with the American representatives of the Farbwerke-Hoechst Company whereby our laboratories would not be interfered with in distributing Arsenobenzol to the medical profession during the period that salvarsan could not be obtained in the American market. On the other hand, we tacitly agreed to cease marketing our product when a sufficient supply of the German preparation became available to the profession of this country. If in the future the supply of salvarsan should again become exhausted or so seriously impaired as to cause hardships in this country, we would again furnish the drug to physicians and hospitals. Under such circumstances no court would construe that a physician using our drug was rendering himself liable to legal procedure.

The Synthetic Drug Company replied:

"... we claim that Diarsenol is chemically identical with Salvarsan.

"Without, however, going into the question of whether it is manufactured by us exactly under the specifications of the patent in question, we might point out that in any event our product Diarsenol is legally manufactured in this country (Canada) under a license and subject to a royalty which is paid to the commissioner of patents.

"Whether this royalty is ultimately paid to the holders of the Canadian patent, Meister Lucius & Brüning, or not may depend upon the treatment accorded to British patentees by the German government after the war.

"The same firm are the holders of the U. S. patent, and we might point out that the salvarsan sold in the United States is not manufactured there but is imported from the patentees' own factory in Germany.

"At the present time Meister Lucius & Brüning are not in a position to furnish for the United States the product made by them in Germany, and as they are not attempting to manufacture in the United States they cannot be suffering any damage by the sale of our product, but on the other hand may in reality be profiting by it, if ultimately they receive the royalties paid by us to our government.

"On this account we do not think they could successfully maintain an action in the United States as they could not show that they are suffering any damage from loss of sales, and certainly not from the cutting of prices.

"Whether or not they would institute legal proceedings it is impossible to say, but so far they have not done so and our product has been on the U. S. market for nearly a year. "If an action were brought there might possibly arise questions as to the validity of the U. S. patents, but there is no necessity of raising this question at the present time."

Owing to the possibility of patent complications, and the apparently temporary status of at least one of these products, the Council deemed it advisable not to admit Arsenobenzol (Dermatological Research Laboratories) or Diarsenol (Synthetic Drug Company) to New and Nonofficial Remedies. At the same time, it desires to point out that these products are apparently identical with salvarsan.

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

BENZIDINE. — Para-diamino-diphenyl. — 4:4' diamino-dibenzene.— $\text{NH}_2\cdot\text{C}_6\text{H}_4\cdot\text{C}_6\text{H}_4\cdot\text{NH}_2$.

Actions, Uses and Dosage.—Benzidine is used in medical practice for the detection of occult blood. In the presence of hydrogen peroxid and acetic acid, benzidine is changed to a deep purple compound by the action of blood.

The benzidine test for blood may be applied as follows: To about 5 c.c. of a saturated solution of benzidine in alcohol or glacial acetic acid, an equal volume of 3 per cent. hydrogen peroxid solution (solution of hydrogen peroxid, U. S. P.), is added and then 1 c.c. of the solution to be tested. If the mixture is not acid, it is made acid with acetic acid. A green or blue color indicates the presence of blood. A control test in which water is substituted for the liquid under examination should give no coloration. A number of modifications of the test have been proposed. The test is said to detect blood in a dilution of 1 in 300,000. Many substances lessen the sensitiveness of the test, but do not inhibit it (tannin prevents it).

Benzidine is a grayish crystalline powder, melting at 127.5 C. to 128.5 C. It is almost insoluble in cold water, more soluble in boiling water, but readily soluble in alcohol and in ether.

Benzidine is dibasic, forming salts which, when soluble, are hydrolyzed by water. Benzidine dihydrochloride is quite soluble in water, but requires that its solutions contain free acid to prevent precipitation of the benzidine monochloride. Benzidine sulphate is slightly soluble even in hot water.

If 0.1 gm. benzidine be dissolved in 1 c.c. concentrated acetic acid (specific gravity 1.064) and 10 c.c. solution hydrogen peroxid (3 per cent.) be added, no color at all or at most a very faint color should develop within three minutes; if a small quantity of blood is now added, a blue color should appear.

Benzidine-Merck (For Blood Test).—A non-proprietary brand complying with the standards for benzidine.

Manufactured by E. Merck, Darmstadt, Germany (Merck & Co., New York).

Occult Blood Test (Dudley Roberts).—This consists of tablets each containing 5 grains of a trituration of benzidine, 1 part, and sodium perborate, 20 parts, and glacial acetic acid (supplied in boxes containing 100 tablets in vials, and a bottle of glacial acetic acid).

Actions, Uses and Dosage.—A tablet is placed in a small saucer or other suitable container; to it is added a quantity of the material to be tested (a weak solution of the stool or stomach contents, or urine), sufficient to wet thoroughly, but not to cover the tablet entirely, and then a drop or two of the acetic acid is allowed to fall on the tablet; if blood is present the tablet will turn greenish blue, the extent of the coloration and the time of its development depending on the amount of blood present. (To avoid contamination of the glacial acetic acid remaining in the bottle, care should be taken not to touch the tablet or specimen with the rod which is used to transfer the acetic acid for the test.)

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SATURDAY, SEPTEMBER 16, 1916

NEW OBSERVATIONS ON THE PINEAL GLAND

In a recent review of the current opinions of the function of the pineal gland, attention was directed to some of the conflicting and negative evidence on the subject.¹ The pineal body undergoes a normal, physiologic atrophy at the time of puberty. This fact, taken in connection with older observations in cases of tumor of the gland occurring before puberty which have been associated with a marked precocity in the realm of both primary and secondary sexual characters, has supplied the basis for one theory of pineal function. It assumes that the gland, when physiologically active, tends to inhibit the development of the sexual function. On this hypothesis, interference with the function of the pineal body, either by experimental operative procedure or by the chance of tumor invasion, might accordingly be assumed to remove a natural physiologic restraint and thus permit a prolonged adolescence or exaggerated performance on the part of the organs concerned in sexual, if not in somatic development.

With respect to overfunction of the pineal gland, the only procedure at present available for imitating this possibility consists in administering gland substance to adolescent animals. This has been attempted in a variety of ways with conflicting results. If one accepts the contention that positive results are more suggestive and valuable than negative experiments in this type of investigation, it may be pointed out that several investigators have reported a noticeable overgrowth in the body weight of animals fed with pineal substance or receiving it by other modes of administration.

Underfunction of the pineal body—the condition which might be anticipated to occur with the encroachment of tumors on this organ—ought to be imitable by surgical extirpation of the gland. Any one conversant with the anatomic topography of the region in which it is located will appreciate the very serious difficulties presented by an operation for removal of the pineal body. Dandy's canine pinealectomies were apparently attended with negative results.² The latest

investigator to undertake work in this field is Horrax,³ who has made successful extirpations on guinea-pigs and rats. He found that pinealectomized male guinea-pigs show a hastened development of the sexual organs, manifested before maturity by a relative increase in size and weight, both of the testes and the seminal vesicles, over control subjects of the same litter. Histologically the testes and seminal vesicles of these animals, if taken before the age of sexual maturity, show a more advanced physiologic state than their controls. The pinealectomized females appear to show a tendency to breed earlier than controls of the same age and weight. Some evidence of hastened maturity has been obtained with rats also.

Obviously careful control experiments are essential in order to insure conclusions derived from observations of the outcome of surgical interference in regions, such as the midbrain, in which many structures may be damaged incidentally. Horrax very properly asks, Can the changes which have been observed in these experiments be attributed to the loss of the pineal gland, or may they be attributed to some other injury of glandular or nervous tissue? The only other intracranial organ which is known to influence bodily growth and sexual development is the pituitary body, and it is conceivable that, as a result of the operation which has been described, some secondary changes might occur in that structure, due, possibly, to a postoperative hydrocephalus scar formation; but such a condition has never been observed and, furthermore, it would have led to changes the reverse of those we have seen, namely, to skeletal undergrowth and delayed sexual development. Microscopic study of the pituitary in the animals which had been operated on disclosed no departure from the normal.

There is a pathognomonic syndrome in which, coupled with a general bodily overgrowth, the size of the primary sex organs is the most striking feature in the records of the cases. Mental precocity is also a well marked symptom. The phenomena are usually seen in boys before the age of puberty, and at necropsy in all cases a tumor replacing the pineal gland has been found. In the case of the girl, no disturbance of the sexual organs was apparent, adiposity being the only metabolic finding. Horrax remarks that if we are right in assuming that the pineal is a gland, and that its secretion exerts any influence on bodily processes, such evidence as we have would seem to indicate that this influence is exerted on inhibiting physical and mental adolescence. A report of three cases from Cushing's clinic³ has just been added to the literature. This number of observations, of course, does not permit sweeping deductions on so important a subject. In view of previous indications, coupled with the newer studies on the physiology of the gland in animals,

1. The Pineal Body, editorial, THE JOURNAL A. M. A., Jan. 29, 1916, p. 360.

2. Dandy, W. E.: Extirpation of the Pineal Body, Jour. Exper. Med., 1915, xxii, 2.

3. Horrax, Gilbert: Studies on the Pineal Gland, I, Experimental Observations, Arch. Int. Med., May, 1916, p. 607; II, Clinical Observations, p. 627.

Horrax ventures the impression that sexual ripening occurs when the pineal ceases to be functionally active, or when it is removed, and on this basis he is inclined to the belief that the tumor in most of these clinical cases is associated with an inhibition of the normal products of pineal secretion. If this were really the case, however, one would suppose that glandular feeding would postpone adolescence; but from the observations of Dana and McCord, the reverse seems to occur. It is evident that further investigation of the physiology of the pineal gland is urgently demanded and is likely to yield fruitful results.

THE TARIFF ON DYESTUFFS, AND DRUG PRICES

Owing to the interdependence of dyestuffs and medicinal chemicals derived from coal-tar (the so-called coal-tar synthetics), any conditions influencing the production of the former necessarily are of interest to physicians. Most coal-tar "synthetics" have been developed either in the attempt to create new markets for the intermediate products in dye manufacture, or to utilize the by-products from the color industry. Dyes are extensively used in the cotton, leather, paint, silk, wall-paper and woolen industries, and at the beginning of the present European war, American manufacturers were producing less than 15 per cent. of the quantities used in this country. Of the foreign makers, Germany produced by far the largest amount. In that country the industry had grown to vast proportions, partly as a result of the efforts of manufacturers to utilize the results of chemical research, and especially because of the paternal attitude of the German government toward home industries and the development of trade. After the war broke out, the prices of medicinal chemicals advanced enormously, as may be seen by a few comparisons, the prices being for pounds.

ADVANCE IN PRICES OF MEDICINAL CHEMICALS

Drugs	Price per Pound		
	August, 1914	August, 1915	August, 1916
Phenol (carbolic acid).....	\$0.15	\$1.50	\$0.75
Salicylic acid	0.25	2.00	3.00
Aspirin (acetylsalicylic acid)...	6.50	8.80	13.00
Sodium salicylate	0.39	2.00	3.00
Glycol	0.75	2.60	6.50
Acetphenetidin	0.80	6.50	30.00
Resorcin	1.05	2.60	24.00
Antipyrin	3.75	15.00	32.00
Benolphtalein	1.85	5.25	15.50
Ethylene blue	1.40	3.25	26.00

It is presumable that these advances in prices have not been made necessary in all cases but that values have been forced up by manufacturers and speculators. For example, phenol (the basis of salicylic acid) is now manufactured here and its price is but half of that of a year ago, yet the prices of salicylic acid and aspirin have advanced. Inasmuch as aspirin is doubtless now made in the United States, presumably from salicylic acid which, in turn, had American-made phenol as a basis, the prices of phenol and aspirin should be parallel.

The revenue bill, which has just been passed by Congress, contains provisions designed to foster and maintain a dyestuff industry in this country. The bill admits parent dye materials and parent coal-tar medicinals free, but assesses 15 per cent. ad valorem and 2.5 cents a pound specific on intermediates, and 30 per cent. ad valorem and 5 cents a pound specific on finished products. The new tariffs become effective at once, but there are provisions for a graded reduction in rates under certain specified conditions. Experience with previous tariffs has shown that, if intermediates are given preferred rates, the goods will be imported so nearly finished that they need but a mere touch for completion, so that the American treasury and American industry both suffer.

The revenue bill also contains an "antidumping" clause. This forbids the sale in this country of imported goods at prices less than those for which they are sold in the country of issue. For years a provision of this kind has been sought in connection with patent legislation but, as passed in the revenue bill, it has broader applications than if applicable only to patented goods.

At present benzene (benzol, C_6H_6), phenol and toluene (the raw products of many dyes) are being manufactured in the United States in large quantities, but owing to the demand for them in the explosive industries, the prices are abnormally high. As soon as the war closes, these products probably will be largely diverted into dyestuffs channels, and prices may be expected to fall. The effect of the tariffs, however, on the cost of medicinal chemicals after the war (discounting speculative features) will be a tendency toward maintaining prices at higher levels than before the war. Under the stimulation of the present high prices and the guarantees of protection after the war, it is to be hoped that American manufacturers will soon produce all of the dyes and coal-tar synthetics needed for home consumption.

SCIENTIFIC INQUISITIVENESS—AN ANECDOTE

In describing the characteristics of a scientific investigator, Liebig once pointed out that certain disciplines, like mathematics, are merely an indispensable instrument for the attainment of scientific ends. He remarked that it is not the mere instrument which plans and executes the work, but the human intellect. It is obvious that without the power of observation, without sagacity, all mathematical knowledge is useless. We may imagine a man who, favored by a good memory, has rendered himself intimately acquainted with every theorem of mathematics and has obtained an eminent degree of skilfulness in handling this instrument, but is altogether unable to invent a problem for solution. If we propose to him a problem, and thus give him the conditions for its solution, he will succeed in obtaining an answer by performing the current operations with which he is familiar, and express

it in a formula consisting of certain symbols, the meaning of which, however, is perfectly unintelligible to him, because he is deficient in other attainments essential for judging of its truth. Such a man is a mere calculating machine. But as soon as he possesses the capacity and the talent of proposing a question to himself and testing the truth of his calculations by experiment, he becomes qualified to investigate nature. For whence should he derive his problems, if not from nature or from life?

The capacity for asking questions which stimulate the spirit of investigation is not a common attainment, even among so-called educated persons. It is a trait which goes hand in hand with the ability to discern unique opportunities and to utilize them in the quest for knowledge. It was with this sort of singular foresight that William Beaumont, "the pioneer American physiologist," recognized the opportunity for scientific discovery that presented itself when Alexis St. Martin received the gunshot wound that transformed him into the subsequently famous man "with a lid on his stomach," and thereby made him a suitable subject for the study of the physiology of digestion.

We cannot refrain from quoting a striking instance of that scientific inquisitiveness and uncommon capacity of formulating a problem which characterized the late S. Weir Mitchell. It serves as an instance not only of the mental alertness of this eminent physician, but also of the acumen which furnishes an opportunity. The incident relates to the days when Mitchell was engaged in his classic researches on the poison of snakes—the subject of subsequent fruitful studies. In an address at the dedication of the Mitchell Memorial Building of the Philadelphia Orthopedic Hospital and Infirmary for Nervous Diseases, W. W. Keen, who aided Mitchell in the early experiments, relates the story as follows:

One hot July just after we had collected one or perhaps two teaspoonfuls of the liquid snake-poison in a small cup, Mitchell was called out of town for three or four days. Usually we immediately spread out this liquid in a thin layer so that it would dry quickly before decomposition set in, but by an oversight on this occasion it was left in the cup in bulk, and naturally in such weather underwent quick decomposition. On his return we went to the laboratory and on opening the door were almost knocked down by the horrible stench. Who of us here would not have sought the source of the smell and in all haste have thrown it away? Not so Mitchell. Instantly he turned to me and said, "I wonder if decomposition has destroyed its poisonous character. Let's try it." That was always his desire—to put everything to the test of experiment. A single experiment showed that for a pigeon it was as virulent as ever. How subtle and potent was the poison that even decomposition left intact! But not to every form of life was it even then a poison, for disporting themselves in the cup were a host of nimble little animalculae having apparently the time of their lives.

This is the spirit of the true investigator. Opportunity for service in science comes to most men in the medical profession. Few, indeed, have the vision or the inclination to grasp the favorable chance.

THE ALKALI RESERVE OF THE BLOOD

The neutrality regulation of the body or the maintenance of a certain equilibrium between acids and bases is accomplished by the cooperation of a variety of factors. In discussing the restitution of basic and acid substances which are used up in the physicochemical equilibriums of neutrality, L. J. Henderson has pointed out that this may be both exogenous and endogenous.¹ He notes that there is an exogenous restitution, which depends on the presence of large amounts of unchangeable basic and acid substances in the food. This process is ordinarily left to chance and a mixed diet, but in case of need may be usefully controlled. The investigation of Blatherwick² on the diet illustrates this possibility, while the value of soda when administered in acidosis is a more familiar instance. The endogenous restitution involves the necessary and, in normal metabolism, unvarying production of carbonic acid, phosphoric acid, sulphuric acid and other substances, and secondly the very variable manufacture of ammonia instead of neutral material, during the course of nitrogenous metabolism. The latter process is not well understood. In such conditions as diabetic acidosis a large increase in the production of ammonia is perhaps the chief means of prolonging life; but on the other hand there are also conditions of acidosis in which the production of ammonia is actually diminished below the normal amount.

The part played by the stored alkali of the organism in these regulatory phenomena has attracted special attention of late. It has been said that the constancy of alkalinity is quite the earliest and most universal physicochemical regulation of active protoplasm. Modern investigations by Palitzsch show that the ocean itself is likewise constant in its alkalinity. "In the course of long experience with the problems of acid-base metabolism a conviction has gradually been established in my mind," Henderson writes, "that such reserves of alkali, in substantial amounts, must exist and not infrequently suffer mobilization." The blood itself, which is the immediate seat of important acid-base regulatory reactions, maintains an efficient alkali reserve. In the plasma it is constituted by bicarbonates and alkali protein compounds, together with small quantities of alkali phosphates. Under normal conditions these substances are present in very constant quantities.

In a recent study of the alkali reserve, Marriott³ describes acidosis as a diminution of this reserve which may be recognized by a variety of clinical symptoms and by characteristic alterations in the composition of the blood, urine and alveolar air. Under this definition

1. Henderson, L. J.: The Excretion of Acid in Health and Disease, Harvey Lectures, 1914-1915, Series X, Philadelphia, J. B. Lippincott Company, p. 132.

2. Blatherwick, N. R.: The Specific Role of Foods in Relation to the Composition of the Urine, Arch. Int. Med., September, 1914, p. 405.

3. Marriott, W. McK.: A Method for the Determination of the Alkali Reserve of the Blood Plasma, Arch. Int. Med., June, 1916, p. 840.

acidosis implies a diminution of the alkali reserve of the blood plasma, though not necessarily a change in its hydrogen ion concentration. Marriott gives this lucid picture of the regulatory reactions: the alkali reserve maintains the plasma at a constant slightly alkaline reaction, despite the fact that acid products of metabolism are continually being poured into the blood. Chief among the acid products, so far as total quantity is concerned, is carbonic acid. An almost infinitesimal change in reaction in the direction of acidity occurs. This slight change is sufficient to stimulate the respiratory center. The resultant pulmonary ventilation removes the excess of carbon dioxide, and the plasma reaction returns to its original point. An excessive production of carbon dioxide in the tissues results in a greater change in the reaction of the plasma, with a consequent increased stimulation of the respiratory center and increased pulmonary ventilation. This tends to accomplish the removal of the extra carbonic acid. No depletion of the alkali reserve occurs. If, however, a nonvolatile acid, such as sulphuric, phosphoric or beta-oxybutyric, is poured into the plasma, a certain amount of the alkali reserve is neutralized, and the reaction of the plasma shifts toward acidity. Increased pulmonary ventilation occurs, but this, of course, cannot effect removal of the nonvolatile acid. An extra amount of carbonic acid can be removed, however, so that less than the normal amount remains in the plasma. This decrease in carbonic acid may compensate for increase in nonvolatile acids, and the reaction may return to the normal point. The alkali reserve, however, is depleted, as it is partially neutralized by the nonvolatile acid. When the plasma with its depleted alkali reserve again comes in contact with the tissues the carbonic acid normally produced causes a greater change in reaction than when the alkali reserve was intact. As a result there is an overstimulation of the respiratory center, the evidences of which are hyperpnea and a diminished alveolar carbon dioxide tension. If the increased pulmonary ventilation is sufficient to maintain the carbonic acid content of the plasma at a low enough level, no appreciable change in reaction occurs. If, however, the alkali reserve is not replenished and, if acid continues to pour into the plasma, a time may come when the increased pulmonary ventilation can no longer compensate by removal of carbonic acid. In such an event, the reaction of the circulating plasma becomes constantly less alkaline until a point is reached which is incompatible with life. This point is, approximately, neutrality.

It is thus evident that the estimation of the alkali reserve in the plasma or its depletion may be of decidedly greater interest than the measurement of the reaction, since it is only in severe acidosis that a change in the latter occurs. For ascertaining the reserve alkalinity, Marriott has devised a new method.³ In a series of cases including nephritis and diabetes in adults, recur-

rent and idiopathic acetonemia, and severe diarrheas in children, all of which patients exhibited clinical or laboratory evidences of acidosis, the reserve alkalinity of the blood serum showed deviations from the normal. The more severe the acidosis, judged by the clinical symptoms, the lower were the figures obtained. Especially striking was the parallelism between alveolar carbon dioxide tension and the reserve alkalinity. The latter always shows an increase after the administration of alkalis, but does not necessarily reach its normal value. The new method has a value that will be appreciated by many therapeutists, in that it gives information as to the probable amount of alkali needed to replenish the reserve. A determination following the administration of alkali shows whether or not the amount has been sufficient. Above certain analytic values that have been ascertained by experience, the acidosis may be successfully combated by dietetic regulation or by the administration of alkali by mouth; when the alkali reserve falls lower, intravenous administration of alkali is usually indicated. Thus every new experimental method of value paves the way for possible improvements in either medical diagnosis or therapy or both.

ANTIMONY IN FOODS

Poisoning of mysterious origin is doubtless more common than is generally appreciated. By this we do not refer to the obviously profound effects of large doses of highly deleterious compounds, but rather to the more subtle intoxications of a mild grade which often escape notice because of the unexpected ways in which they may arise. Industrial poisonings are occasionally of this character. Recently we called attention to the possibilities for harm in the accidental employment of daffodil bulbs as food.¹ Some time ago the warning of the Hygienic Laboratory of the United States Public Health Service against the use, for milk bottles, of rubber nipples containing antimony was mentioned.² Recently unexpected possibilities of harm have been detected in some of the enameled cooking utensils that are sold in American markets.³

When these dishes first began to supplant crockery-ware, considerable agitation arose in Europe regarding the possibility of lead poisoning from food prepared in dishes highly glazed, because this metal is employed in the arts in which glazing is carried out. In the case of sheet steel enameled ware, for which a glaze of great brilliancy is not required, it has been possible to use other substances to act as a flux. It is now widely believed that lead is not used in the manufacture of popular enameled dishes. Investigations by

1. Poisonous Properties of the Garden Daffodil, Current Comment, THE JOURNAL A. M. A., July 22, 1916, p. 290.

2. Bull. 96, Hyg. Lab., U. S. P. H. S., 1914, p. 56. Rubber as a Source of Hygienic Danger, Editorial, THE JOURNAL A. M. A., Nov. 28, 1914, p. 1954.

3. Miller, Elizabeth W.: The Solution of Antimony from Enameled Cooking Utensils, Jour. Home Econ., 1916, viii, 361.

Miss Miller³ at the University of Chicago indicate that this element was liberated in exceptional cases only, by vigorous cooking tests with enameled dishes of standard make.

Not so with antimony, however. This relatively cheap substance has long been added to certain enamels to make the glaze opaque. Usually tin oxid is employed. Arsenic is said to be used only in enamels for decorative purposes. Presumably enamels containing antimony can be made so resistant to mild chemicals that practically none of the poison will dissolve in the ordinary cooking process. Nevertheless some of the European countries have forbidden the use of antimony in culinary utensils. No such prohibition exists in America. Miss Miller has recently found that some antimony was dissolved in every case after cooking various foods in cheap gray enameled kettles purchased in certain stores where the poorer classes trade. As an illustration of the quantities liberated in this way, acid substances like grape juice, cider and cranberries acquired from 3 to 14 mg. during a cooking test. A serving of spinach incorporated nearly 10 mg. of antimony from a small dish. Even fresh milk dissolved out 3 mg.

Various factors seem to influence the amount liberated. The acidity of the foods, the number of times the dish has been used, the amount of abrasion in the culinary process, temperature, and a time factor doubtless all play a part. Miss Miller remarks that the fact that one make of enamel is so readily attacked as to betray its inferiority by the abrasion produced would probably prevent its use by intelligent persons; but the less intelligent might adopt it without question. The toxic dose of antimony is not so large — the average dose of tartar emetic contains only 5 mg. of the element itself — that its introduction into foods through the medium of cooking utensils can be overlooked. Further investigation is desirable in the interest of public health.

Current Comment

FISH MEAL AS A STOCK FOOD

It has been asserted that of all the fish which swim the seas the most valuable American food fish is the menhaden; but no American eats of its flesh. This paradox finds its explanation in the fact that the menhaden is one of the principal foods of the vast shoals of cod and other fish which frequent the northeastern coasts, and that it is caught in enormous quantities for the sake of its oil. The residues, after the removal of the latter, are ground up and used as fertilizer. This fish, therefore, in two ways, becomes indirectly an important food source. Fish residue fertilizer products are also obtainable from the refuse of the sardine and salmon canning industries. The nitrogenous and mineral content (phosphoric acid) of fish meal is high, but presented in a form in which the manurial

properties are very slowly developed in the soil. Yet, if this fish meal could be fed to live stock, the whole of the nitrogen and phosphorus would be rendered available either as meat or in a readily assimilable form as manure. The use of such products as a part ration for live stock dates back a great many years, and is quite thoroughly organized in Germany. The whole question has been submitted to experimental investigation by the Department of Agriculture, and the result is published in Bulletin 378.¹ The conclusions are that fish meal is as valuable as other widely used high protein feeding stuffs, and in some instances has been proved more valuable than these; that it does not impart its flavor to animal products if fed in reasonable amounts in conjunction with other foods, and, finally, that it should be given consideration whenever a high protein foodstuff is required.

AS DRUGGISTS SEE IT

"One advantage, to the manufacturer, of putting up preparations according to a secret formula is that he can put in or leave out any ingredient he chooses, as the condition of the market, his respect for the law, or other circumstance may dictate. Indeed, he may take an entirely different thing and continue to sell it under the old name and to boost it with testimonials written for the old preparation. This is done right along. Just to what extent such action is fraudulent and just how much of the responsibility for the fraud rests upon the retailer are questions which might be thought over by the latter."

Another vicious attack from the self-seeking doctor! Another bit of vituperation from the "Medical Trust." No! On the contrary, it is from a magazine published in the interest of pharmacy and the drug business — the *Druggists Circular*. But THE JOURNAL could not have said it better. It is a pleasure to quote from a drug journal that really represents the decent druggists of the country. Unfortunately, there is a noisy group of magazines that are called drug journals which are but the mouthpieces of the "patent medicine" interests. Because of their publicity methods, journals of the latter type have obtained a hearing that is all out of proportion to their importance. The science and art of pharmacy have suffered accordingly. If venders of secret remedies would read the *Druggists Circular*, they would learn what decent druggists think of their business.

THE DOCTOR WITH WRITER'S CRAMP

"Dr. Scribbler, Chicago, office hours 9-11, 1-3, 7-8," read his card. He was just a general practitioner with an average practice. Quite frequently there would be three or four persons waiting in his office. One day in September, 1916, he arrived promptly at 9, and the sight which greeted his eyes almost caused him to faint. The waiting-room was full. It was a case of "women and children first," however, for there was not a man in the place. Before Dr. Scribbler's eyes there passed visions of a season ticket for the opera, the new fur coat his wife wanted, the last payment on the mortgage, and his next insurance premium — and

1. Fish Meal: Its Use as a Stock and Poultry Food, Bull. 378, U. S. Dept. Agric., Aug. 22, 1916.

a lot of other little indebtednesses which he was expecting or wanting to meet. So he sat down at his desk and said, "Who's first, please?" Mrs. Jones came in with Johnny, aged 9, Mary, aged 11, and Susie, aged 13. "It must be an epidemic," thought Dr. Scribbler. "Doctor," said Mrs. Jones, "I can't send the children to school without a health certificate. The papers say that you are to give them to us free." Gone were the visions of luxuries and paid-up necessities. The doctor questioned the mother closely as to the children's past activities, examined each child's throat, nose, ears, skin and reflexes, and wrote out a certificate for each. By this time the congestion in the waiting-room had increased tremendously. The doctor took off his coat, refilled his fountain pen, and called for the next lot. By 12—he had worked right past the 11 o'clock hour—he had examined 150 children. At 12:30 the examination had assumed this form: "Where've you been last three weeks? Anybody sick near your house? Open your mouth; say 'Ah.' That's all." And he wrote another certificate. By 8 p. m. he had examined—save the mark—400, and his total income was \$0.00. He stepped out into the waiting room and addressed the remaining applicants, "You will have to come back tomorrow." Just then a man entered. "Come right in, Mr. Smith," said Dr. Scribbler. "Doctor," said Smith as he walked into the office, "I have to collect some accident insurance, and the company sent me these blanks and said you will fill them out for me free." When they examined Dr. Scribbler at the hospital, an hour later, the diagnosis was "acute shock superinduced by writer's cramp."

PLAYING TO THE GRANDSTAND

"Grandstander" is a term of more than mild reproach used to characterize the athlete who plays his game in showy fashion with an eye to the plaudits of the onlooking multitude. In football, he is always limping after a tackle; in baseball, he is excessively active, making unnecessary motions and attempting to cover ground he was never meant to cover; in golf, he adjusts his tee with a nicety which can have no effect on the distance of his drive, and if he "slices," the "gallery" is indulged with an exceedingly technical discussion of just how it happened. No one is so inclined to "grandstand" as the American officeholder or public official. The medical aspects of the matter are being displayed in the present epidemic of infantile paralysis. The measures employed by some officials to stay the progress of the epidemic, while apparently logical in every instance, at times impress the average observer as being merely an attempt to play to the grandstand. In some communities the health officers appear daily in interviews in which they call attention to their immense activities in preventing the spread of the disease. Every move is chronicled in the newspapers, and press notices are sent to those papers which fail to interview the official personally. Commissions are appointed to investigate when there are no funds for such purposes, and in some instances when there are not enough cases to form a respectable basis for an investigation. Fre-

quently a "grandstander" in athletics is rewarded merely by the hisses of those whose encomiums he seeks. It would not be strange if a similar fate should befall some of those public officials who carry the unsportsmanlike attitude of the "grandstander" into the care of the public's health.

PREVENTION OF ABORTION

Congress has voted an appropriation of \$50,000 for the investigation and control of abortion—but it is a disease of cattle and not of man that is to be investigated and controlled, and the undertaking is under the direction of the Bureau of Animal Industry. Why not appropriate \$50,000 for the investigation and control of abortion among human beings, and let the Public Health Service do the work? There is certainly every year a sufficient number of undesired and unplanned abortions, and a sufficient number of desired and planned abortions which would never be consummated, were the possible consequences known, to justify such an effort.

LIGHT PRODUCTION IN ANIMALS

The firefly, with its intermittent glowing, has always been regarded with wonder by all children and many adults. Years ago it was found that the dried luminous organs of the firefly will glow if moistened with ordinary water, but that no light is emitted if the oxygen is removed, as by boiling the water. In 1884, Raphael Dubois of the University of Lyons, working with *Pyrophorus noctiluceus*, the West Indian fire-beetle, demonstrated that there were two substances present in the luminous organs, one a thermostabile substance, luciferin, and the other a thermolabile enzyme, luciferase. He stated that luciferin was an albumin having acid properties and an active reducing power. It was oxidized readily with luciferase, potassium permanganate, peroxids, etc., giving off light and forming amino acids. Luciferase, on the other hand, had all the properties of an oxidizing enzyme. The work of Dubois has recently been confirmed by Harvey,¹ who studied *Pyrophorus*, the eastern American fireflies, *Photinus* and *Photuris*, and luminous bacteria. Harvey states that there is no doubt as to the existence of luciferin and luciferase, although he was unable to isolate the latter from luminous bacteria, probably because it occurs in an endo-enzyme. He finds that luciferase of one form will act with luciferin of another form, and vice versa. Whether or not all forms of luciferin and luciferase, respectively, are identical, is debatable. A luminous reaction which parallels animal light production may be made by taking an almost inconceivably small concentration of pyrogallol in water (1:254,000), adding first some vegetable oxidases (potato or turnip juice), and then some hydrogen peroxid. The pyrogallol plus hydrogen peroxid corresponds to luciferin; the vegetable oxidase corresponds to luciferase. In the fore-

1. Harvey, E. Newton: The Mechanism of Light Production, *Science*, Aug. 11, 1916, p. 208; Experiments on the Nature of the Photogenic Substances in the Firefly, *Jour. Am. Chem. Soc.*, 1915, xxxvii, 397.

going action, mammalian blood may be substituted for the plant juices. Although there is much work to be done, especially from a chemical standpoint, to prove it, yet the phenomenon of bioluminescence in the fire-fly appears to be simply an unusual enzyme reaction.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

DISTRICT OF COLUMBIA

Poliomyelitis in the District.—Four new cases of poliomyelitis were reported during the week ending September 9, of which two were the result of infection outside the District.

Opening of Schools Postponed.—Notwithstanding a report from the health officer that such action was not necessary, the board of education has postponed the opening of the public schools from September 18 to October 2 on account of poliomyelitis. The health officer reported that poliomyelitis had prevailed in the District to a relatively slight extent, that both knowledge and experience with respect to the disease indicated that the decline that had already begun would continue, and that there was no evidence to show that the disease was spread through school attendance.

Appointments to be Made in the Health Department.—Search is being made for the most available persons to fill two offices in the health department created by Congress in the appropriation bill enacted September 1. Appointments will be made, it is stated, without reference to residence in the District, in order to get the most efficient service. A chief medical and sanitary inspector is to be appointed, who, under direction of the health officer, is to give his whole time to, and exercise direction and control of, the medical and sanitary conditions of the public schools, at a salary of \$2,500 a year. He will assume charge of the thirteen medical inspectors and five graduate nurses now in the service. A chief food inspector, at \$1,800 a year, is authorized by the appropriation act, to have general supervision and control of the food inspection service, comprising seventeen subordinate inspectors.

Tuberculous Persons to be Excluded from Schools.—The attendance at public or private school of any person suffering from any communicable form of tuberculosis, either as a pupil, teacher, janitor, or helper, except at schools maintained solely for the instruction of tuberculous pupils, is forbidden by a regulation promulgated by the commissioners of the District, to take effect October 1. There is no school in the District maintained for the instruction of such pupils, but it is hoped that the promulgation of this regulation will lead to the establishment of classes for them. As indicating the need for this regulation and for the establishment of such classes, the health officer pointed out that in November, 1915, the records of the health department showed 127 children suffering from communicable forms of tuberculosis and in attendance at school, and that during 1915 there were reported 114 new cases among persons between 5 and 20 years of age.

ILLINOIS

Personal.—Dr. Ernest M. Ewers, Apple River, recently of San Juan, P. R., sails from San Francisco, October 7, to take up work in a hospital in the Orient under the Presbyterian Board of Foreign Missions.—Dr. Charles C. Peck, Harvard, is a candidate for renomination as coroner of McHenry County.—Dr. William M. Hanna, Aurora, was elected surgeon-general of the Grand Army of the Republic at its recent encampment in Kansas City.—Dr. Ira O. Paul, Winnebago, announces his candidacy for coroner of Winnebago County.

Chicago

Asks Appropriation for Poliomyelitis.—Health Commissioner Robertson has asked the school board to appropriate \$15,000 for laboratory work in connection with the medical inspection of schoolchildren.

Doctors' Fees Held Up.—The bills of eight physicians who have served on boards for the examination of feeble-minded persons have been reduced by the board of county commissioners in one instance from \$170 to \$5; and in others from \$265 to \$30; \$60 to \$5; \$105 to \$15; \$45 to \$5; \$40 to \$5, and \$110 to \$30.

Personal.—Dr. Albert E. Halstead has been asked to take charge of a French base hospital on the west front.—Dr. Christian B. Luginbuhl has been appointed surgical attaché to the American Legation, Berlin.—Dr. P. J. H. Farrell is a candidate for congress from the ninth district on the Democratic ticket.

Typhoid at Pumping Station.—It is reported that three employees of the Sanitary District of Chicago have died from typhoid fever during the last week and that three other cases have occurred, all traceable to infection at the Lawrence Avenue pumping station, where the hygienic conditions are said to be deplorable.

Children Must Have Certificates.—By joint action of the board of education and the commissioner of health, all pupils on entering school this fall must present certificates from authorized physicians that said pupils have no contagious or infectious disease and have not been exposed to any such disease within two weeks. Medical school officers will examine pupils having no certificates, and physicians at large have been asked to cooperate by giving their services where needed. The kindergartens of the public schools are not to open until after September 29. This measure is taken as an added guard against further increase of infantile paralysis or other contagion.

MARYLAND

Personal.—Dr. William A. Frontz of Johns Hopkins Hospital has been commissioned as major in the Royal Army Medical Corps, and has gone to France as a member of the Harvard unit.

Infantile Paralysis.—During the past week six new cases of infantile paralysis were reported to the city health department, and there were four deaths. The state board of health received a report of a positive case of infantile paralysis in Dorchester County from Dr. Lyle L. Gordy of Cambridge. The quarantine on several houses at Thistle Mills, near Catonsville, has been raised by the state board of health. The first case of the disease to appear in Catonsville was reported during the week, but it is thought the child contracted the disease while on his way home from North Carolina.

MASSACHUSETTS

Personal.—Dr. Albert B. Toppan, attached to the quarantine station at Balboa, Canal Zone, is visiting his parents at Parker River.—Dr. Fred M. Spalding, Boston, has been elected president of the Asquam Lake Fish and Game Association.

Infantile Paralysis.—During August there were 255 cases of infantile paralysis reported in the state, with thirty-three deaths, North Adams heading the list with eight deaths, Boston following with seven.—The opening of the schools of Medford has been delayed until September 26 on account of the prevalence of infantile paralysis.

Quarantine Station to be Sold.—It is reported that the mayor of Boston has come to an agreement with the assistant secretary of the treasury whereby the federal government will pay \$150,000 for the quarantine station at Gallup's Island, Boston Harbor. The formal transfer of the quarantine was made through the federal health authorities, June 1.

Pediatricists Meet on Hospital Boat.—Sixty-five physicians connected with hospitals and dispensaries of Boston met at the invitation of Dr. Henry I. Bowditch, Boston, on the floating hospital, August 23. A meeting was held at which fifty selected cases treated by the hospital during the season were discussed and a paper was also given by Dr. Wilson G. Smillie, Boston, on "Infectious Diarrhea and Dysenteries." August 23 was the record day of the season for the floating hospital, when 303 patients were cared for.

NEW YORK

Advice to Summer Residents Returning to City.—Dr. Hermann M. Biggs, in response to numerous requests as to the advisability of summer residents returning to New York and other places where infantile paralysis is still prevalent, suggests that children be not brought back, unless it is impera-

tively necessary, until there is indisputable evidence that the active spread of the disease has ceased. Such a time, Dr. Biggs is quoted as saying, may be set not earlier than October 1. Up to September 8, there have been 2,520 cases of infantile paralysis reported to the state health department, with 268 deaths.

New York City

Quarantine Against Cholera.—The Ward Line steamship *Monterey* and the Spanish liner *Montserrat* which arrived recently from Vera Cruz were detained in quarantine while their passengers, sixty-seven in number, were sent to Hoffman Island for observation for twenty-four hours. This step was deemed necessary in view of the report that cholera has broken out in Vera Cruz and several smaller Mexican ports.

Domestic Animals and Poliomyelitis.—Visiting nurses of the health department have been instructed that in visiting cases of poliomyelitis they shall make special inquiry regarding animals. If they find anything suspicious they report the matter immediately and the suspected animals are removed by the health department for observation. A veterinarian then examines the animal and if he finds the suspicions justified the animal is killed and a careful examination made. A veterinarian also visits the shelter of the Society for the Prevention of Cruelty to Animals to see if there are any suspected cases of animal infection.

Diabetes Research.—Under the special George Blumenthal scholarship of \$900 in the School of Medicine of Columbia University, Dr. H. Rawle Geyelin has made distinct additions to the knowledge of diabetes along clinical lines. This work has developed into a special clinic and Dr. Geyelin has been given an academic appointment as assistant. In addition to this scholarship there have been three undergraduate scholarships established during the last two years, and in the coming year there will also be a fourth. The students who receive these scholarships work as special assistants in the laboratory and are used as assistants in laboratory teaching.

Infantile Paralysis.—According to the records of the health department there have been, to September 9, 8,486 cases of infantile paralysis, with 2,100 deaths. The daily average of cases during the first week of September has been slightly under fifty, ranging a little higher for the excessively warm days. As was noted some time ago, the death rate has been somewhat higher than earlier in the epidemic, having advanced from 20 per cent., which was considered unusually large, to 41 per cent., with an average of about 25 per cent. —Announcement is made that Ward G. Crampton, director of hygiene, physical training and athletics in the public schools, has conferred with the health commissioner with a view to securing the cooperation of the departments of education and health for the purpose of formulating a program for the instruction of the public school teachers with reference to the prevention of infantile paralysis during the teachers' institute. —Mention has before been made of the effort of the health department to secure donors who have had infantile paralysis and who are willing to give blood to supply serum for the treatment of those having the disease. This appeal has been again emphasized. It is stated that up to the present time the amount of serum thus obtained has been only a fraction of what could well be used in the treatment of patients now entering the hospitals. If such individuals will communicate with the health department either by telephone or letter all arrangements will be made by the department for collecting the blood either at the laboratory of the department or at the donor's home. —The daily press announces that the Brace Fund is growing apace, and now amounts to something more than \$31,000.

Pay Clinic.—The following opinion has been rendered by the attorney-general of the state on this subject at a request of the Medico Economic League:

You state that you are informed that certain large charitable institutions of this city contemplate the establishment of night pay clinics for medical and surgical treatment of persons, on a general basis of One Dollar per visit. This is a matter which may be considered when occasion arises. Unless facts are presented showing the character of the dispensary and the manner of fixing the charge and the disposition of such funds, it is impossible to pass upon the question.

I have no hesitancy in stating, however, that a charge even of One Dollar, if made in accordance with the provisions of Section 290, by a dispensary which fully complies with the standards, requirements and purposes of Section 291 of the State Charities Law, would be lawful.

Whether a person who pays One Dollar for treatment at such a dispensary is a proper object of charity, depends entirely upon the circumstances in each individual case. If all that patient can afford to pay is One Dollar, and he may obtain treatment by a specialist for that amount at a dispensary, while treatment by the same specialist at the patient's home or the physician's office would be entirely above his

means, I do not see why such patient cannot avail himself of the services of such specialist. There are many physicians and specialists of great skill and high professional standing who give time to dispensaries to treat just such cases. It is their generous contribution to the general welfare of the community. The advantage of a dispensary is that the patient will there find a coordinated group of specialized physicians, surgeons and pathologists, working together in a comprehensive organization.

I see no danger of the use of dispensaries being abused by persons who can afford to pay the full quota of specialized surgical or medical treatment, for Section 296 of the State Charities Law provides that:

"Any person who obtains medical or surgical treatment on false representations from any dispensary licensed under the provisions of this article, shall be guilty of a misdemeanor, and on conviction thereof shall be punished by a fine of not less than Ten Dollars, and not more than Two Hundred and Fifty Dollars."

I feel that dispensaries of the standard conducted by the institutions named by you should be encouraged and assisted, rather than hampered and hindered.

PENNSYLVANIA

Municipal Hospital for Reading.—The Driscoll farm, north of Reading, has been purchased by the city for a municipal hospital. The price paid for the property was \$30,000.

Diphtheria in Conway.—There are so many cases of diphtheria in and around Conway that the health and borough authorities have appealed to the state health department to intervene and assist in stamping out the outbreak.

Personal.—Dr. Charles E. Roderick, pathologist at the Hazleton State Hospital, has resigned to become laboratory superintendent for the Florida State Board of Health. —Dr. David Earl Hemphill, Tarentum, has been commissioned first lieutenant, N. G. Pa., and assigned to the First Ambulance Company, Pittsburgh. —Dr. Fred E. Weddingen has been appointed city bacteriologist of Williamsport. —Dr. Oliver H. Fretz has resigned after twenty-three years' service as president of the Quakertown Board of Health. —Dr. Andrew B. Gloninger, Lebanon, has been mustered out of the United States Service. —Dr. Samuel H. Gilliland, for seventeen years connected with the Alexander Vaccine Farms, Marietta, has resigned from the biologic laboratory of that institution. —Dr. Edward S. Dickey, Pittsburgh, has returned after several months' service with the Russian army.

Philadelphia

Club Outing.—The Medical Club of Philadelphia held an outing on the Delaware River, September 11, on the steamer *Queen Anne*, which left the Arch Street wharf in the afternoon, returning about 10 o'clock.

Baby Death Rate High.—Despite extensive plans made early in the summer to save the lives of babies there were more deaths of infants in July than during the same period of last year. The number of children ranging in age from 1 day to 1 year who died during July, 1915, was 701, but this year 1,050 babies died.

Personal.—Dr. Charles K. Mills has been appointed consulting neurologist to the Hospital for Contagious Diseases. —Dr. Amin M. Saleeby has returned from Greece. —Dr. William Henry Furniss III, who went abroad, July 1, on a mission for the Emergency Aid in Philadelphia and who was taken ill, is reported to be improving.

Infantile Paralysis.—The epidemic of infantile paralysis in Philadelphia shows no sign of abatement. Ten more new cases were reported on September 9, and this makes the total of 649 cases since the epidemic began. Three deaths were recorded in the previous twenty-four hours, making the total number of deaths 197. The death rate for the disease per thousand in Philadelphia is 30.36, in New York the rate is 24.76 and in Camden is 30.01. Camden reported one new case on September 9, making a total of fifty-four cases since the epidemic began, with sixteen deaths. The disease is widespread throughout the city and has not been limited to any special sections. Several adults as well as infants have contracted the disease and died. The schools of Philadelphia will be closed until October 2, the only exception being college classes, and the third and fourth high and special classes in St. Joseph's College. These will open on September 18. Immune serum has been used to a considerable degree in the treatment of the disease in the Municipal Hospital. Reports given out claim that the serum has a specific influence but no official statements have been issued. The number of new cases reported for September 9 throughout the state of Pennsylvania totaled eleven. Dr. Samuel G. Dixon, health commissioner, claims that any attempt to suppress reports of cases of the disease will be dealt with severely by the health authorities. It has been stated that on several occasions the disease has been concealed in order to protect families from quarantine.

SOUTH CAROLINA

Personal.—Dr. James E. Daniel, Greenville, who has been serving for more than a year in the American Woman's War Hospital, Paignton, Devon, sailed from Liverpool on his return, August 12.—Dr. Le Grand Guerry has been elected president, and Dr. Pinkney V. Mikell, vice president of the Columbia Hospital Association.

Health Officers Meet.—A state federation of health officers was organized at a meeting called at the Isle of Palms, August 21, by Dr. James A. Hayne, Columbia, secretary of the state board of health, at which thirty-nine delegates from the state board of health and various county and city boards of health were present. The following officers were elected: president, Dr. Charles E. Low, Spartanburg; vice presidents, Drs. Davis Furman, Greenville, and J. Merceir Green, Charleston, and secretary, Dr. Marion R. Mobley, Florence.

TEXAS

Camp for Tuberculosis Patients.—It is expected that the city of Houston will donate a site for a camp for tuberculosis patients and that Harris County will cooperate with the city in providing the buildings for this purpose. About ninety persons who have tuberculosis have appealed to the Houston Foundation for relief.

Personal.—Prof. Carl T. Dowell, instructor of chemistry at the University of Texas, Austin, has been elected associate professor of chemistry at Tulane University, New Orleans, and was given a farewell recently by the faculty and students of the University of Texas.—Dr. William E. Spivey, Belton, has been appointed a state quarantine officer with station at Brownsville.

State Board of Health Topics.—At the recent quarterly meeting of the state board of health infantile paralysis was made a notifiable disease, as provided by the State Sanitary Code. It was decided that health certificates be required from persons under 16 years of age desiring to travel from infected points. Rules similar to those adopted at the Washington Conference as to the handling of the disease were passed.

CANADA

Hospital News.—The new Convalescent Hospital for returned soldiers in the old building of Knox College, Toronto, is rapidly drawing to completion and will be opened in another ten days. The hospital is furnished with beds and equipment throughout. The whole of the furniture has been given by private individuals and societies in Toronto, and the hospital will be one of the best equipped in Canada.

More Medical Officers Wanted.—The Canadian Army Medical Corps doing duty overseas is in need of more officers to cope with the rapidly increasing work. A call has been received in Toronto for more volunteers and until the required number has been received no further drafts into the R. A. M. C. will be permitted. All offers of medical practitioners who are qualified will be accepted and taken on the strength of the local C. A. M. C. unit, and then given as much training as possible. Applicants are to apply to the A. D. M. S., Camp Borden, Ont.

Personal.—Capts. Clarence Woods Johnston, C. A. M. C., Manitou, Man.; William Jonas McAllister, Calgary, Alta.; John Bruce McGregor, Winnipeg, Man.; Albert Ross, Blue Mountain, N. S.; Frederick James Tees, Montreal, Que., and Herbert William Wadge, Winnipeg, Man., all of the same service, have been decorated by the king with the military cross. Johnston established a new dressing station under terrific fire, working continuously for three days, and evacuated his wounded with complete success. McAllister was very devoted to duty under very heavy shell fire. His work at all times is described as splendid. McGregor cleared all his casualties under great difficulties and was regardless of personal danger in carrying out his duties. Ross continued to dress and attend to the wounded after all dugouts had been blown in, and attended to wounded in open trenches. Tees led his bearers to exposed positions under heavy shell and machine gun fire, and evacuated all his wounded. Wadge dressed and evacuated wounded for four hours in an advance dressing station under intense bombardment and then succeeded in evacuating all with extreme danger and difficulty.—Dr. E. O. Hovey, who is in command of the Grenfell Mission schooner, which in July, 1915, went to the relief of the Donald B. MacMillan Arctic Expedition, decided to remain in northern Greenland for a time along with other scientists of the expedition. The schooner has returned to

Battle Harbor, Labrador.—Word has been received in Woodstock, Ont., from Dr. Samuel McM. McLay, who went to England when the war began for graduate work. He accepted a chance to join the R. A. M. C., and has been serving ever since. About three weeks ago he returned to England wounded. He was working in a dressing station at the front in France when the enemy got range of the station, killing every occupant except Dr. McLay. Even the man on whom he was working at the time was blown to pieces.

GENERAL

Ohio Valley Physicians to Meet.—The annual meeting of the Ohio Valley Medical Association will be held in Evansville, Ind., November 15 and 16.

Personal.—Senate bill 3180, which passed the Senate, August 29, authorizes the appointment of Dr. Clarence C. Kress to the grade of captain, Medical Corps, U. S. Army.

New Head for Red Cross.—Elliot Wadsworth, a lawyer of Boston, was elected vice chairman and executive head of the American Red Cross at a special meeting of the executive committee, August 23.

Adventists Advocate Medical Inspection.—At the Adventists Camp held in Hastings, Neb., which closed August 30, resolutions recommending medical inspection in all Adventists' schools were adopted.

New Rear Admirals.—Under the new naval bill two rear admirals will be appointed from the Medical Corps by the president. Under seniority these will be Medical Directors William R. DuBose and James D. Gatewood.

Workmen's Compensation Bill Becomes Law.—The bill providing compensation for employees of the federal government disabled in the line of duty, and providing medical, surgical, and hospital services and supplies for all such employees injured in the line of duty, whether disabled or not, has been signed by the president and is now a law. A synopsis of this bill appeared in THE JOURNAL, Sept. 2, 1916, p. 755.

Medical Intern Examination.—The United States Civil Service Commission announces an open competitive examination for medical intern for both men and women at various places in the United States, October 4. From the eligibles, certification will be made to fill vacancies in St. Elizabeth's Hospital, Washington, D. C., at \$900 a year and maintenance. Persons who desire to take this examination should apply to the United States Civil Service Commission, Washington, D. C., for Form 1312, stating the title of the examination.

Appeal From Decision of Judge Advocate General.—Col. Henry P. Birmingham, acting surgeon-general of the army, has appealed from the approved opinion of General Crowder that the increase in the Army Medical Corps provided in the national defense act is effective by increments equally distributed over five years. Colonel Birmingham argues that this interpretation of the act will furnish a commissioned personnel for the Medical Corps of little above five per thousand instead of seven per thousand, as provided in the act.

Missouri Valley Physicians to Meet.—The annual meeting of the Medical Society of the Missouri Valley will be held in Omaha, September 21 and 22, under the presidency of Dr. John P. Lord, Omaha. Dr. Jabez N. Jackson, Kansas City, Mo., will deliver the address in surgery and Dr. Walter L. Bierring, president of the State Board of Health of Iowa, Des Moines, the address in medicine. Headquarters will be at the Hotel Fontenelle. Clinics will be held at various Omaha hospitals on the day following the close of the meeting for the benefit of visiting physicians.

American Chemists to Meet.—The forty-third annual meeting of the American Chemical Society will be held in New York, September 25 to 30, in conjunction with the Second National Expedition of Chemical Industries. Headquarters will be at the Chemists' Club, 52 East Forty-First Street, and the hotel headquarters at the Hotel Astor. Among the important papers to be presented at this meeting is one by Dr. Alice Hamilton, Chicago, chairman of the committee on industrial hygiene of the association, on "Dangers Other Than Accidents in the Manufacture of Explosives."

New Hospital Ship for Navy.—A ship built from the keel up for hospital purposes—the very first ship of its kind ever built anywhere—will soon be placed under construction by the navy department. Congress has appropriated \$2,500,000 for the purpose, and the necessary specifications have been completed by the bureau of construction and repair, with the cooperation of the bureau of medicine and surgery. It will

accommodate 300 patients in time of peace, with an estimated capacity of 500 under war conditions. Every essential detail of a modern hospital is laid down in the plans. The ship is to measure 460 feet in length with a beam of 60 feet, and will be furnished with several stabilizers, to reduce the roll to a minimum.

Bequests and Donations.—The following bequests and donations have recently been announced:

Mt. Sinai Hospital, Montefiore Home for Chronic Invalids, St. Vincent's, Presbyterian, St. Luke's and Roosevelt hospitals, New York, each \$5,000, by the will of Andrew Freedman.

Presbyterian Hospital, Philadelphia, will eventually receive one third of the estate of David M. Barrick valued at \$70,000.

Jefferson Standard Life Insurance Company, Greensboro, N. C., a donation of \$1,000 toward the erection of a tuberculosis hospital in Guilford County.

Missouri Association for the Blind, \$50,000; Home for the Friendless, St. Louis, \$25,000, and bequests to the St. Louis Children's Hospital and St. Louis Maternity Hospital, by the will of James J. Butler, St. Louis.

Georgia Infirmary, Savannah, Ga., \$1,000, as a memorial to Mrs. Harriet L. Barnard, by the will of James M. Barnard.

National Board of Medical Examiners.—The National Board of Medical Examiners will hold its first examination in Washington, D. C., October 16 to 21. On the first day there will be registration of candidates and written examinations in anatomy, chemistry and physics. On the second day there will be written examinations in materia medica, pharmacology and therapeutics, oral and laboratory pharmacology, hygiene and its divisions and oral and laboratory hygiene. On the third day there will be taken up laboratory and oral chemistry and physics and written examinations in obstetrics and medical jurisprudence. The fourth day will be devoted to written examinations in medicine and surgery, and on the fifth day there will be written examinations in pathology and physiology, demonstrations of microscopic and gross pathology and laboratory demonstrations and on the last day, clinical examinations will be held at government hospitals on medicine and surgery. Further information may be obtained by inquiry of the secretary, Dr. John S. Rodman, 2106 Walnut Street, Philadelphia.

OUR TROOPS ON THE BORDER

Malaria Mosquitoes in Army Camp.—The anopheles has been discovered among the swarms of mosquitoes which recently appeared in the camp of the First Illinois Cavalry at Brownsville. One case of malaria is said to have occurred.

Paratyphoid Spreads.—The paratyphoid epidemic in Texas has spread to other New York troops. Two paratyphoid cases are reported in the Second Infantry and one of the two recent deaths in the Seventh Infantry is said to have been due to this cause. There are at present said to be fifty men ill with paratyphoid in the Fourteenth Infantry.

Refreshment Stations Established.—Col. Jefferson R. Kean, M. C., U. S. Army, director general of military relief of the American Red Cross, commends the establishment by Red Cross chapters of refreshment stations for troops en route, and calls attention to the order recently issued returning 21,000 troops to their home station. He requests that chapters on the routes of travel inform themselves of the time at which troop trains are expected to arrive and provide refreshment and entertainment for them, as was so successfully done when the troops went south two months ago.

Health of Troops.—Under this caption the *Army and Navy Journal* discusses editorially the health statistics of the troops of the regular establishment and of the National Guard on the Mexican border. It compares the figures of Surgeon-General Sternberg's report from May to September, 1898, with the figures of mortality and morbidity in the present campaign. In 1898 there was a strength of 167,168 men, while this year there were 139,222 men in the field, August 5. In the war with Spain there were 1,715 deaths, of which 640 were from typhoid fever. In the National Guard this year, with a strength of 98,500 men, there were two deaths and a sick rate of 1.14 per cent. for the week of August 5. During the same week, the regulars reported six deaths and a sickness percentage of 2.45 for the 40,722 men on the border and in Mexico. The report from the Southern department for the week ended August 19 shows a sick rate for the National Guard of 1.17 per cent., and three deaths, while the regulars had a sick rate of 2.02 per cent. with two deaths. This accords with the figures of 1898, which showed a death rate of 3.62 among the National Guard and of 5.83 among the regulars.—Dr. Thomas Darlington, formerly health commissioner of New York, after an inspection of the health

conditions in the military camps along the border and in Mexico, reports that the sick rate is low, and states that adequate steps are being taken by the military authorities to safeguard the health of the guardsmen.—In a comment by General Pershing, August 22, on the health report, he cites the record of only one case of typhoid fever and of only six deaths among the regulars in a five-month campaign in Mexico as remarkable for an expedition serving in a country like Northern Mexico with nothing but field equipment.—There threatened at one time an epidemic of amebic dysentery in a camp in Mexico. When the sick rate reached 5 per cent., the chief surgeon and his entire corps were despatched to the camp from headquarters and after a quick and exhaustive study of camp conditions, measures were instituted which soon reduced the sick rate to 1.7 per cent. The chief means employed was the chloridation bag devised by Maj. William J. L. Lyster, M. C. There were at one time 125 cases of the disease in the camp, but this was soon reduced to thirteen.

Medical Work on the Border.—Col. Henry P. Birmingham, Acting Surgeon-General, U. S. Army, on account of circulars issued which have given the impression that the government was not taking adequate care of its troops on the border, has sent the following memorandum to the secretary of war:

The Medical Department has supplied every need and request from the Southern Department. In addition to the various small hospitals at minor posts along the border, we have established base hospitals at Fort Sam Houston and Fort Bliss, Texas. Base hospitals have also been authorized and are now being completed, supplied with personnel and equipment, at Brownsville, Eagle Pass, Laredo, Nogales and Fort Crockett. The hospital at Fort Crockett is not in process of organization. Should it be necessary to establish this hospital, it will occupy the building of the post. In addition, there are hospitals at Forts Huachuca, Clark, McIntosh, Columbus, Camp Douglas, Marfa, Del Rio and Deming. There are also seven field hospitals with the troops on the border, each with a capacity of 216 beds. This does not include the field hospitals of the Organized Militia now on the border. Field hospitals, while mobile hospitals, are always available to take care of the sick with troops until they can be evacuated to base hospitals. The government has expended large sums of money constructing new hospitals and increasing the bed capacity of the hospitals already built. The Southern Department has at its disposal, in addition to the money already expended on hospitals, \$300,000 to be used at the discretion of the department commander. In addition, the department has organized and is now having completed a hospital train for the transportation of the sick and wounded from the border stations to the base hospitals mentioned above.

The army at this time has established general hospitals at the Presidio of San Francisco, with a maximum capacity of 953 beds; at the Army and Navy General Hospital, Hot Springs, Ark., 600 beds, and at Walter Reed General Hospital, Tacoma Park, D. C., 320 beds. The department has completed plans for the establishment of general hospitals at Fort McPherson, Ga.; Fort Sheridan, Ill.; Fort Douglas, Utah; Fort Oglethorpe, Ga., and Fort Benjamin Harrison, Ind., should conditions warrant. These hospitals will have a capacity of from 500 to 1,000 beds. Plans have been completed for disinfecting trains in case it is necessary to enter Mexico, for the purpose of disinfecting clothing of the soldiers in order that they may be protected against typhus fever. All soldiers on the border have been vaccinated against smallpox and typhoid fever. Medical supplies are on hand sufficient for the needs of the army now in the field or under orders for the border. Attention is invited to the fact that for approximately five years the greater part of the regular army in the United States has been on the Mexican border; the health conditions of the troops have at all times been excellent, and they have been and are now free from the usual camp diseases.

I believe the best interests of the government can be served by announcing through the press bureau that the government is not at this time in need of such committees as the American Committee for the Maintenance of the Border Hospital, Brownsville, Texas, and that appeals such as that filed by Mrs. Harriman convey a false impression and tend to create a feeling of insecurity and distrust in the minds of the people of the government's ability to care for its soldiers. Contributions such as requested in the letter of Mrs. Harriman are absolutely unnecessary and the activities of such organizations should, especially at this time, be discouraged by the government.

FOREIGN

Pass Medical Supplies for Palestine.—The allies have granted permission for the passage through the blockade of medical supplies shipped by New York Jewish societies on the U. S. S. cruiser *Des Moines* for the relief of sufferers in Jerusalem.

Physical Education in Spain.—Spain is organizing a national conference to promote physical training for young and old, athletics, sports and gymnasium work. The first Congreso Nacional de Educación Física is to be held early next year at Madrid. It will be presided over by Professor Ocaña, who is one of the life term senators and professor of physiology at the University of Madrid.

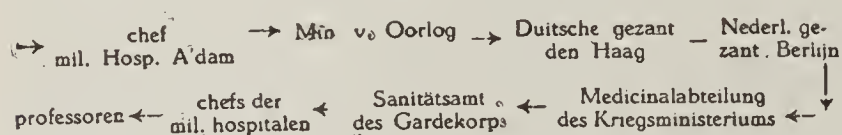
Base Hospital Unit Financed.—To finance the complete equipment of an American Red Cross base hospital unit which is being organized by the American Red Cross with a staff from the German Hospital, New York, a contribution of \$25,000 has been received from Mr. Fritz Achelis. The director of this unit will be Dr. Frederic Kammerer, who recently returned after active service with the German army.

Medical Equipment for Serbia Needed.—The Franco-Serbian Field Hospital Committee, of which Helen Hartley Jenkins is chairman, appeals for \$30,000 for the complete equipment of a movable hospital of 100 beds which will be manned by an American personnel. The Serbian army lost its entire medical equipment in its retreat last fall. Subscriptions for this should be sent to Henry B. Britton, Treasurer, 17 W. Thirtieth Street, New York.

Heat Strokes in Mesopotamia.—The British Mesopotamian Expeditionary forces have had to contend with intense heat in their work at the head of the Persian gulf. At Basra the temperature has ranged from 104 to 109. The treatment of sunstroke and heat apoplexy practiced in Arabia is the intramuscular injection of 20 grains of quinin, as it is believed that the malarial parasite is a potent factor in the causation of heat apoplexy. The quinin injection kills the parasite and reduces the fever. Three or four pints of cool water, as near the freezing point as possible, are then given as an enema and the patient is packed in crushed ice.

Sterilizing the Water of the Tigris.—On account of the polluted condition of the water of the Tigris, the expeditionary forces in Arabia have been exposed to many varieties of water-borne diseases, especially typhoid fever, cholera and dysentery. The medical staff has employed an effective method of sterilization analogous to that recently used by Maj. William J. Lyster of the Medical Corps of the Army. Water is put into large canvas tanks in which alum is suspended, this causing the settling of the mud. Chlorine water is then added in the proportion of 2 fluidounces to 10 gallons of Tigris water and in an hour the water is said to be safely potable.

Letter from Berlin.—I. Zeelandelaar, an officer of the Public Health Service of the Netherlands, recently went to Berlin to make a study of functional neuroses and their treatment, especially with psychotherapy. The minister of war of the Netherlands called his attention particularly to this latter subject. His report appeared in the *Nederlandsch Tijdschrift voor Geneeskunde*, August 19. He says, "The reflex arc which elicited the desired permission for me to visit the military hospitals at Berlin ran like this":



[*Oorlog* in the language of the Netherlands means "war," *Gezant* means ambassador.] The way thus provided for him was so smooth that, he states, even his luggage was not examined at the frontier, and he regretted not having brought double his supply of cigars. At the Berlin hospitals he was warned that he must not speak to any soldiers on any subject connected with military matters. He says of his visit to the psychopathic ward of the Moabit penitentiary, "It was light and airy and looked out on some sunflowers although this institution is an old and lugubrious building. Sunflowers are profusely cultivated in Germany now for the oil from the seeds. There were many Poles and Russians among the psychopaths here. Some of the men had 'prison edema.' Without kidney or heart disease, they have edema in the legs when they stand, owing to the unfavorable conditions of their life. Some of the men complained of being hungry. They do not get enough to eat. The food in the prison is entirely different from what it was before the scarcity. The supply of bread and potatoes is so much less than they are really hungry. They get other articles, such as marmelade, beer, fruit, etc., which they never had had before, but this does not content the men. The lack of all fat is what makes the hunger sensation so strong. Leppmann, still chief of the psychopathic ward as before the war, does the best he can, but cannot do much. He combines the strict firmness with the kindness which is indispensable in a position of this kind. One of the convicts had symptoms suggesting gastric ulcer, and he asked for consultation with a university specialist, which was in fact granted. The man can pay the consultant personally.

VOGT'S INSTITUTE

"O. Vogt and his neurobiologic institute are still housed in the old building where he has over a million specimens of brain tissue. He distinguishes 200 different fields in the cortex. Vogt told me that psychotherapy is not applicable to most of the soldiers who have been on active service, as their fear of being sent back to the front counteracts the effect of psychotherapy.

WAR PSYCHONEUROSES

"In this special field of the nonorganic nervous affections and psychoneuroses, which are so extraordinarily multiple in this war, Lewandowsky informed me that he regards them as exclusively psychic. Oppenheim's theory of 'molecular concussion' finds in him its greatest opponent. He does not apply treatment to this great mass of functional nervous affections. All that hysteria can produce in the way of deafness, dumbness, paralysis, tremor, contracture, etc., I saw in long series in his service. The men lie around without getting any special treatment. The stay in the hospital is made as little agreeable for them as possible. No or very few visits from the family and acquaintances are allowed. The motto is: 'Just wait and have patience and everything will go away of itself.' Sometimes this system succeeds, and sometimes not. When it fails and the man is declared unfit for further service, he is sent to his home as speedily as possible. He is reexamined a year later and may then be found fit for army duty. Lewandowsky has a high opinion of psychotherapy provided it is associated with occupation therapy and strict discipline in a suitable environment. But he does not think it can be applied in the ordinary hospital. Among the interesting cases was one of traumatic rigidity of the pupil after a blow in the face. Lewandowsky has seen other cases of this kind. An organic affection of the brain or spinal cord was out of the question in these cases. Leppmann also denounced the idea of attempting to apply psychotherapy in an ordinary military hospital, even in a special ward. By the time the men reach Berlin the hysteric phenomena are firmly established.

"To my question how epileptics get along in the war, Leppmann replied that epilepsy had not made itself noticeable during the war and, so far as he could judge, the seizures did not occur any more frequently. Sexual perversity did not seem to have increased. The psychoneuroses are not caused by the war, but their development is hastened in the predisposed and the manifestations of an inherited taint are more pronounced. Almost invariably it is possible to detect the predisposition in all such cases. Both Leppmann's and Lewandowsky's clinics are in the sixty-year old military hospital. A new building had been planned but the war interfered with its construction. The reason why it looks so extremely dingy is that there is no oil to paint it with.

OPPENHEIM'S SERVICE

"The clinic where Oppenheim displays his great talents and experience as a neurologist is installed in the magnificent structure, the home of the Museum of Arts and Crafts. The whole building is temporarily at his disposal and the clinics of his staff are also installed there, Kalischer, Flatau and others. Oppenheim's aid is frequently called on by the military authorities, and yet he finds time to study each patient and give a brief but clear insight into the case. Particularly interesting to me was the close cooperation of the neurologist and the surgeon. A whole group of cases were presented to the surgeon (Borchardt) and the two studied them together, even when it was not a question of an operation. The discussions were always right to the point. No one had time to waste on explanations. These cases were of wounds of peripheral nerves, plexuses, spine and skull. Neurolysis and other operations on the trunk nerves often improved function materially. One man shot through the cauda equina, completely paralyzed in the legs and bladder, was so improved by removal of splinters of bone that he now can run. The intimate cooperation of neurologist, surgeon, roentgenologist and serologist was truly remarkable. Not one but several roentgenographs are found in the reports of cases. The Wassermann reaction and lumbar puncture findings are recorded in a special register for each case, with an arrangement for ready reference. A medically trained secretary accompanies Oppenheim to every patient and records not only most fully all the objective findings but also the patient's complaints. There were numbers of neuroses in his service. Treatment was with electricity, psychotherapy and hypnosis. I noticed that the nervous patients were given a bottle of beer. Hysteric phenomena were frequently grafted

on organic affections. One man with a history of old syphilis presented symptoms of tabes. With closed eyes and feet together he fell, but not as with the true Romberg. He would have fallen like a block of wood if we had not caught him. Oppenheim said at once that this was hysteria, and held a bottle of valerian under the man's nose and asked him what it was. He started to open his eyes to look, but Oppenheim pressed on the eyelids and told him to smell without looking. His attention thus diverted, the man stood quietly for several seconds smelling at the bottle with his eyes closed and feet together.

"Lewandowsky avoids testing the sensibility of the skin with psychogenic neuroses, saying that the physician always suggests the findings here. No attempt at isolation was made at Oppenheim's clinic for the functional nervous affections. The treatment here does not seem rational or just. They are treated either with rigorous strictness or great mildness. It is difficult to know where the unconscious or intentional aggravation of the condition in these soldiers begins. The dread of being sent back to the front is also an important factor in the outcome. Treatment of hysteric deafness is peculiarly long and difficult to accomplish results, as no really good method of treatment seems to be known there. My method of treating it was received with great interest.

THE SCHÖNOW NEUROLOGIC SANATORIUM

"The Schönow institution, Laehr's realization of the ideal of a free sanatorium for neurologic cases, lies in fields and woods with ample equipment. Henneberg is in charge of the neurologic department, and the psychoneuroses are here also in large numbers. He does not expect much from psychotherapy for soldiers who have been at the front. The men have no wish to recover, and be sent back. He spoke with some bitterness of all these psychoneuroses, asking 'Did you ever see a hysteric with both arms paralyzed, or ever with the right arm paralyzed?' He has had two cases of psychogenic paralysis of the left arm. 'Have you ever seen one that let himself get soiled with feces?' He does not attempt to give them special treatment, and I became convinced from what I saw in Berlin that these victims of an inherited taint plus the emotions of the war do better when they are kept with the mildly wounded and are not isolated or segregated. At the earliest possible moment send them to their homes if at all suitable. Men with attacks of arrhythmia and tachycardia are given the needed repose in the Schönow sanatorium. It is equipped with everything for hydrotherapy and for training the men in various trades and in agriculture. I was present at the inoculation of a number of men against typhoid and cholera, which is repeated every six months. The heart neuroses are differentiated from organic trouble by E. Weber's method. The volume of the arm is registered with a plethysmograph before and while the foot is swung vigorously to and fro for fifteen seconds. Weber says that the curve then shows at a glance whether the heart is sound or not.

BERLIN'S FOOD SUPPLY

"In order to determine for myself whether the populace of Berlin is undernourished, I went to a free bathing place where men, women and children lie around on the sand in bathing suits. I was there for several hours on two days, and thus I saw many dozens of Berlin's people very nearly naked, and I was soon convinced that there can be no question of undernourishment there. I wish that my Amsterdam city patients only looked as well nourished. The food supply is poorest at Berlin on account of the crowded populace and the difficulty of equitable distribution. The Berliners have to do without much, but there is no real hunger. I took meals at all kinds of places, good and cheap restaurants. The food costs more than it used to, but there is enough and the poor are looked after especially. The most critical months are past as the fine harvest is at hand. The people eat less than they used to, but they have adapted themselves to this. They drink their coffee without sugar, eat their potatoes without gravy, spread their bread very thin with butter or use jam instead, eat no meat on certain days in the week, and they have lost their protuberant abdomens, but they are very far from starving.

USE OF HIGH FREQUENCY APPARATUS

"I also visited the 'High Frequency Promenade Hall.' It is fitted up with high frequency apparatus so that the hall forms a high frequency alternating field like that on a small scale in the solenoid. The electricity is so strong that touching with the finger elicits a powerful spark. The institution is gathered by an engineer and backed by considerable capital.

It is designed for treatment of deranged metabolism of all kinds accompanied by high blood pressure and nervous troubles. I myself know too little about the high frequency current to ever advise a patient of mine to go into an atmosphere so heavily laden with electric currents. It is proposed to erect such institutions in different cities, after the model of the one in Berlin, the first in the world."

MEDICAL PRISONERS OF WAR

In conclusion Zeehandelaar relates that he tried to investigate the truth of the rumor that Germany is detaining so many medical men and members of the nursing force belonging to the entente allies. He applied to the state department of foreign affairs and was given a permit to visit a prisoners' camp and talk with the medical men there, but did not have time to do so. He says of this, "At the state department I was told that it was a reprisals measure. The French and the Russians began this detaining of the medical men. Then Germany did the same. At the same time the official admitted that this holding prisoners the physicians and nursing force conflicts with the Geneva convention. I was told, moreover, that within a few weeks, an agreement is to be made with Russia and France whereby all directly connected with the medical service will be released except for a small percentage who are absolutely required for medical care of their own countrymen. Naturally only Russian physicians can be used for the different camps of Russian prisoners. This percentage to be detained is to be small and the same for each nation. Hence the larger proportion of our confrères now in prison camps are facing better times."

PARIS LETTER

PARIS, Aug. 17, 1916.

The War

A NEW SCHOOL FOR THE REEDUCATION OF CRIPPLES

Mr. Godart, undersecretary of state for the sanitary service of the army, has recently inaugurated at the Maison Blanche of Neuilly-sur-Marne, a new institution for physical reeducation. This has been organized by the union of foreign colonies in France for the benefit of victims of the war (THE JOURNAL, July 22, 1916, p. 297). The Maison Blanche is more particularly intended for those who have lost arms or legs. The creation of this school has been rendered possible by the liberality of Mr. Edward Stotesbury of Philadelphia, who in response to the appeal of Mme. Baylies of the New York committee, immediately placed at the disposition of the work about half a million francs (\$96,500), while the New York American committee was, on its part, able to collect more than 1,000,000 francs (\$193,000). The government furnishes the first artificial limbs for the cripples, but the upkeep of the institution is at the expense of the union of foreign colonies, which has made of it a model institution endowed with all modern conveniences and comforts, the most perfect equipment, and the most ingenious apparatus permitting the cripples to exercise various trades, even to cultivating their artistic talents. This school of physical reeducation is divided into two sections. In the one, French, English, accountancy, stenography, etc., are taught. The other is devoted to manual work and has workshops for fitting of joinery, cabinet making, shoemaking, tailoring, harness making, saddle making, basket work and tinsmith's work. The founders of this institution attach especial importance to its moral influence as much as to the physical reeducation of the cripples. The majority of these men return from the war depressed, discouraged by the loss of their limbs, anxious about the future, and with the feeling that the pension which they will receive will not suffice. It is, therefore, necessary to console them, to reassure them and to bring back their taste for life, their love of work, and their confidence in themselves and in the future.

THE FRENCH HOSPITAL IN ITALY

A year ago, I mentioned the establishment at Milan of the French hospital. The French colony in Rome has followed this example by installing a hospital for the Italian wounded. These, however, are not the only works of benevolence created by the French in Italy. Many French families living in this country have offered their services to the works of assistance or benevolence in favor of victims of the war. Thus at the entrance of a small village of Seravezza, situated in Spezia on the shoulder of Mount Carrara, the French flag floats over a large establishment. This is a hospital of fifty beds equipped with all modern conveniences,

which was established and has been maintained completely by the Henraux family, a French family installed for many generations in this region of marble quarries.

A SCHOOL OF CLOCK MAKING FOR CRIPPLES

Mr. Justin Godart, undersecretary of state for the military, sanitary service of the army presided at the inauguration of a school of clock making at Cluses (department of Haute-Savoie) where forty-five men who have lost their legs will be taught the trade of clock making.

A LIBRARY FOR THE BLIND

It is estimated that there are about 35,000 blind persons in France, of whom a considerable number owe their affliction to war wounds. For these unfortunates, reading is one of the few consolations left. Unfortunately, there are very few works in Braille type. We have two libraries in Paris and one in Lyons containing altogether 40,000 volumes. This does not amount to very much, because the ordinary book of 300 pages, when printed in Braille type, occupies four or five volumes. It has been decided to complete this library. At present, the preparation of a dictionary for the blind has been undertaken. This will be extremely succinct, each word being followed by only one word of explanation. This work of condensation is being carried out under the direction of the celebrated writer Anatole France, by a young man of letters, Guy-Robert de Costal. When the text is prepared, the work will be set up and printed on the Ernest Vaughan press. This is a very ingenious invention (THE JOURNAL, Sept. 17, 1910, p. 1036). It is intended for the composing and printing of Braille type, and it is so constructed that persons who are not typographers by profession can use it. In this way, those who have time at their disposal may employ it by composing and printing Braille type plates and thus contributing to the formation of the library for the blind.

DEATH OF PROFESSOR A. CHARPENTIER

Dr. A. Charpentier, professor of medical physics at the Faculté de médecine de Nancy, has died suddenly in his sixty-fifth year. Since 1888, he was a correspondent member of the Académie de médecine.

DIAGNOSIS OF PULMONARY TUBERCULOSIS IN SOLDIERS

At one of the last sessions of the Société médicale des hôpitaux de Paris, Dr. Emile Sergent, hospital physician, presented a communication on the differential diagnosis of pulmonary tuberculosis in which he insisted on the fact that this diagnosis should be made only when an examination completely demonstrates the existence of the disease, and permits of eliminating the commonest causes of error. Among the latter considerable place must be given to lesions and obstructions of the upper air passages and in particular of the nose and of the nasopharynx. It is certain that among the subjects suspected of consumption many are not tuberculous. Sergent is convinced that fewer men would have been discharged as tuberculous if the order for discharge had not been made until the patient had passed some time under observation. Dr. LeGenre, hospital physician, who is especially charged with the sorting out of tuberculous soldiers, brought forward observations which concurred perfectly with those of Sergent. There can be no doubt that, on the discharge sheets of soldiers, the word "hemoptysis" is somewhat abusively employed. For the diagnosis of tuberculosis one should not content one's self with a single symptom, such as hemoptysis, but should depend on a careful confrontation of the results furnished by the numerous diagnostic procedures at our disposal.

The Société médicale des hôpitaux passed a resolution recommending that all soldiers suspected of tuberculosis or subject to cough should be examined and reported on by specialists, for which purpose they should be detained in special hospitals for the necessary time.

THE ANATOMIC EXCURSIONS OF A BULLET

At the Réunion médico-chirurgicale de la 1-ère armée, Dr. Grandgérard communicated an interesting case of a shrapnel bullet which had entered through the left supra-clavicular fossa and, by roentgenoscopy, was found in the right auricle. One hour after the examination, the patient having got up, the ball was found again in the triangle of Scarpa in the track of the femoral vessel, and then, after a few minutes of lying on his back, opposite the right sacro-iliac symphysis at the level of the iliac vessels. At operation the projectile was found in the internal iliac vein, where the operator fixed it by a proximal ligature.

LONDON LETTER

LONDON, Aug. 28, 1916.

The War

THE TRAINING OF THE DISABLED FIGHTERS

The problem of the soldier disabled from fighting by some mutilation or disease but capable of being trained for some civil occupation is engaging the consideration of the authorities. It is realized that it is not sufficient to simply discharge the man from the army with a pension and an artificial substitute for any part which may have been lost. Establishments for the training of such men in some civil occupation have been formed. Of these the most important is the so-called "Command Depot" at Tipperary, Ireland, established under the direction of Prof. Sims Woodhead of Cambridge. Massage, electric treatment and drill of various kinds are given. There are handicraft schools in which the men are trained in crafts suitable to their abilities. Damaged men are trained in motor driving and in ordinary road repair work. The theory of the motor engine is being taught in order that they may be able to apply knowledge of it to farm work in which motor engines are coming into use. Other branches of industry, French polishing, electric fitting, and typewriting are also being taught. As a result of experience gained here the local executive committee has decided to equip and maintain a special institute in which discharged soldiers may attend classes organized for the men in the depot.

THE PRICES OF FOOD DURING THE WAR

For the first time during the war a decrease, though only slight, in the general level of the prices of food is announced. This occurred in July and was mainly owing to the decline in the price of potatoes though there was also a general reduction in the price of cheese. Imported meat was a little cheaper on August 1 than a month earlier. The average percentage increase on retail prices in July, 1914, at the beginning of each month since the beginning of the war is as follows:

	Per Cent.		Per Cent.
September, 1914.....	10	October, 1915.....	35
January, 1915.....	12	January, 1916.....	45
April, 1915.....	24	April, 1916.....	49
July, 1915.....	32½	July, 1916.....	61
		August, 1916.....	60

These figures relate to food only. It may be estimated that the average increase in the cost of living of the working classes, taking food, rent, clothing, fuel, and light and miscellaneous expenditure into consideration, between July, 1914, and the present time, is between 40 and 45 per cent., disregarding increased taxation and assuming that the standard of living has not been modified in view of war conditions.

THE EFFECT OF WAR ON INSANITY

The annual report of Dr. William Graham, resident medical superintendent of Belfast District Asylum, and one of the best known alienists in Ireland contains some remarkable conclusions as to the effect of war on insanity and mental disorder. The number of admissions to the asylum during the past year shows a marked diminution as compared with the average for the past ten years, and the interesting, and at first sight paradoxical, fact is that this diminution takes place at a time when we are involved in the greatest war in the history of the world. It has become a commonplace since August, 1914, to say that the world is growing mad, and there is a widespread, popular notion that the distress and agony of a conflict so terrible as the present one must end in profound psychic disturbance and alienation. Yet the fact is indisputable that insanity, like crime has lessened during the period of the war. It will not do to say that the vast number of men called to the colors include some who might otherwise be reckoned among our asylum population, for the greatest reduction is among women, 119 being admitted in 1915 against 154 in 1913. The future is equally encouraging. The problem of the probable influence of the war on the mental life of the nation and on insanity is not an isolated one. It is implicated in the general economic, sociologic, and physical state of the community at a given time. There are grounds for hope that especially, though not exclusively among women we shall find a great diminution in those neurotic disorders that form part of mental abnormality. Thousands of men who have gone or are preparing to go to the front have all their life been subject to the bondage of neurasthenic weakness and incapacity or of psychasthenic fears or hypochondriac fancies. They have never known what it is to live. The physical regimen under which these men are

compelled to live can have nothing but the best effect on those subjected to its discipline. Especially significant is the change coming over the lives of the women of the middle classes. These sheltered daughters of the merchant or of the professional man are now falling into line with their sisters of the upper and humbler social ranks. Idleness and ennui have lost their hold; healthy and unselfish activity is now the prevailing fashion. The war has enfranchised women. Among the mighty sociologic forces which the present world conflict has set in motion not the least will be the new value set on all sorts of good work and the new dignity which will crown the workers. With the ever-widening circle of women's interests a new barrier against mental disorder has been erected. War is the destruction of culture, art, education—the finest fruits of humanity. But the human mind has the strange power of wringing out of the worst evils some great and far-reaching good.

THE DEMAND FOR PHYSICIANS FOR THE WAR

The Local Government Board has addressed a circular to county and metropolitan borough councils, sanitary authorities, joint hospital boards, and committees and joint committees for appointing health officers, stating that it has become necessary to make provisional arrangements for enabling every physician of suitable age (45 and under) who can be spared from civil employment without serious injury to the civil population to place himself at the disposal of the authorities and to be prepared, if required, to take a commission in the army or navy in the near future. Authorities are accordingly requested to make a return of physicians of military age (1) who could be spared almost at once; (2) who might be spared later, and (3) who cannot be spared.

WHOLE CEREALS AS FOOD

Advocating the use of whole cereals as food in war time, Sir James Crichton-Browne, at a conference held by the Bread and Food Reform League, said that to some extent he was there as "a patriotic Scotsman" in defence of oatmeal. He believes it is the most nutritious of the cereals and certainly the most economical. Probably the people are better fed now in war time than in any previous period; but it is evident that cheaper foods will be required to take the place of beef, eggs and milk. Whole cereals will supply the necessary requirements but it is essential that they shall not be robbed of their principal constituents. Good digestion does not rest on appetite, but on mastication, and the prevalence of dental decay might be traced to the use of soft foods. He suggests that in munition canteens whole cereal foods ought to be provided, and he understands that the subject is now under consideration by the government.

Dr. Saleeby moved a resolution urging government attention to the importance of utilizing during war time whole cereals, especially whole wheat meal, whole wheat flour, oatmeal, unpearled barley, and unpolished rice. The greatest waste in the country, he said, is in regard to our use of wheat and coal, and it is true economy to attempt to get full value out of both.

Marriages

WILLIAM W. PERDUE, M.D., Mobile, Ala., to Miss Eleanor C. Bartlett of Chicago, in New York City, September 5.

JUDSON M. MEYERS, M.D., Superior, Wis., to Miss Jeanette Carlson of Spooner, Wis., in Duluth, Minn., August 26.

ERNEST MORRISON EWERS, M.D., Louisville, Ky., to Miss Ruth A. Schoefer of Pierceton, Ind., August 29.

IVAN CHARLES JACKSON, M.D., Portland, Ore., to Miss Lola Heskett of Enterprise, Ore., June 14, 1915.

HUGO FRIEDSTEIN, M.D., Kansas City, Mo., to Miss Helen Seelenfreund of Chicago, September 11.

ALLEN HAMILTON BUNCE, M.D., Atlanta, Ga., to Miss Lena River of Worcester, Mass., August 28.

LEWIS HASBROOK KEMBLE, M.D., Glendale, Colo., to Miss Virginia Lowe of Denver, August 28.

MARTIN HENRY MERBITZ, M.D., Chicago, to Miss Norma Helen Irasek of Milwaukee, May 17.

BENJAMIN NEWHOUSE, M.D., to Miss Esther Raum, both of Washington, D.C., September 10.

WALTER IVAN LILLIE, M.D., Flint, Mich., to Miss Opal Jones of St. Johns, Mich., August 30.

GROVE HARKNESS, M.D., to Miss Florence Trumpf, both of Vaukesh, Wis., August 15.

Deaths

Surg. Rudolph H. von Ezdorf, U. S. P. H. S., aged 43; in charge of the marine hospital at New Orleans, who was recently ordered to special duty at Lincolnton, N. C., died in that place, September 8, it is believed from heart disease.

Dr. von Ezdorf was a native of Pennsylvania, was graduated from the Columbian University, Washington, D. C. (now the George Washington University), in 1894. He entered the Public Health Service as assistant surgeon, March 2, 1898; was made passed assistant surgeon, Feb. 28, 1903, and was promoted to surgeon, Oct. 1, 1912. During the United States intervention in Cuba, Dr. von Ezdorf served as quarantine officer in Santiago and later was quarantine officer of the Isthmian Canal Commission at Cristobal and Colon. He was also on duty with the United States forces when they occupied Vera Cruz, Mexico, in 1914. From 1907 to 1910 he was in charge of the Quarantine Station at New Orleans, and in 1911, during the threatened invasion of the United States by cholera, he was quarantine officer of the port of New York. Dr. von Ezdorf was a Fellow of the American Medical Association and a member of the Association of Military Surgeons of the United States. By reason of his long residence in summer climates and his special study and research regarding yellow fever and malaria he was esteemed an expert in these diseases, and his death is a distinct loss to the Public Health Service and to sanitary science.

George Jameson Cook, M.D., Indianapolis; Kentucky School of Medicine, Louisville, 1866; aged 72; a Fellow of the American Medical Association; professor of gastro-intestinal surgery in Indiana University School of Medicine, Indianapolis, for more than thirty years; once president of the Indiana State Medical Association and Indianapolis Medical Society; for twenty years business manager of the Indiana Medical Journal; a pioneer specialist in the field of gastro-intestinal surgery and a physician greatly esteemed and much beloved; died at his home, August 31, from heart disease.

John Wesley Ward, M.D., Pennington, N. J.; University of Pennsylvania, Philadelphia, 1866; aged 76; formerly a Fellow of the American Medical Association; an honorary member and president in 1890 of the Medical Society of New Jersey; a member of the staff since 1866 and superintendent for more than thirty years of the New Jersey State Hospital, Trenton; died at his home, August 24.

William Hall Brace Pratt, M.D., Brooklyn; College of Physicians and Surgeons in the City of New York, 1867; aged 73; a Fellow of the American Medical Association; consulting physician and a member of the board of managers of the Methodist-Episcopal Hospital, Brooklyn; for forty-five years a practitioner of that city; died at his home, August 27, from arteriosclerosis.

John A. Fritchey, M.D., Harrisburg, Pa.; University of Pennsylvania, Philadelphia, 1879; aged 58; three times mayor of Harrisburg; for many years surgeon for the Pennsylvania System and Northern Central Railroad, and assistant surgeon of the Governor's Troop, N. G., Pa.; died in the Presbyterian Hospital, Philadelphia, from disease of the liver, August 25.

Ozias Willard Peck, M.D., Oneonta, N. Y.; Yale University, New Haven, Conn., 1857; aged 81; a member of the Medical Society of the State of New York; surgeon in the army during the Civil War; for twenty-six years health officer of Oneonta and consulting physician to the Aurelia Osborne Fox Memorial Hospital; died at his home, August 4.

Edward Meggenhofen, M.D., Chillicothe, Ohio; Kentucky School of Medicine, Louisville, 1893; aged 59; a Fellow of the American Medical Association and for many years a practitioner and druggist of Chillicothe; was instantly killed, August 23, when his automobile slipped from the towpath road into the bed of an empty canal near Chillicothe.

William Thackery Cathell, M.D., Baltimore; College of Physicians and Surgeons, Baltimore, 1886; aged 52; a member of the Medical and Chirurgical Faculty of Maryland and a specialist on diseases of the nose and throat; demonstrator of anatomy in Baltimore Medical College; died in the Hotel Emerson, Baltimore, August 24, from nephritis.

Warren Fisher Gay, M.D., Boston; Harvard Medical School, 1893; aged 50; a Fellow of the American Medical Association; a well known surgeon of Boston and at various times on the staff of the Boston Dispensary, Carney, St. Elizabeth's, Massachusetts General, and Massachusetts Women's hospitals, died at his home, August 26.

James Henry McLaughlin, M.D., Sutter Creek, Calif.; Kentucky School of Medicine, Louisville, 1891; aged 54; a member of the Medical Society of the State of California; who had been ill for many years with diabetes, died in the Dameron Hospital, Stockton, Calif., August 20, from cerebral embolism.

William Rutledge Hudson, M.D., Huntington, W. Va.; Johns Hopkins University, Baltimore, 1911; aged 32; a Fellow of the American Medical Association; while endeavoring to save his brother-in-law and brother from drowning in the Shenandoah River at Luray, Va., July 23, was accidentally drowned.

Earl Curtiss Peck, M.D., Philadelphia; Jefferson Medical College, 1914; aged 25; first assistant resident physician in the Philadelphia Municipal Hospital, Germantown; formerly of Newton, Mass.; died in the Municipal Hospital, September 5, from anterior poliomyelitis.

Howard S. Justice, M.D., Hutchinson, Kan.; College of Physicians and Surgeons, Keokuk, Iowa, 1865; aged 79; formerly a Fellow of the American Medical Association; for more than fifty years a practitioner of Missouri and Kansas; died at his home, August 25.

William George Brede, M.D., Minneapolis; University of Minnesota, Minneapolis, 1906; aged 40; formerly a Fellow of the American Medical Association; a member of the Minnesota State Medical Association; died at his home, September 5, from septic pneumonia.

Robert G. Witherspoon, Anderson, S. C. (license, South Carolina, years of practice); aged 70; formerly a member of the South Carolina Medical Association; a practitioner since 1875; died at his home, June 9, from chronic bronchitis.

Thomas T. Matlock, M.D., Dalark, Ark.; Beaumont Hospital Medical College, St. Louis, 1900; aged 41; is said to have shot and fatally wounded his wife and then to have committed suicide, August 21.

Marcus Francis Brown, M.D., Billings, Mont.; College of Physicians and Surgeons, Chicago, 1908; aged 35; a member of the Medical Association of Montana; died at his home, August 28, from neuritis.

S. P. Watson, M.D., Loris, S. C.; College of Physicians and Surgeons, Baltimore, 1884; aged 54; formerly a member of the South Carolina Medical Association; died at his home, August 14.

Tyner Emanuel Lowe, M.D., Greenfield, Ind.; Homeopathic Medical College of Missouri, St. Louis, 1908; aged 39; died at the home of his parents in Indianapolis, August 26, from carcinoma.

James S. Knott, Dallas, Texas (license, Texas, Eleventh Judicial District Board, 1879); aged 72; a practitioner for nearly half a century; died at his home, May 31, from uremia.

Josias Edgar Jones, M.D., Digby, N. S.; Harvard Medical School, 1858; aged 78; died suddenly from heart disease, while on a fishing trip in Nova Scotia, May 18.

Martin Giesy, M.D., Aurora, Ore.; Willamette University, Salem, Ore., 1868; aged 83; a pioneer practitioner and druggist of the state; died at his home, August 22.

Rudolph Goldstein, M.D., Tampa, Fla.; University of Louisville, Ky., 1894; aged 59; is reported to have committed suicide in his room in Tampa, May 2.

William McKelvey, M.D., Denver; University of Pennsylvania, Philadelphia, 1875; aged 64; died at his home, July 13, from perforating gastric ulcer.

M. J. Newberry, M.D., Lizella, Ga.; Atlanta (Ga.) Medical College, 1886; aged 54; died at his home, August 27, from cerebral hemorrhage.

La Fayette Cate, M.D., Adin, Calif.; Vermont Medical College, Woodstock, 1852; aged 86; died at his home, August 25, from heart disease.

Winfield S. Makemson, M.D., Rio Vista, Calif.; Medical College of Ohio, Cincinnati, 1884; died in Rio Vista, August 24.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

SULFURYL MONAL

Report of the Council on Pharmacy and Chemistry

Sulfuryl Monal is said to be manufactured by Monal Freres, manufacturing chemists of Nancy, France. It is sold in the United States by George J. Wallau, Inc., New York City. According to the label:

"Each Pastille { Contains: Sulfuryl (combined polysulphurets) = 0.35 centigr.,
Liberates: Nascent sulphuretted Hydrogen = 2 cub. cent."

The Chemical Laboratory of the American Medical Association was requested to check the amount of available hydrogen sulphid. An original bottle of Sulfuryl Monal was used; this contained tablets having the taste of licorice extract and an odor of hydrogen sulphid. The tablets were found to liberate about 6 c.c. hydrogen sulphid to each tablet.

Among the claims made for the preparation are:

"Dissolved by the saliva, Sulfuryl Monal reaches the stomach where, under the influence of the gastric juice, it generates nascent sulphuretted hydrogen. Professor Albert Robin's remarkable researches have proven that it is in the nascent state that drugs produce the greatest effect with the smallest dose. . . . Being thus eliminated by the entire respiratory tract: the lungs, bronchi and the throat, the sulphuretted hydrogen passes from the interior to the exterior, that is to say, goes right through these organs which are, as a consequence, thoroughly cleansed, antiseptized and freed of the pathogenic micro-organisms. . . . Then again, part of the sulphuretted hydrogen, liberated in the stomach, is eliminated by the mouth and acts as an antiseptic and disinfectant of the mucous membranes of the throat and mouth. Hence Sulfuryl Monal is a perfect protective agent against contagious diseases. . . . Numerous clinical tests have demonstrated its real efficacy in diseases of the throat and of the respiratory tract: laryngitis, pharyngitis, hoarseness, granulations, tonsillitis, colds, bronchitis, pulmonary catarrh, asthma, emphysema, grippe, whooping cough, simple and infectious pneumonia, and in the first stage of pulmonary tuberculosis."

The sulphids are practically ignored in modern textbooks. There is a rather extensive clinical literature on the subject, particularly in connection with sulphur waters; this, however, offers no good evidence for the therapeutic value of sulphids. Probably the tradition in their favor is largely due to the old popular idea that a disagreeable taste or odor is a mark of a good remedy.¹

When hydrogen sulphid is introduced into the body, the small amounts that appear in the expired air are insufficient for quantitative demonstration and it is highly improbable that the amount thus excreted has any germicidal action, or that enough is excreted in the lungs to cause irritation and a reaction. The claim that Sulfuryl Monal is "a perfect protective agent against contagious diseases" is unwarranted; the recommendation for its use in "simple and infectious pneumonia, and in the first stage of pulmonary tuberculosis" is dangerous and vicious. The Council declared Sulfuryl Monal ineligible for New and Nonofficial Remedies and authorized publication of this report.

[EDITORIAL NOTE.—With one exception, this product does not appear to be advertised in medical journals. We find, however, in the gallery of nostrums that grace the advertising pages of the *International Journal of Surgery*, that Sulfuryl Monal has its place. According to an advertisement that has been running some months in this publication, "affections of the throat and respiratory organs respond promptly" to Sulfuryl Monal whose "effects are rapid and certain" even in "incipient tuberculosis." This preposterous pronouncement is no worse than many others appearing in the same journal, but it is bad enough to indicate how uncritical must be the physicians who support—by subscription or contribution—publications that are still debasing scientific medicine.]

1. Liquid Sulphur—Sulphume, THE JOURNAL A. M. A., Dec. 2, 1911, p. 1853.

BI-TARIDE TABLETS

Report of the Council on Pharmacy and Chemistry

Bi-Taride Tablets, dark-brown tablets with a strong tarry odor, were submitted to the Council by the Germicidal Products Corporation, New York. According to information furnished:

"The tablet is a mixture and contains as active principle (25%) of the aromatic series of coal tar with the group formula $C_nH_{2n-3}(OH)$. Cane Sugar, Sugar of Milk, Boric Acid, etc., sufficient to ensure a soluble and stable tablet."

The identity of the "active principle (25 per cent.) of the aromatic series of coal tar with the group formula $C_nH_{2n-3}(OH)$ " is not declared, neither is the amount of boric acid stated, while the "*et cetera*" suggests the presence of other medicinal constituents, which are not named. In the letter of submission the phenol coefficient was given as 1.4 and the toxicity as 4 per cent. Enclosed with this letter, however, was a report which showed the toxicity to be 15 per cent. as compared with phenol.

The bottle containing the tablets has the name "Bi-Taride" blown in the glass while the carton containing the bottle bears the following recommendations:

"For fresh wounds, cuts, burns, bruises, boils, carbuncles, ulcers, erysipelas, gangrene, diseases of the scalp, vermin and in cases of infection and suppuration; destroys all germs of contagious and infectious diseases."

"Vaginal Douche, Useful in Leucorrhoea and other female disorders, allays inflammation, prevents contagion . . ."

Reliance on a germicidal preparation in such affections as erysipelas, gangrene and leukorrhea is likely to lead to harm, and advice to this end is pernicious. The Council voted that Bi-Taride Tablets be held ineligible for New and Nonofficial Remedies in that the composition [of the tablets] is essentially secret (Rule 1); in that the recommendations for their use constitute therapeutic exaggeration and an invitation to the public to depend on them in contagious and other serious diseases (Rules 6 and 4) and in that the combination of coal-tar derivatives with "Boric Acid, etc.," is irrational. After submission of this report to the Germicidal Products Corporation the Council authorized its publication.

GLYCO-THYMOLINE AND POLIOMYELITIS

One characteristic of the "patent medicine" business is that it trades on fear. Should an epidemic occur the market is flooded with new nostrums purporting to cure or prevent the disease in question, while the manufacturers of older "patent medicines" revamp their advertising so as to make it appear that their preparations are all that stand between the scourge and the public. One has but to remember "Peruna's" exploitation of the yellow fever epidemic in New Orleans some years ago and the way in which the exploiters of "Pond's Extract" played on the fears of the public at the time of the former meningitis epidemic in New York City.

At present the public is much exercised over the epidemic of infantile paralysis. Anticipating that the nostrum fraternity would attempt to reap a golden harvest from the public distress, the federal officials issued a bulletin of warning on the subject. Naturally, the bulletin was addressed to the public, the government assuming that physicians knew enough to avoid being misled by any such advertising campaigns. Apparently, the assumption is too broad. At any rate, the manufacturers of "Glyco-Thymoline" are circularizing physicians, one of whom writes as follows:

To the Editor:—I am enclosing circular letter that I received this morning which seems to me almost a crime. I do not suppose that there is any way to prevent anything of this sort, but it is certainly a shame to attempt to deceive people in this way. As I recollect, Glyco-Thymoline is almost inert, practically no more efficient than Dobell's solution.

E. FLETCHER INGALS, M.D., Chicago.

The circular letter referred to was on the stationery of Kress & Owen Company, manufacturers of Glyco-Thymoline. It read:

Dear Doctor:—Regarding Infantile Paralysis, it is conceded that the cause of infection is through the Nose, Mouth and Throat. Making this to be correct, we believe that there is no safer prophylactic measure than the use of Glyco-Thymoline, with three parts of

water, as a mouth, tooth and nasal wash, by means of the K. & O. Nasal Douche and the toothbrush.

Glyco-Thymoline tends to promote exosmosis, and prevents the absorption of the germ or toxic matter.

We would be very glad to send you samples of both Glyco-Thymoline and the Douche should you so desire.

With best wishes, we beg to remain,

Yours very truly,

KRESS & OWEN COMPANY.

Glyco-Thymoline has been discussed in these pages. A report of the Council on Pharmacy and Chemistry pointed out that this "patent medicine" is simply a weak antiseptic, so feeble that even in full strength it does not kill *Staphylococcus aureus* in four hours and is of little, if any, greater therapeutic value than sterile salt solution. Yet, Glyco-Thymoline has been recommended by its manufacturers, either directly or inferentially, for such diseases as diphtheria, ophthalmia neonatorum, consumption, etc. Today its manufacturers put it forward as one of the safest prophylactic measures against infantile paralysis and have the effrontery to make this suggestion, not to the uninstructed public but to the medical profession. Presumably, as a business organization, the concern believes it will convince a sufficient number of physicians of the therapeutic efficacy of its product to pay for the cost of this advertising campaign. If it appraises the situation correctly there need no longer be any wonder expressed that in the recent suit against THE JOURNAL, "patent medicine" makers were able to enlist the help of medical men.

Correspondence

The Deaf Child's Dependence on the Physician

To the Editor:—Helen Keller gratefully acknowledges in her autobiography her indebtedness to a physician for telling her mother that she ought to write to the Perkins' Institution for the Blind for advice about the education of her little daughter stricken with blindness and deafness.

It is not always that physicians receive credit for the useful advice they give outside their professional realm. But, on the other hand, many physicians fail to render this service. Scarcely a month passes that I do not see deaf persons whose condition with regard to speech and education would have been much more favorable if the physician to whom they were taken in childhood had given their parents the address of some competent authority on the teaching of the deaf by the speech method, to whom they could have applied, either by letter or in person, for advice and guidance.

Deaf children are almost wholly dependent on physicians for the information that leads to a beginning of their training in speech and lip reading sufficiently early to insure the best results in each case. The years between birth and the age of 5 are of the greatest educational importance to a deaf child, and it is only through the physician that knowledge of where to get the necessary guidance can reach the parents early enough to be of the utmost benefit.

The word of the physician has great weight for good or ill, and it should be spoken advisedly. The parents of a deaf child and the physician desire first of all the restoration of hearing. If this cannot be attained, they desire to enable the child to speak and to understand when spoken to, and to live a normal life among hearing and speaking people. The tendency of deafness is to segregate its victims, and this tendency is unfortunately increased by certain methods employed by many teachers in the education of the deaf. It is to the employment of finger spelling and sign language during the impressionable educational period that the creation of the typical "deaf-mute" is principally due. If the child is carefully trained from its earliest infancy to associate ideas with the visible movements of speech, and his thought habits are formed along normal lines of intercourse by the universal method of communication, he will not find himself an alien using a foreign language when he leaves the school and takes up his life work.

1. THE JOURNAL A. M. A., Oct. 10, 1914, reprinted in the ninth (latest) edition of "The Propaganda for Reform."

The physician who, by his advice, or by his failure to advise, allows the deaf child to enter the abnormal environment of the silent method of teaching, is helping to deprive that child of a fair chance to surmount his misfortune to the utmost possible degree. When he directs the child's parents to some person who believes in, or at least uses silent methods of communication in his dealings with his pupils, the physician is heading that child toward deaf-mutism and isolation.

Probably the person to whom the physician sent the parents for guidance says that his is a "combined school" in which they employ all methods of reaching the imprisoned mind of the child: that they teach by speech and lip reading as well as by finger spelling and the sign language. As a matter of fact, many years of experience have shown that it is not possible to develop adequately the inherent possibilities of practical speech and speech reading when silent methods of communication are employed with the pupils during their school life. The child goes into such a school a possible member of a speaking community, and comes out a deaf-mute, whose only means of communication with those around him is either by finger spelling, the sign language or pencil and paper. It is even true, sometimes, that the child whose deafness has occurred after speech has been acquired, and who enters those portals a speaking person, comes out dumb.

Bearing these facts in mind, the physician should place his patient in communication with some educator who does not use the primitive methods of silent communication. If such a person is not available close at hand, for a personal interview, an address should be given to which a letter may be sent asking for guidance. Educators are like physicians in giving freely and willingly their best advice and service to rich and poor alike.

I will gladly send to any physician on request a list of the schools for the deaf in this country and Canada, classified according to method of instruction and location, where a deaf child can be educated free of charge.

JOHN DUTTON WRIGHT,
1 Mount Morris Park, West, New York City.

Note on Present Condition of Patient in Case of Implantation of Testes, Previously Reported

To the Editor:—Last May (THE JOURNAL, May 13, 1916) I reported a case of double implantation of testes, taken from the dead body, in a subject who had lost both testes. This report comprised the details of the operation and the condition of the patient and of the implanted organs seven months after the implantation. The patient reported, Aug. 15, 1916, one year and fifteen days after the implantation. I found that, while a moderate degree of atrophy of the implanted organs had occurred, they were still much in evidence, being about the size of the testes of a boy of 10 or 12 years of age. They were firm, of fairly normal contour, and the epididymides were plainly definable. The sexual function was normal and more than ordinarily vigorous. The patient stated that, when conditions were favorable, he was in the habit of having satisfactory coitus every other day. He also stated that his muscular vigor was exceptional, and that he could hold his own again in various forms of athletics. He expressed himself as so well satisfied with results that, should it become necessary, he would gladly submit to a repetition of the implantation.

G. FRANK LYDSTON, M.D., Chicago.

Dr. de Tarnowsky vs. Jenner Medical College

To the Editor:—The annual announcement of Jenner Medical College has just been sent me, and I find my name listed in its faculty as professor of surgery. The only connection I have had with Jenner Medical School has been through some of their students attending my Cook County Hospital clinics, which are open to students and graduates of all schools.

GEORGE DE TARNOWSKY, M.D., Chicago.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

POWERS OF HEALTH OFFICERS

To the Editor:—Please answer the following questions: Has a municipal or city board of health the authority to prevent entrance into that state or municipality of a person suffering from an infectious disease, and traveling in a private conveyance? For example: A child suffering from diphtheria and needing antitoxin and hospital treatment is being carried by a private conveyance to a hospital in a neighboring city. Can the health officers of this neighboring state or city prevent the entrance in a private conveyance of the patient mentioned? If so, must this duty be especially designated or will the general state law allow that much executive action to the health officers?
R. D. T.

ANSWER.—Generally speaking, most state health laws vest the state health officer or some similar official with the power to quarantine against the entrance of infectious diseases. These laws give this official the further power of making rules and regulations vesting local officials with a like power of quarantine. Many of these health laws frequently vest local officials with this power, usually subject, however, to the state health officers.

The health laws of many Southern states frequently specifically mention railways and vessels, as being subject to the regulation of health officers, state or municipal. Under one rule of construction, a law thus specifically mentioning certain things thereby impliedly excludes other things which might be of the same class. But in this case the power of a health officer to prevent the entrance into a state of a person infected with a communicable disease would not necessarily come from this section, but would come from the general powers vested in the health officers under the health laws. The quarantine of the case would not be because of the conveyance but because of the disease. A state may so quarantine under that power which is called the police power and which gives a state the right to protect itself against another state. Subdivisions of a state, such as a county or a municipality, have a similar right of power when so vested therewith either by the health officers or the state health law, such as the state law giving the local governing bodies powers to regulate controllable diseases. See Chapter 22, Article 3, Sections 736, 739, and Chapter 228, Article 1, Section 7061, Alabama Laws; Chapter 4348, Sections 1117, 1118, 1120, Florida Laws, and Sections 1463, 1662, Georgia Political Code.

RESUSCITATION FROM DROWNING

To the Editor:—Please answer the following questions: 1. What are the most approved methods for resuscitation of the drowned? 2. What is the longest time that a person can remain submerged in water and live, and is resuscitation possible after one hour's submersion? 3. Is the so-called Scandinavian method of holding the head of the patient under water scientific, and has it been adopted by the United States government? 4. Please refer me to references on the general subject of resuscitation.

E. P. STRATHERN, M.D., St. Peter, Minn.

ANSWER.—1. The method of resuscitation advised in government bulletins and by the Commission on Resuscitation from Electric Shock is that of Schäfer. The patient is held with the head down so that the water may run out of the lungs by gravity. He is then placed flat on his abdomen. The operator stands straddle over the patient and makes alternately pressure and relaxation with both hands on the base of the thorax about twenty times a minute. It has been shown that by this procedure more air is moved than by the older Silvester method. The use of some simple apparatus to inflate the lungs rhythmically is probably of more value than simply external pressure. It is important that the manual method be not neglected if the more elaborate apparatus is not on the spot. The use of oxygen is rational. Cardiac massage, the injection of epinephrin into an artery followed by saline solution, as advocated by Crile, and the direct injection of epinephrin into the pericardial sac may be a useful procedure if the conditions are such that they can be practically carried out. The respiration usually fails long before the circulation. It has been suggested that whenever any form of direct inflation of the lungs is attempted pressure be made on the rigid trachea, thus collapsing the esophagus; otherwise the air will simply inflate the stomach.

2. It is not definitely known how long a person may be under water and be revived. The statements as to the actual

time a person has been submerged are often untrustworthy. If syncope takes place at once and no water enters the lungs, the individual will live much longer than if he had attempted to breathe under water.

3. The idea of siphoning the water out of the lungs by keeping the head submerged seems irrational because this would probably not form a siphon in any sense.

4. The following are some recent references on the subject of resuscitation:

Schäfer, E. A.: Artificial Respiration in Its Physiologic Aspects, *THE JOURNAL*, Sept. 5, 1908, p. 801.

Henderson, Yandell: Resuscitation Apparatus, *THE JOURNAL*, July 1, 1916, p. 1.

Frazier, C. H.: Resuscitation by Cardiac Massage, *THE JOURNAL*, May 20, 1911, p. 1448.

Dooley, D. H.: On Resuscitation, *Univ. Missouri Bull.*, October, 1913. The Resuscitation of the Heart After Arrest, editorial, *THE JOURNAL*, Jan. 1, 1916, p. 32.

Gunn, J. A., and Martin, P. A.: Intrapericardial Medication and Massage in the Treatment of Arrest of the Heart, *Jour. Pharmacol. and Exper. Therap.*, 1915, vii, 31.

NAPHTHALENE IN GASOLINE FOR AUTOMOBILES

A subscriber has sent in some tablets with a circular advertising Inajiffi (Inajiffi Fuel Company, Akron, Ohio). The circular reads in part:

"More Power for Less Money
IMPORTANT

To Automobile, Motorcycle,
Motorboat Owners,
Operators and Dealers

Inajiffi Prepared Gasoline is 100% Efficient.
Contains neither Alcohol, Acid, Ether
or Camphor.

Serves You Quickly, Faithfully, Economically
You will Never Know the meaning of Real Engine
Economy and Efficiency until you experience the
quiet, smooth, easy-running and augmented power
features produced by INAJIFFI."

The tablets were submitted for examination to our chemists, who report:

The tablets had the odor of naphthalene and also the general physical properties of this substance; the material of the tablets melted at about 150 C., and this melting point was not changed materially when the powdered tablet was mixed with naphthalene; it was readily and completely soluble in chloroform, and burned on ignition without leaving an appreciable residue. When the material was treated to form the naphthalene according to Mulliken (Identification of Organic Compounds, 201) a substance was obtained which melted at from 150.5 to 151.5 C., uncorrected. This agrees closely with the melting point of naphthalene, which is stated to melt at 150 C., uncorrected. The examination shows that the tablets consist to a large extent, if not entirely, of naphthalene.

We publish this note to suggest to our readers that before investing in any of the hundred and one accessories and improvements sold in connection with automobiles, they obtain reliable, unbiased opinions as to the merits of the contrivance in question.

Because of its high carbon content, naphthalene, when dissolved in gasoline, does add some energy, but its solubility is so low that the gain is negligible. Certainly in the present instance the addition of the few tablets the dealers recommend is so small that the effect would not be noticeable. But the addition of this small quantity did produce appreciable augmentation of energy, why not buy naphthalene in the form of mothballs?

BORDET-GENGOU BACILLUS—ETIOLOGY OF WHOOPING COUGH—PERTUSSIS VACCINE

To the Editor:—1. Can you tell me something about the Bordet-Gengou bacillus used in the preparation of Mulford's pertussis vaccine? 2. Is the etiology of whooping cough proved? 3. Has the vaccine given satisfactory results as treatment or as prophylaxis?

HAROLD G. GEGGIE, M.D., Wakefield, R. I.

ANSWER.—1. The Bordet-Gengou bacillus was first described in 1906. It is somewhat larger than *Bacillus anthracis*. It occurs singly and in groups. It has rounded ends, is nonmotile, and possesses no flagella. It has neither spores nor spores. It stains poorly with ordinary aniline dyes, and is gram-negative. It stains readily with carbolfuchsin, methylene blue, carbol toluidin blue and methylene blue. Like the influenza bacillus, it can be made to grow in media which do not contain hemoglobin. Bordet and Gengou recommend a potato-glycerin-blood agar medium. The organism is aerobic.

2. The etiology of whooping cough has been a controversial subject for several years. It is now generally believed that the Bordet-Gengou bacillus is the cause of whooping cough. This organism is found in the majority of cases, and has not been isolated from those free from the disease.

3. According to New and Nonofficial Remedies, 1916, irregular but somewhat encouraging reports of the use of vaccines of this bacillus are available. In general, the evidence indicates that it is of value both for prevention and for treatment, although some writers report that results have not been satisfactory. Four preparations are described in New and Nonofficial Remedies.

The following references may also be consulted:

Hess, A. F.: Use of a Series of Vaccines in Prophylaxis and Treatment of an Epidemic of Pertussis, *THE JOURNAL*, Sept. 19, 1914, p. 1007.

Whooping Cough, Therapeutics, *THE JOURNAL*, Jan. 30, 1915, p. 434.

Cause of Whooping Cough—Value of Pertussis Vaccine, Queries and Minor Notes, *THE JOURNAL*, Aug. 29, 1914, p. 796.

Pertussis and Vaccination, editorial, *THE JOURNAL*, Aug. 21, 1915, p. 724.

VACCINES IN PERTUSSIS

To the Editor:—There are so many bacterial vaccines on the market that the general practitioner is confused and uncertain as to their use. What is the consensus of opinion as to their value in pertussis?

A. B. FITCH, M.D., Factoryville, Pa.

ANSWER.—See reply to question three in letter above to Dr. Geggie.

USE OF PARAFFIN BY FRENCH ARMY SURGEONS

To the Editor:—Can you give briefly the paraffin method used by the French army surgeons of treating burns? I understand that they use such a method with great success.

C. C. GREEN, M.D., Beaver City, Neb.

ANSWER.—It may be that our correspondent refers to the use of a proprietary preparation, to which reference has already been made. See Current Comment entitled "Miracles in the War Zone," *THE JOURNAL*, Aug. 12, 1916, p. 516; also a Query and Minor Note, p. 535 of the same issue. It is possible, however, that he is referring to the method mentioned by our Paris correspondent in the communication published in *THE JOURNAL*, Jan. 22, 1916, p. 290, from which we quote the following:

INJECTIONS OF PETROLATUM AND SOFT PARAFFIN IN FISTULOUS TRACTS PRODUCED BY WOUNDS OF WAR

Dr. Marquis of Rennes has reported to the Société de chirurgie de Paris some excellent results given by injections of a mixture of petrolatum and soft paraffin in cases of serious lacerations, the repair of which seems difficult or likely to be indefinitely prolonged and especially in large fistulous tracts where drains had been placed for a long time. After various attempts at forming a mixture with a higher melting point than petrolatum, which, melting at 40 C. (104 F.), is absorbed by the dressing, Marquis decided on a mixture of nine parts of petrolatum and one of soft paraffin. This petrolatum and paraffin mixture, melted in a water bath, is injected into the fistula with a syringe of 20 c.c. while a tampon closes the opposite orifice of the fistula. These injections are repeated every day or every two days. Before this treatment, fragments of projectile, of clothing and of bone should be carefully removed from the wounds. It is not necessary to wait until suppuration has completely ceased but it should not be profuse.

These injections of petrolatum and paraffin are painless, and they shorten the time of healing of fistulous tracts considerably.

DEATH FOLLOWING BLOW ON HEAD OR SOLAR PLEXUS

To the Editor:—A man dies immediately following a blow by a fist on his neck or face. Necropsy reveals no fracture or hemorrhage in or within the cranium or spinal canal, and no pathologic condition of the heart, coronary arteries or kidneys. What might be the cause of death? Would it be possible for a blow over the solar plexus to cause immediate death? Kindly omit name and address in answer.

A. R. V.

ANSWER.—A blow on the head may be followed by concussion of the brain or shock, either of which conditions may give rise to immediate death without any noteworthy necropsy findings. The pathology of shock is still imperfectly understood, but in some cases death is probably due to vasomotor or cardiac paralysis. Blows falling in the epigastric region over the large plexus of sympathetic nerves may cause immediate death. The cause of death in such instances is probably a cardiac or respiratory paralysis which may not be accompanied by any gross anatomic changes. The subject is discussed in all good textbooks on legal medicine.

LICENSED THROUGH RECIPROCITY		Year	Reciprocity
College		with Grad.	
College of Physicians and Surgeons, Chicago.....	(1901)		Illinois
Rush Medical College.....	(1915)		Mississippi
University of Kansas.....	(1906)		Kansas
Maryland Medical College.....	(1907)		Delaware
Detroit College of Medicine.....	(1901)		Michigan
University of Michigan Medical School.....	(1893)		Oregon
Marion Sims College of Medicine.....	(1893)		Missouri
St. Louis College of Physicians and Surgeons.....	(1897)		Missouri
University Medical College, Kansas City.....	(1897)		Iowa
John A. Creighton Medical College.....	(1907)		Iowa
University and Bellevue Hospital Medical College..	(1911)		New York
Starling Medical College.....	(1893)		S. Dakota
Medico-Chirurgical College of Philadelphia.....	(1912)		Pennsylvania
University of Pennsylvania.....	(1908)		Pennsylvania
University of Tennessee.....	(1914)		Tennessee
Vanderbilt University.....	(1909)		Missouri
University of Vermont.....	(1908)		Vermont
Imperial University, Tokyo.....	(1905)		Utah

Book Notices

PULMONARY TUBERCULOSIS. By Maurice Fishberg, M.D., Clinical Professor of Tuberculosis, New York University. Cloth. Price, \$5 net. Pp. 639, with 119 illustrations. Philadelphia: Lea & Febiger, 1916.

This book is presented to supply the general practitioner with information on the etiology, diagnosis, prognosis and treatment of pulmonary tuberculosis, its clinical forms and common complications. An experience of eighteen years with tuberculosis problems in New York has laid the foundation for this task. The author gives the results of his personal experiences, and furnishes many valuable references on every phase of the problem. The home treatment of tuberculosis, the importance of constitutional symptoms, tuberculosis in the aged, and the importance of economic conditions as affecting the diminution of tuberculosis are considered. A strong distinction is drawn between active disease and tuberculous infection. Physical diagnosis and roentgenography are gone into minutely. In treatment, attention is given to psychotherapy and the wise use of available means, considering the pocket-book of the patient. In the discussion of medicinal treatment, the use of tuberculin is condemned. Artificial pneumothorax is clearly set forth. Some omissions are noted, one of these being the lack of citation or reference to the standard Turban or National Association classification of tuberculosis. Too great stock is taken in the childhood immunization against tuberculosis with a consequent neglect in completely considering prophylaxis and prevention in the adult. In spite of a number of minor statements which may be questioned, the book is full of interesting and enlightening information concerning pulmonary tuberculosis.

A TEXT-BOOK OF PATHOLOGY. By W. G. MacCallum, Professor of Pathology in the College of Physicians and Surgeons, Columbia University, New York. Cloth. Price, \$7.50 net. Pp. 1085, with 575 illustrations. Philadelphia: W. B. Saunders Company, 1916.

Dr. MacCallum has written this book evidently with the diseases of the body in mind, discussing the pathology of each condition on the basis of etiology. The book is a treatise on medicine as well as a pathologic textbook. He describes many specific cases illustrative of the conditions discussed; such case reports add greatly to the practical value and interest of the book. After each chapter references to literature are given, chiefly with a view to enable the student who wishes to study any subject further.

The author points out continuously the limitations of our knowledge. He says of cloudy swelling:

"All this is very contradictory and confused, but at least we may see that it is scarcely believed any longer that the granular opacity of the organ cells in infections and intoxications is due to the accumulation of protein food materials, but that it is intimately related to changes in the specific granules of the cell. More study is necessary to make the matter quite clear."

Of hyaline degeneration:

"This expression is loosely employed to class together, in the present state of our ignorance, a great many unrelated substances, usually recognizable only with the microscope, which have in common, besides their protein nature, only their translucent clear or hyaline appearance and their tendency to stain brightly with such acid dyes as eosin."

In discussing new growth of tissue and tissue repair, he says:

"Very vague, too, are our notions about the substances which cause the sudden new-growth of tissue at the onset of puberty, and especially those which produce the remarkable changes in the breasts and other organs in pregnancy."

Particularly interesting is the author's discussion of arteriosclerosis. After discussing numerous views which have been advanced, he says:

It seems more probable that, as the French have so long suggested, arteriosclerosis is the effect of some injurious or poisonous agent acting upon the intima of the arteries, as it is not upon any other organ, with destruction, fat accumulation, and repair. What this agent may be is as yet uncertain."

In the discussion of shock the recent experimental studies have been considered. A chapter of particular interest is

that devoted to the effects of light, radiant energy and electricity on the tissues. The clinical method of the study is particularly well illustrated in that section of the book devoted to the pathology of the conduction bundles of the heart. This includes a brief discussion of the mechanism by which recent studies have been made and illustrates by electrocardiographic curves the results of the various changes in the condition of the heart tissues. On page 504 two exceptional case reports are given which are illustrated with photographs of lesions resulting from a staphylococcus septicemia. Special sections are devoted to the various acute infections; the chapter on poliomyelitis being particularly interesting at this time.

The book is based on the course in the subject which the author gives at the College of Physicians and Surgeons of Columbia University, New York. Several sections usually included in books on pathology, for instance, the biology of bacteria and other parasites, malformations, and many diseases of the nervous system—are not discussed, and little is said of resistance and immunity. The book is not, therefore, a complete reference book on the subject of pathology. It is, however, one of the most practical and interesting modern books on the subject. There are 575 excellent illustrations, practically all new and especially prepared for this book from specimens in the department of pathology headed by Dr. MacCallum.

A MANUAL FOR FIRE PREVENTION AND FIRE PROTECTION FOR HOSPITALS. By Otto R. Eichel, Director, Division of Sanitary Supervisors, New York State Department of Health. Cloth. Price, \$1 net. Pp. 69. New York: John Wiley & Sons, 1916.

In this book Eichel states the significant points concerning fire prevention and protection which should be borne in mind by those interested in hospital construction and management. Local and state restrictions and the requirements of insurance underwriters are now so systematized that the hospital superintendent could not neglect this subject, even were he careless. The author emphasizes the importance of prevention rather than protection. He outlines the minimum amount of equipment which hospitals should possess for overcoming incipient fires. In three chapters he outlines various dangers which must be particularly guarded against. The most important and, perhaps, the best part of the book is that dealing with the hospital fire department. The author outlines a scheme for the organization of hospital attendants for action during fires, and describes the conduct of the fire drill. He also indicates recent literature of service in connection with this work. While the book contains nothing new to those acquainted with the general aspects of the subject, it will serve as a timely reminder to hospital superintendents and others that fire is an ever present menace.

Miscellany

Pulmonary Tuberculosis Survey in Cincinnati

Public Health Bulletin 73 contains a report on an investigation into pulmonary tuberculosis in Cincinnati. Though published under the title "Tuberculosis Among Industrial Workers," its scope is wide, as it covers also predisposing causes. The survey was originally undertaken at the request of the board of health and of the Antituberculosis League of Cincinnati, in order to determine to what degree the high phthisis death rate of that city was influenced by industrial conditions. In order to ascertain what effect, if any, occupation has on pulmonary tuberculosis, Surgeons Robinson and Wilson inspected 154 factories, representing thirty-eight different industries, and examined 19,932 persons. The second part of the inquiry related to the predisposing causes of tuberculosis in cases reported to the board of health. The housing and economic conditions of families of the tuberculous were studied in detail. In the same way it was endeavored to ascertain what had been the most prominent predisposing factors of the disease among the inmates of the municipal tuberculosis hospital. Meteorologic conditions and the prevalence of Ohio river floods were also collated with the regional prevalence of pulmonary tuberculosis. The prevalence of other diseases usually considered as predis-

posing to tuberculosis was carefully investigated and, finally, consideration was given to the racial character and rate of growth of the population. The conclusions are that:

1. Climatic conditions, floods and prevalence of other diseases have no influence on the death rate from pulmonary tuberculosis in Cincinnati.

2. Occupational hazard has been one of the factors predisposing to tuberculosis in a considerable number of cases, but there seems no reason to believe that this cause is more active in Cincinnati than elsewhere.

3. The fact that the white population has a larger proportion of Germans and of Irish, and a small proportion of Jews and of Italians, together with the large number of colored people, is shown to be one of the reasons for the high tuberculosis death rate.

4. The comparative slowness of the growth of the city has had a similar effect because, among other reasons, it inhibits the destruction of old and the building of new houses.

5. Poor economic conditions, bad housing and the inadequacy of financial relief for families whose wage earner is tuberculous, form a closely interrelated group of factors for the causation and maintenance of a high tuberculosis death rate.

6. Insufficient provision for the care of incipient cases, insufficient knowledge as to the distribution of persons afflicted with the disease, inadequate cleansing and disinfection of houses and rooms vacated by consumptives and inadequate segregation of advanced cases were found to be among the most important causes of the high death rate.

The recommendations follow from these conclusions, and they are:

1. Institution of measures whereby a more accurate knowledge can be had of the whereabouts of all cases.

2. Strict medical surveillance over families in which tuberculosis exists.

3. Medical examination of industrial workers.

4. Improvement in sanitary and hygienic conditions in work places; the improvement of home conditions by providing sanitary homes.

5. Revision of the building code and the placing of tenement house inspection with the health department.

6. Increased segregation of advanced cases.

7. State industrial insurance to enable workers' families to be provided for while remedial measures are being carried out.

8. Medical examination of lodging house inmates.

9. The erection of a sanatorium for the treatment of incipient cases.

Inosite as a Food

It is more than sixty years since inosite, hexahydroxybenzene, $C_6H_{12}O_6$, was first described as a constituent of muscle by Scherer (*Ann. Chem.*, 1850, lxxiii, 322). The identity of its empiric formula with the hexose carbohydrates like glucose, and the widespread distribution which inosite was soon found to have in the tissues and fluids of animal structures, as well as in the plant kingdom, served to arouse considerable physiologic interest in the compound. Students of a generation ago will recall in particular the attempt to establish some sort of relation between inosite and the carbohydrates. Külz of Marburg, to whom we owe many important observations in the field of the pathology of diabetes, fed large quantities of inosite to healthy persons and also to diabetics. In neither case was he able to recover more than insignificant amounts of the compound from the urine; and inasmuch as the diabetics showed no increased elimination of sugar after ingestion of inosite, Külz concluded at one time that the new substance might be available in the diabetic organism as a source of energy in place of sugars (Külz, E.: *Beitr. Path. u. Therap. d. Diabetes Mellitus*, 1874, i).

It is apparent, however, that, instead of being oxidized in the body, inosite given by mouth may be lost again with the feces, destroyed by the micro-organisms of the alimentary tract, or stored up in some tissue. In none of these cases would it reappear in the urine unchanged, yet it would

not be a source of energy to the organism. The best test of the oxidative metabolism or combustion of a substance in the body is furnished by studies with the respiration apparatus in which the consumption of oxygen and the production of carbon dioxide can be measured accurately. The ratio of these values, that is, the respiratory quotient, CO_2/O_2 , ascertained under suitably controlled conditions, gives an index to the nature of the metabolism in the body. A substance of carbohydrate nature tends to raise the quotient toward unity.

If inosite were oxidized in the body in the same manner as the carbohydrates or glucose, for instance, then a rise in the respiration quotient might be expected. R. J. Anderson (The Utilization of Inosite in the Dog, *Jour. Biol. Chem.* 1916, xxv, 391; Anderson, R. J., and Bosworth, A. W.: The Utilization of Inosite in the Animal Organism, *ibid.*, 1916, xxv, 399) put the problem to the exact test in an experimental animal. In the case of the dog he found that inosite is not utilized to any extent. It is neither stored nor oxidized in the body, but the greater part is excreted unchanged. Even as much as 2 gm. per kilogram of body weight do not cause any appreciable rise in the respiratory quotient. The reason is not far to seek. More than three quarters of the amount of inosite fed has been recovered from the excreta. It is absorbed very slowly from the intestine; hence it may cause more or less severe diarrhea, and only a small portion leaves the body through the kidneys.

Of late there has been considerable discussion of a compound, phytin, which represents inosite conjugated with phosphoric acid, presumably as a rule as inosite hexaphosphoric acid, in which form it is widely distributed in the seeds, roots and tubers of plants. (An elaborate review of the subject has been prepared by Rose, A. R.: *Biochem. Bull.* 1912-1913, ii, 21). Phytin has appeared in the medical literature endowed with a great variety of problematic virtues, most of them attributed to the organic combination of phosphoric acid. Little has been said about the inosite component of the molecule; indeed, it was not until comparatively recent years that inosite was understood to be the organic component of the phytin molecule. When phytin is fed, inosite is presumably liberated in the digestive tract. The evidence recently obtained by Anderson and Bosworth at the New York Experiment Station, Geneva, gives no promise of nutritive value to inosite in the organism of man. Their results confirm earlier observations that inosite given by mouth disappears without more than very small quantities appearing in the urine. When inosite is taken by human subjects at the rate of about 0.5 gm. per kilogram of body weight per day, it produces some diarrhea at first or frequent soft stools. After a few days the stools, although more frequent than usual, are likely to be of nearly normal consistency. Anderson and Bosworth observed no marked or appreciable effect on the metabolism of man. Inasmuch as less than 10 per cent. of the inosite ingested was eliminated unchanged in the urine and none was found in the feces, it remains to be ascertained whether it was destroyed by alimentary bacteria; for the negative observations on dogs make it highly improbable that inosite is burned up in the body.

Society Proceedings

COMING MEETINGS

- Am. Assn. for the Study and Prev. of Inf. Mort., Milwaukee, Oct. 19-22.
- Am. Assn. of Obstetricians and Gynecologists, Indianapolis, Sept. 25-27.
- American Association of Railway Surgeons, Chicago, Oct. 17-19.
- American Public Health Association, Cincinnati, Oct. 24-27.
- American Roentgen Ray Society, Chicago, Sept. 27-30.
- Clinical Congress of Surgeons, Philadelphia, Oct. 23-28.
- Idaho State Medical Association, Twin Falls, Oct. 5-6.
- Indiana State Medical Association, Ft. Wayne, Sept. 27-29.
- Kentucky State Medical Association, Hopkinsville, Oct. 24-27.
- Minnesota State Medical Association, Minneapolis, Oct. 11-13.
- Missouri Valley Medical Society, Omaha, Sept. 21-22.
- Nevada State Medical Association, Reno, Oct. 10-12.
- New England Surgical Society, Boston, Oct. 5-7.
- New Mexico Medical Society, Albuquerque, Oct. 11-13.
- Pennsylvania State Medical Society, Scranton, Sept. 18-21.
- Virginia State Medical Society, Norfolk, Oct. 24-27.
- Wisconsin State Medical Society, Madison, Oct. 4-6.

Medicolegal

No Direct Claim Against Employer for Services to Employee

(*Bloom vs. Jaffe* (N. Y.), 157 N. Y. Supp. 926)

The Supreme Court, of New York, Appellate Term, First Department, reverses a judgment for \$21 obtained by the plaintiff, a physician, for medical services to an injured workman, and dismisses his complaint, with costs. The court says that it was conceded at the trial that the workmen's compensation commission had fixed the physician's compensation at \$21, by which the parties apparently meant that the commission approved a claim for services of this amount and included it in the award to the workman, as provided by Section 24 of the New York workmen's compensation law. The employee assigned the award, or this portion of it, to the plaintiff, who, on these facts, was awarded the judgment for \$21 against the defendant, who was apparently the employer of the injured workman. It seems to the court quite plain that the plaintiff physician had no cause of action. At common law a physician who rendered services to an injured employee had no right of action against the employer, although the injured employee in a proper case might have recovered the reasonable value of such services as part of his own damages. The workmen's compensation act has given an injured employee a new kind of remedy, and seeks to compensate him for all injuries suffered in the course of his employment, regardless of whether these injuries were caused by the negligence of his employer. As part of this compensation it provides in Section 13 for medical service at the expense of the employer, and where the employee has been compelled to procure such service himself the law makes provision for the inclusion of a claim for such service in the award made to the employee. The primary purpose of the statute is not, however, to provide compensation to the physician, but solely to provide compensation to the injured employee for such medical service as the law permits him to procure at the expense of the employer. It does not, therefore, provide for any award to the physician, but merely gives the physician a lien on the compensation awarded to the workman, which "shall be paid therefrom only in the manner fixed by the commission." In this case the plaintiff was not seeking to enforce his lien on the compensation awarded to the employee, but was seeking to recover the amount directly from the employer. Moreover, even if he were seeking to enforce his lien on the award in a direct proceeding before the commission, he would be bound to show that the commission had fixed the manner of its payment. The assignment from the injured employee could give him no right of action, because the statute expressly declares that claims for exemptions or benefits due shall not be assigned. In basing this decision on the ground that no award had been made to the plaintiff which he could enforce against the defendant, the court does not seem to imply that in any event payment of an award could be enforced against the employer, except by action instituted by the commission as provided in Section 26. The plaintiff had under no circumstances any direct claim for compensation against the employer.

Unlawful Practicing of Medicine by Clairvoyant — Evidence

(*Commonwealth vs. Lindsey* (Mass.), 111 N. E. R. 869)

The Supreme Judicial Court of Massachusetts, in overruling exceptions to the conviction of the defendant of unlawfully practicing medicine, says that, if the defendant was a clairvoyant and as such came within the exception of the Massachusetts statute, he could not prescribe medicine for the cure of disease, even if the diagnosis of it and the kind of medicines prescribed were revealed to him through clairvoyance. Near the street door of the building in which he carried on his business was the sign, "Dr. Willard M. Lindsey, Inc." This was the name of a corporation of which

he was the president. He also was the president of another corporation, The Magnetic Sanitarium Company. It was plainly for the jury to say whether, in the sale of the medicines, he was acting entirely as the agent of the corporations, or was engaged at the time in the practice of medicine. His guilt or innocence was to be determined by what he actually did. It was not to be determined by what he purported to do. A requested instruction to the jury was properly denied, which stated that, if the people who consulted the defendant believed him to be a clairvoyant and the defendant purported to treat them by that method of treatment or if he purported to ascertain their physical condition by means of clairvoyance, it was not important for the jury to decide what constitutes clairvoyance. Nor was it error to permit the commonwealth to introduce evidence of the defendant's acts and conversations on different days between April, 1913, and November, 1914, although the commonwealth had elected to rely on Nov. 24 and 30, 1914, respectively, as the days on which the offenses were committed. While it is a well established rule of law, in the trial of a criminal case, that the commonwealth is not allowed to introduce evidence of other crimes with the purpose of showing the defendant to be guilty of the offense charged, it is equally well established that evidence of other crimes and acts is admissible when they are a part of a common purpose, where the plan or scheme of the defendant is a material circumstance, and when the course of the defendant's business is a matter of importance in passing on his guilt or innocence. Where the several visits and consultations of a patient with one from whom she is receiving medicines are but parts of the same course of treatment, where the speech or conduct of the defendant on one of the occasions may be equivocal, and it is essential to determine the dominant purpose of the defendant on the day of the offense, then the conduct of the defendant on other days, and as a part of the same transaction, may be a matter of great importance, and therefore of probative value. Assuming, as the defendant claimed, that he could sell and deliver drugs and medicines without violating the particular statute under consideration, the commonwealth had a right to meet this defense by showing the plan and purpose of the defendant, as well as his method of business, in order that the jury might determine whether, November 24 and 30, he was acting in the capacity of a salesman or as a physician. As sales of liquor at other times than that alleged have been held admissible as showing the intent with which the specified liquors have been kept, so the intent with which the defendant disposed of his medicines on the days in question, whether as sales of goods to customers or as medicines prescribed by himself, might be shown by his conduct respecting people and medicines in his office on other occasions.

Liability for Insanity Following Injury to Syphilitic Employee

(*Crowley vs. City of Lowell* (Mass.), 111 N. E. R. 786)

The Supreme Judicial Court of Massachusetts holds that, compensation having been awarded for total incapacity as provided in the workmen's compensation act, the decree should be affirmed, although the city contended otherwise on the ground that no causal connection between the injuries of the employee and the general condition of paresis rendering him insane, and requiring his commitment to an asylum, was shown by the record. The material evidence before the committee on arbitration, submitted without the introduction of further testimony to the industrial accident board on review, warranted the findings, the court says, that the employee had "a preexisting constitutional disease known as syphilis," which, being dormant, left his ability to perform the arduous work for which he was hired unimpaired, and that because of the nature of the accident arising out of and in the course of employment, his nervous system suffered a shock sufficiently severe to aggravate and accelerate this condition, until general paralysis or insanity resulted, depriving him of all capacity for work in the future. The statute prescribes no standard of fitness to which the employee must conform, and compensation is not based on any implied warranty of perfect health, or immunity from latent and

unknown tendencies to disease, which may develop into positive ailments, if incited to activity through any cause originating in the performance of the work for which he is hired. What the legislature might have said is one thing, what it has said is quite another thing, and in the application of the statute the cause of partial or total incapacity may spring from, and be attributable to the injury just as much where undeveloped and dangerous physical conditions are set in motion producing such result, as where it follows directly from dislocations, or dismemberments, or from internal organic changes capable of being exactly located.

Counties Not Liable for Unauthorized Attendance on Poor

(*Guerin vs. Clarke County (Wash.)*, 155 Pac. R. 1035)

The Supreme Court of Washington says, in affirming a judgment in favor of the defendant county, that the plaintiff physician sued the county for professional services rendered in the county to one resident and eight nonresidents indigent, but judgment was properly rendered against him, for he neither had a claim to begin with nor had properly presented one. These persons were not accepted paupers, and no county officer had requested the plaintiff to treat them. Nothing can be plainer, under Rem. & Bal. Code, Sec. 8377 et seq., than that, however much the poor may of a sudden require a physician, a bill for such work cannot be run up against the county without an order from some one in authority. Even were the court to suppose the county under a common-law obligation, this thing has long been regulated by statute. Neither that statute nor reason exposes the counties to what might otherwise become enormous charges, unnecessary services, and feigned situations. These are old statutes and this their old interpretation.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

September, XII, No. 3

- 1 *Scarlet Fever, Morbidity and Fatality. H. H. Donnally, Washington, D. C.—p. 205.
- 2 Congenital Dextrocardia with Patent Ductus Ovale. H. J. Morgan, Toledo.—p. 233.
- 3 *Pyelitis of Infancy. R. M. Smith, Boston.—p. 235.
- 4 *Acetone Bodies in Blood of Children. F. Moore, Des Moines, Iowa.—p. 244.
- 5 Types of Pneumococcus Found in Pneumonias of Infants and Young Children. M. Wollstein and A. W. Benson, New York.—p. 254.
- 6 *Intradermal and Repeated Intradermal Injection of Diphtheria Toxin with Reference to Schick Test. D. M. Cowie, Ann Arbor, Mich.—p. 266.
- 7 *Epidemiology of Pertussis. P. Luttinger, New York.—p. 290.
- 8 *Anaphylactic Skin Reaction to Diphtheria Bacilli. J. A. Kolmer and E. L. Moshage, Philadelphia.—p. 316.
- 9 Sarcoma of Kidney Treated by Roentgen Ray. A. Friedlander, Cincinnati.—p. 328.

1. **Scarlet Fever.**—In all, something over 7,000,000 cases have been collected by Donnally but for various reasons some of these have had to be put aside, only those being retained concerning which it was believed that cases and deaths were well reported. Among approximately 2,000,000 cases there were 104,500 deaths, which gives a case fatality of $5\frac{1}{4}$ per cent., while the morbidity rate was 3.9, that is, about four persons in each 1,000 inhabitants had scarlet fever, of whom one person in twenty died. Periodicity in the appearance of epidemics of scarlet fever cannot be made out. Morbidity and mortality rates for scarlet fever seem independent of each other. A decline in morbidity has not generally been made out. In cases in which notification has been of longest duration and most thorough (Norway) a reduction in the incidence of scarlet fever has been observed. Season itself does not influence morbidity. The sexes as a whole show equal susceptibility. Under 5 years of age boys are more susceptible, while between 5 and 15 years of age girls are

more susceptible than boys. About half of the cases occur in children between 3 and 8 years, and 90 per cent. in those under 15 years of age. About two children out of three between 3 and 8 years of age contract scarlet fever if exposed to it in their homes, if they have not previously had it. Scarlet fever appears to be a milder disease than formerly. Different epidemics may vary greatly in virulence. Scarlet fever has been regularly more prevalent in some places than in others. It has been consistently attended by greater fatality in some places than in others. At all ages males succumb more readily to it than females. Case fatality is lowest in those about 10 to 15 years of age. The younger the child, the less in his chance of recovery. About 90 per cent. of deaths from scarlet fever occur in those under 10 years of age.

3. **Pyelitis of Infancy.**—Smith believes there is sufficient evidence that pyelitis is always a blood infection and that the bacteria frequently gain entrance to the blood by the lymphatics. In the uncomplicated cases the lesion remains localized in the pelvis of the kidney, where the organisms are excreted. Secondary infection of the kidney substance may occur by lymphatic channels from the pelvis. Quite possibly these secondary infections account for many "relapses." The source of the infection in the majority of cases, considering males and females together, is the gastrointestinal tract. Some cases may arise from infection in the skin, teeth or tonsils or in some local septic process. Many cases in females, accounting for the greater number in this sex as compared with the males, arise from bacteria entering the blood, often via the lymphatics, from the urethra, vulva or vagina.

4. **Acetone Bodies in Blood of Children.**—The blood of sixteen normal children was examined by Moore quantitatively for acetone bodies (beta-oxybutyric acid, aceto-acetic acid and acetone). Expressed as milligrams of acetone per 100 gm. of blood, this was found to vary from 1 to 13 mg., with an average of 6.3 mg. The blood of a normal child after forty-eight hours of voluntary starvation was examined for acetone bodies and found to contain 39.5 mg. acetone bodies per 100 gm. of blood. Acute febrile disturbances are accompanied by an increase in the blood acetone, though this may not be very marked. In some patients showing acidosis clinically, the acetone content of the blood was found to be sufficient to account for the acidosis. Many cases of acidosis in infancy and childhood are not accompanied by an increase of acetone bodies in the blood sufficient to account for the severity of the acidosis. In a given case of acidosis acetoneuria alone does not indicate that the acidosis is due to an increase of the acetone bodies in the blood.

6. **Intradermal Injections of Diphtheria Toxin, Reference to Schick Test.**—Successive intradermal injections of very dilute solutions of diphtheria toxin (0.00001 c.c. L.+ dose), when given at intervals varying from five to twelve days, Cowie says, provoke the formation of antibodies, and in those cases already exhibiting a certain degree of immunity, bring about a definite immunity as recognized by the intradermal test. The degree of immunity induced by such small doses of toxin as are represented by 0.1 c.c. of highly diluted diphtheria toxin, seems to be very slight, and cannot be compared with the results obtained by the use of toxin-antitoxin mixtures. Solutions carrying sufficient toxin to induce immunity when given intradermally are not well borne by the patient.

7. **Epidemiology of Pertussis.**—The number of cases seen by Luttinger in connection with this study exceeds ten thousand. About 80 per cent. of all cases and 97 per cent. of all deaths are in children under 5 years of age. Fifty per cent. of the cases are in those under 2 years of age, and over 50 per cent. of all deaths are in children under 1 year of age. The actual case mortality in whooping cough is difficult to estimate, owing to incomplete returns; it is probably about 1 per cent. The death rate per 100,000 population is about 7. It has been steadily decreasing for the last fifty years having been as high as 58.82 in 1872 and as low as 4.71 in 1908. Whooping cough is transmitted by direct contact and in nearly 60 per cent. of cases the source of infection is

given as coming from a neighbor. Relatives and friends, schools, nurseries, recreation piers and ferries are other sources of infection. Moving picture shows and public conveyances seem to be important factors in the dissemination of the disease. Adult pertussis carriers probably have been disseminating the disease and have remained unrecognized owing to the atypical form in which it manifests itself. Pertussis vaccines, as prepared by the Bureau of Laboratories, when given early, have continued to give good curative and prophylactic results at the Whooping Cough Clinic and in the hands of a large number of private practitioners and health officers. The very small number of deaths under vaccine treatment and the vast crowds who apply for treatment at the clinic indicate a favorable and possibly tangible influence of the specific treatment on the further epidemiology of the disease.

8. Anaphylactic Skin Reaction to Diphtheria Bacilli.—In the investigation conducted by Kolmer and Moshage the anaphylactic skin reactions were produced with an emulsion of washed and heat-killed diphtheria bacilli, for which they propose the name "diphtherin"; at the same time the regular Schick test was conducted in each person. Two types of reactions were observed. The first resembled the luetin reaction in all its essential details. The second type of reaction corresponded quite closely with that described by Park and Zingher. The Schick reactions were characterized by areas of erythema, with a brownish tinge measuring from 0.5 to 2 cm. in diameter and accompanied by slight edematous infiltration of the underlying tissues. An anaphylactic skin reaction to the protein of the diphtheria bacillus was observed in about 70 per cent. of children and 35 per cent. of adults following intracutaneous injection of diphtherin. About 53 per cent. of persons of various ages yielded positive diphtherin and negative toxin (Schick) reactions. About 10 per cent. yielded negative diphtherin and positive toxin reactions, both tests agreeing therefore in about 63 per cent. of persons; 12.5 per cent. reacted positively and 24.1 per cent. negatively to both tests. The percentage of positive diphtherin reactions was slightly greater among those who were convalescent from diphtheria. The authors state that while the diphtherin test indicates hypersensitiveness to the protein of the diphtheria bacillus, it has probably no value as an index of immunity and is of practical interest mainly from the viewpoint that the anaphylactic reaction may be mistaken for a positive Schick reaction.

American Journal of Roentgenology, New York

August, III, No. 8

- 10 Some Causes of Error in Roentgen Diagnosis of Bone and Joint Conditions. R. Hammond, Providence, R. I.—p. 385.
- 11 Roentgenographic Efficiency of Coolidge Roentgen Ray Tube. W. S. Gorton and J. A. C. Colston, Baltimore.—p. 388.
- 12 Plea for Conservatism in Treatment of Closed Fractures from Roentgenologic Standpoint. S. B. Childs, Denver.—p. 390.
- 13 Roentgenoscopy of Foreign Bodies in Eye by Sweet Method. J. S. Derr, Atlanta, Ga.—p. 393.
- 14 Roentgenographic Examination of Urinary Bladder. J. M. Garratt, Buffalo.—p. 399.

Boston Medical and Surgical Journal

August 31, CLXXV, No. 9

- 5 *Contact Points Between Pulmonary Tuberculosis and Syphilis. J. A. Lyon, Rutland.—p. 285.
- 6 Tuberculosis Carriers. C. E. Perry, Northampton.—p. 292.
- 7 What Constitutes Clinical Tuberculosis in Adults? G. L. Schadt, Springfield.—p. 298.

15. Contact Points Between Tuberculosis and Syphilis.—In 471 cases having received the Wassermann test, 430 were negative, 10 were doubtful, 2 were unsatisfactory, and 29, or 6 per cent., were positive. Of the 430 negative cases 140 had incipient pulmonary tuberculosis, 105 of these had repeated negative sputum, and 35 had positive sputum. Moderately advanced, 222, and of these 75 had negative sputum, and there were 149 instances where it was positive. The remaining 68 were far advanced; and of these 7 were negative, and 61 had positive sputum. The sputum was negative in 4, and positive in 2 of the doubtful cases in the incipient stage; 2 had negative and 2 had positive sputum in the moderately advanced stage. There were no doubtful cases in the far

advanced stage of their pulmonary disease. Of 2 unsatisfactory cases, both of which were in the moderately advanced stage, one had a positive sputum and the other was negative. A positive Wassermann was obtained in 10 incipient cases, and of these cases 8 had negative sputum and 2 positive sputum. In the moderately advanced stage, 4 had negative and 11 positive sputum. In the far advanced stage there were only 4 that gave a positive Wassermann, and in each instance the sputum was positive. Lyon is firmly convinced that all patients who are suffering from diseases of the lungs should be given repeated Wassermann tests.

Bulletin of Johns Hopkins Hospital, Baltimore

September, XXVI, No. 307

- 18 *Localization of Cerebellar Tumors. Cranial Nerves. E. G. Grey, Boston.—p. 251.
- 19 Treatment of Emergency Cases of Ectopic Pregnancy. E. H. Richardson, Baltimore.—p. 262.
- 20 Etiology of Diseases of Circulatory System. T. C. Janeway, Baltimore.—p. 265.
- 21 Some of Professor Lexer's Work at Red Cross Auxiliary Naval Hospital, Veddel-Hamburg, Germany, 1914-1915. H. G. Beyer, U. S. Navy.—p. 267.
- 22 Superstition and Folklore of Menstruation. E. Novak, Baltimore.—p. 270.

18. Localization of Cerebellar Tumors.—Since anosmia in cases with intracranial tumor is usually a distant symptom due to a secondary internal hydrocephalus, Grey points out that it has no appreciable significance for the localization of the new growths. The sense of smell was affected in about 7 per cent. of the sixty-three certified cases analyzed in this report. Choked disk may have some importance when it is associated with other signs. It is Grey's experience that the early appearance and high degree of changes in the eye-grounds, when they appear in company with some of the so-called cerebellar symptoms, are important confirmatory evidence pointing toward a subtentorial localization of the new growth. The observations recorded by Grey are in favor of the view held by many that the nystagmus seen in cerebellar disease is very frequently of cerebellar origin—an asynergy of the eye muscles. When there is a definite and persisting difference in the size and rate of the jerks with the eyes in the lateral positions the nystagmus is usually suggestive of the side of the lesion. Conjugate deviation has relatively little importance for the localization of tumors within the posterior cranial fossa. A paresis or a paralysis of one facial nerve in tumors of the posterior cranial fossa is strong presumptive evidence of the side of the lesion, though a paresis appears not infrequently in median growths.

In subtentorial new growths a slight unilateral impairment of hearing, which has appeared for the first time in company with general pressure symptoms, is indicative either of a homolateral tumor or, less frequently, of a median growth. When hearing, under similar circumstances, is greatly impaired or lost in one ear, it points toward a homolateral extracerebellar localization of the tumor. Tinnitus is not a reliable guide to the side occupied by a tumor situated below the tentorium. Vertigo has no appreciable significance for the localization of the disease in one or another part of the posterior fossa. The presence of dysarthria and dysphagia (unless they are very marked) in patients with subtentorial tumors, though a source of anxiety, is no contraindication to operation, since neither is a reliable sign of an impending respiratory paralysis. When they occur, they constitute two of the most striking symptoms of intracerebellar and extracerebellar new growths.

Canadian Medical Association Journal, Toronto

August, VI, No. 8

- 23 Treatment of Diabetes Mellitus. E. P. Joslin, Boston.—p. 673.
- 24 Colloidal Gold Test in Cerebrospinal Fluids. G. A. Ramsay and E. Fidler, London.—p. 685.
- 25 Medical Work at Base Hospital in France. F. G. Finley.—p. 692.
- 26 Meningococcus Meningitis. J. G. Fitzgerald, Toronto.—p. 695.
- 27 Definite Treatment of Pneumonia; Report of Germicidal Power of Quinin and Other Cinchona Derivatives on Pneumococcus Cultures in Vitro. S. S. Cohen, Philadelphia.—p. 706.
- 28 Thoracic Operation for Chronic Empyema and for Bronchiectasis. F. N. G. Starr.—p. 713.
- 29 Blood Transfusion in Hemorrhage of Newborn. A. Brown, Toronto.—p. 716.

Cleveland Medical Journal

July, XV, No. 7

- 30 Typhoid in Cleveland in 1915. J. G. Frey and R. G. Perkins, Cleveland.—p. 443.
- 31 Goiter Problem. H. G. Sloan, Cleveland.—p. 453.
- 32 Regional Hypertonus. L. Taylor, Cleveland.—p. 468.
- 33 Recent Advances in Gynecology and Obstetrics. W. D. Fullerton, Cleveland.—p. 475.
- 34 Neurologic Reviews. T. S. Keyser, Cleveland.—p. 479.
- 35 Clinical Laboratory Methods. C. L. Cummer, Cleveland.—p. 482.

Delaware State Medical Journal, Wilmington

May, VII, No. 6

- 36 Double Shame of Baltimore. Her Unpublished Vice Report, Her Indifference. H. A. Kelly, Baltimore.—p. 2.
- 37 Under Cover of Respectability. (To be continued.) W. D. Lane, Wilmington.—p. 5.

June, No. 7

- 38 Under Cover of Respectability. W. D. Lane, Wilmington.—p. 7.

Indiana State Medical Association Journal, Fort Wayne

August, IX, No. 8

- 39 *Benzol in Treatment of Leukemia. J. M. Barry and J. M. Ketcham, Indianapolis.—p. 315.
- 40 Some Later Methods Used in Diagnosis and Treatment of Sterility. P. E. McCown, Indianapolis.—p. 323.
- 41 Bacteriologic Study of Recent Epidemic of Infection of Respiratory Tract. V. H. Moon and S. C. Summers, Indianapolis.—p. 327.
- 42 Some Considerations in Pelvic Floor Work in Women. W. H. Baker, South Bend.—p. 329.

39. **Benzol in Treatment of Leukemia.**—From a study of the literature and from their experience with one case, the authors believe they are justified in concluding that benzol has a wonderfully selective action in chronic myeloid leukemia, if uncomplicated and not of too long duration; that one can count with considerable assurance on getting a rapid reduction in the number of leukocytes; on getting a normal, or nearly normal, blood formula; a rapid diminution in the size of the spleen; an increase in the red cell count and the hemoglobin; and a concomitant improvement in the general health of the patient, increase in weight, etc. One should never forget, however, that the drug is a powerful poison, a two-edged sword, and not carry its effects too far, thus completely destroying the function of the bone marrow and substituting a grave aplastic anemia for the leukemia. The patient ought to be in a hospital, in bed; the gastro-intestinal tract, kidneys and liver be watched carefully for toxic symptoms; blood counts should be made every few days; the benzol should not be increased in dosage without definite warrant, and its administration should be stopped entirely considerably before the white count has returned to normal. With these precautions there should be no grave results.

Iowa State Medical Society Journal, Des Moines

August, VI, No. 8

- 43 Cardiac Pain. A. Lambert, New York.—p. 337.
- 44 Tumors of Hypophysis Cerebri; Report of Case. C. E. Ruth, Des Moines.—p. 343.
- 45 Problems of Surgical Judgment Associated with Treatment of Gastric and Duodenal Ulcers. E. MacD. Stanton, Schenectady, N. Y.—p. 350.
- 46 Epidemiology of Poliomyelitis. M. F. Boyd, Iowa City.—p. 356.
- 47 Practical Diagnosis and Treatment of Benign Tumors of Bladder. E. J. Harnagel, Des Moines.—p. 361.
- 48 Pneumonia in Children. C. W. Rominger, Waukon.—p. 363.

Journal of Experimental Medicine, Baltimore

September, XXIV, No. 3

- 49 Non-Gas Producing Strain of Hog-Cholera Bacillus Isolated from an Old Laboratory Culture. C. Tenbroeck, Princeton, N. J.—p. 213.
- 50 *Effects of Exposure to Cold on Experimental Infection of Respiratory Tract. J. A. Miller and W. C. Noble, New York.—p. 223.
- 51 Studies on Heterogeneous Hemolytic Serums. I. L. Kritchevsky, Moscow, Russia.—p. 233.
- 52 Effects of Serum Treated with Agar. E. Zunz and M. Gelat, Lausanne, Switzerland.—p. 247.
- 53 *Experimental Study of Circumscribed Dilatation of Artery Immediately Distal to Partially Occluding Band, Its Bearing on Dilatation of Subclavian Artery Observed in Certain Cases of Cervical Rib. W. S. Halsted, Baltimore.—p. 271.
- 54 Distortion of Malarial Parasite. Interpretation of "Plasmodium Tenue" (Stephens). M. R. Lawson, New London.—p. 291.
- 55 Partial Occlusion of Aorta with Metallic Band. Observations on Blood Pressures and Changes in Arterial Walls. M. R. Reid, Baltimore.—p. 287.

50. **Exposure to Cold in Respiratory Infection.**—The organism chosen by Miller and Noble for inoculation was *Bacillus bovissepticus*, or snuffles bacillus, which belongs to the hemorrhagic septicemia group and is pathogenic for the rabbit. They found that respiratory infection is favored by chilling the animals after they have been accustomed to heat. It is suggested that any marked change of temperature predisposes to this infection, the severity of which varies with the amount of change, and that change from low to high temperature has an even more marked effect than that from high to low.

53. **Circumscribed Dilatation of Artery.**—Halsted's experiments showed that a partially occluded artery may dilate distal to the site of constriction. The dilatation is circumscribed. When the constriction has been either slight in amount or complete, dilatation has not been observed. The dilatation was greatest when the lumen of the artery (the aorta) was reduced to one third or perhaps one fourth of its original size. Dilatation or aneurysm of the subclavian artery has been observed twenty-seven or more times in cases of cervical rib. The dilatation of the subclavian is circumscribed, is distal to the point of constriction, and strikingly resembles the dilatation which Halsted produced experimentally. The genesis of the experimental dilatation and of the subclavian dilatation occurring with cervical rib is probably the same. The experimentally produced dilatations and the aneurysms of the subclavian artery in cases of cervical rib are probably not due to vasomotor paralysis, trauma, or sudden variations in blood pressure. Halsted suggests that the abnormal, whirlpool-like play of the blood in the relatively dead pocket just below the site of the constriction, and the lowered pulse pressure may be the chief factors concerned in the production of the dilatations. Intimal surfaces brought, however gently, in contact by bands or ligatures do not, in his experience, unite by first intention, for the force necessary to occlude the artery is sufficient to cause necrosis of the arterial wall. Bands, rolled over so tightly, do not rupture the intima. The death of the arterial wall having been brought about by the pressure of the band, a gradual substitution of the necrotic tissue takes place, the new vessels penetrating it from both ends.

Journal of Laboratory and Clinical Medicine, St. Louis

June, I, No. 9

- 56 Poisonous Proteins. (To be continued.) V. C. Vaughan, Ann Arbor, Mich.—p. 631.
- 57 *Pharmacologic Action of Nitrous Oxid. D. E. Jackson, St. Louis.—p. 644.
- 58 *Cholesterol Retention as Factor in Cell Proliferation. G. Luden, Rochester, Minn.—p. 662.
- 59 Present Status of Tuberculosis Chemotherapy. L. M. DeWitt, Chicago.—p. 677.
- 60 Sugar Content of Cerebrospinal Fluid in Health and Disease. W. M. Kraus and G. G. Corneille, New York.—p. 685.
- 61 Artificial Respiration Apparatus for General Laboratory Purposes. P. J. Hanzlik, Cleveland.—p. 688.
- 62 Color Reactions of Proteins and Their Split Products. H. W. Emerson and J. S. Chambers, Ann Arbor, Mich.—p. 692.
- 63 Physical Characteristics of Spinal Fluid in Various Diseases. A. Levinson, Chicago.—p. 699.
- 64 Delayed Negative Wassermann Reaction. G. M. Olson, Minneapolis.—p. 704.

57. **Pharmacologic Action of Nitrous Oxid.**—The thought has occurred to Jackson that nitrous oxid might be used as a hypnotic. He has tried repeatedly to compare the mild on-coming effects of the gas as breathed with a considerable proportion of oxygen with the physical and mental sensations present as one begins to fall asleep. There is a very striking similarity, a marked feeling of tiredness and exhaustion, the limbs feel heavy and the eyelids tend to close. One's mentality gradually sinks and there is difficulty in maintaining connected thought. The natural inclination of the subject of the experiment is to lie down quietly and fall asleep. The sensations remind one of the feelings of a child worn out by a long day's play when it lies down at night to sleep. Sometimes Jackson has noted slight muscular twitchings or feeble jumping or convulsive moments. These, he thinks, would probably not occur if the gas were administered very slowly with plenty of oxygen and a sufficiently long period of time

were used to bring on the action of the drug. Suggestion appears to play a noticeable part in this action, for if one keeps perfectly quiet and at rest and tries to go to sleep, then the somnolent action of the gas is especially liable to be well marked. It would appear that this matter of suggestion extends even to dogs. For an animal which is petted and induced to lie down quietly and at complete rest may very often take the gas readily and peacefully fall asleep.

58. Cholesterol Retention as Factor in Cell Proliferation.—Proceeding on the working hypothesis that essential factors for the effectual progress of malignant proliferation are: (1) the creation of a disturbance of metabolism which would lead to an accumulation of cholesterol, (2) an extraneous irritant, and (3) the breaking down of the "lymphoid defence." Luden began in March, 1915, to give light treatment by Roentgen rays to a double suprarenalectomized spermophile (*Citellus tridecemlineatus*). The results obtained were a marked change in the blood picture, there being an increase of normoblasts from 0 to 10 per cent. in the course of six months, and the appearance of pathologic, "unripe" leukocytes together with proliferation in various tissues. The experiment was then repeated on eight spermophiles; two were double and suprarenalectomized, three were double ovariectomized and three were used as normal controls. The results already described were found to repeat themselves both in blood and tissue. The proliferation of the various types of tissues is comparable to the proliferation of the small arteries in lungs and kidneys together with changes in the spleen resembling those found in "Gaucher's spleen," which have been observed after forced cholesterol feeding.

Luden has studied simultaneously in goats the effect of cholesterol feeding alone, the influence of the Roentgen rays alone, and the influence of cholesterol feeding combined with Roentgen treatment. Here also similar changes in the blood picture were observed. Recently Luden made a series of observations on the cholesterol content of the blood of patients suffering from malignant disease. The normal cholesterol value as given by Authenrieth and Bloor averages about 0.18 with a low limit of 0.14 per cent. The high normal value has not yet been determined, but Luden found it as high as 0.27 per cent. in apparently normal adults. The cholesterol content of the blood of the patients studied varied from 0.254 to 0.71 per cent., the average being 0.449. The patient having the highest cholesterol value of all showed not only symptoms of proliferation in the blood (109 normoblasts, fourteen megaloblasts in a count of 300 cells; a picture typical of pernicious anemia according to Ehrlich; atypical according to Grawitz) but malignant degeneration in a number of histologically diverse tissues as well. Luden is convinced that the retention of cholesterol due to its insufficient conversion or defective elimination may be a primary factor in the etiology of malignant disease.

Kansas Medical Society Journal, Topeka

July, XVI, No. 7

- 55 Recognition and Treatment of Acute Frontal Sinus Headache. H. B. Caffey, Pittsburg.—p. 191.
- 56 Acute Torsion of Spermatic Cord, Symptoms of Which Resemble Strangulated Omental Hernia. H. L. Snyder, Winfield.—p. 195.
- 57 Hospital Hints. J. T. Axtell, Newton.—p. 199.
- 58 Carcinoma of Larynx; Report of Case Operated. P. H. Owens, Great Bend.—p. 201.

Laryngoscope, St. Louis

August, XXVI, No. 8

- 9 Diagnosis and Treatment of Syphilitic Affections of Acoustic Nerve, with Special Reference to Use of Salvarsan. G. E. Davis, New York.—p. 1065.
- 0 Study of Tumors of Uvula—Considering Their Frequency, Malignancy and Recurrence; Report of One Additional Papilloma (Exclusive of Angioma). P. S. Stout, Philadelphia.—p. 1075.
- 1 Brain Abscess from Chronic Suppuration in Frontal Sinus; Report of Case. T. P. Berens, New York.—p. 1083.
- 2 Simple Method of Fixation of Intubation Tubes. S. Iglauder, Cincinnati.—p. 1089.
- 3 Acidosis; Its Importance in Nose and Throat Surgery in Children. W. H. Johnston, Muscatine, Iowa.—p. 1093.
- 4 Infections of Ears, Nose and Throat as Primary Foci for Secondary Infections. C. G. Crane, Brooklyn.—p. 1099.
- 5 Connecting Links Between Endocrinology (Internal Secretions) and Otorhinology. H. R. Harrower, Los Angeles.—p. 1105.

New York State Journal of Medicine

August, XVI, No. 8

- 76 Value and Limitations of Physiologic Therapeutics. J. M. Swan, Rochester.—p. 379.
- 77 Treatment of Anterior Poliomyelitis. C. Wallace, New York.—p. 386.
- 78 Epidemic Poliomyelitis. F. E. Fronczak, Buffalo.—p. 389.
- 79 Experience in Epidemic of Poliomyelitis. J. Roby, Rochester.—p. 393.
- 80 *Practical Aspects of Ovarian Secretions. W. P. Graves, Boston.—p. 394.
- 81 Diagnosis of Inflammatory Diseases of Labyrinth. J. B. Rae, New York.—p. 401.
- 82 Treatment of Labyrinthine Affections. W. C. Phillips, New York.—p. 404.
- 83 Fundamental Causes, Prevention and Principles of Treatment in Acute Membrane Inflammations, with Special Reference to Inflammations of Ear, Nose and Throat. S. F. Snow, Syracuse.—p. 409.
- 84 Recent Studies in Diabetes Mellitus. J. R. Williams, Rochester.—p. 412.
- 85 Pelvic Inflammation. R. Burns, Syracuse.—p. 418.
- 86 Fatality of Chickenpox, Mumps and German Measles. L. R. Williams, Albany.—p. 422.

80. Abstracted in THE JOURNAL, June 24, p. 2124.

Pennsylvania Medical Journal, Athens

August, XIX, No. 11

- 87 Bronchiectasis and Bronchiectatic Symptoms Due to Foreign Bodies. C. Jackson, Pittsburgh.—p. 807.
- 88 Medical Education in China. J. B. Neal, Tsinan, China.—p. 813.
- 89 Technique of Injecting Gasserian Ganglion with Alcohol for Tic Douloureux. G. M. Dorrance, Philadelphia.—p. 814.
- 90 Gestation Complicated by Appendicitis. S. E. Tracy, Philadelphia.—p. 826.
- 91 General Practitioner's Experience with Pituitary Extract. M. C. Rumbaugh, Kingston.—p. 829.
- 92 Prevention of Fecal Fistula in Suppurative Appendicitis. D. Guthrie, Sayre.—p. 833.
- 93 Recent Conceptions of Some Throat Infections. J. A. Hagemann, Pittsburgh.—p. 836.
- 94 Few Significant Points in Hypertension and Hypotension Blood Pressure. R. D. Snively, Philadelphia.—p. 838.
- 95 Medical Preparedness. F. L. Van Sickle, Olyphant.—p. 839.
- 96 Two Cases of Anal Herpes Zoster. L. H. Adler, Jr., Philadelphia.—p. 842.
- 97 Significance of Abdominal Pain. J. B. Deaver, Philadelphia.—p. 843.
- 98 Visions (Not Optical). C. G. Brumbaugh, Huntington.—p. 846.
- 99 Looking Forward in Medical Profession. J. B. McAlister, Harrisburg.—p. 848.
- 100 Scientific Researches into Causes of Alcoholism and Inebriety. T. D. Crothers, Hartford, Conn.—p. 853.

Public Health Journal, Toronto

August, VII, No. 8

- 101 Tuberculosis in Relation to Feeble-mindedness. P. H. Bryce.—p. 365.
- 102 Poliomyelitis (Infantile Paralysis). W. H. Frost, Cincinnati.—p. 371.
- 103 Care of Children Under School Age. D. Forsyth.—p. 381.
- 104 Flies and Refuse Heaps. W. H. Symons, Bath, N. B.

South Carolina Medical Association Journal, Greenville

August, XII, No. 8

- 105 Noninflammatory Pneumohematoma Simulating Hernia, Following Transverse Suprapubic Abdominal Section. L. Peters, Columbia.—p. 229.
- 106 Montgomery Operation in Uterine Retrodisplacements. S. O. Black, and H. S. Black, Spartanburg.—p. 232.
- 107 Use and Abuse of Uterine Curet. G. Bunch, Columbia.—p. 233.

Surgery, Gynecology and Obstetrics, Chicago

September, XXIII, No. 3

- 108 *Extended Operation for Carcinoma of Uterus. R. Peterson, Ann Arbor, Mich.—p. 237.
- 109 Roentgen Therapy of Uterine Hemorrhage. R. T. Frank, New York.—p. 243.
- 110 *Precancerous Changes in Uterus. W. S. Stone, New York.—p. 248.
- 111 *Detailed Study of Pathologic Causes of Sterility with End Results. J. O. Polak, Brooklyn.—p. 261.
- 112 *Syphilis of Body of Uterus; Report of Case. C. C. Norris, Philadelphia.—p. 268.
- 113 *Syphilitic Fever in Relation to Gynecologic and Obstetric Practices. F. J. Taussig, St. Louis.—p. 274.
- 114 *Occurrence of Syphilis in University of Michigan Obstetric and Gynecologic Clinic. R. Peterson, Ann Arbor, Mich.—p. 280.
- 115 Specificity of Wassermann Reaction. R. Buhman, St. Louis.—p. 284.
- *116 *High Degrees of Heat vs. Low Degrees of Heat in Treatment of Cancer of Uterus. H. J. Boldt, New York.—p. 288.

- 117 Past, Present and Future of Gynecology, Obstetrics and Abdominal Surgery. J. W. Bovée, Washington, D. C.—p. 290.
- 118 Epiploitis Following Herniotomy. W. Hessert, Chicago.—p. 297.
- 119 *Transplantation of Articular End of Bone Including Epiphyseal Cartilage Line. S. L. Haas, San Francisco.—p. 301.
- 120 Traumas of Back and Spine; Report of Cases. F. E. Pierce, Chicago.—p. 332.
- 121 Abdominal Pregnancy; Report of Case. B. Solomons, Dublin.—p. 338.
- 122 Rhabdomyoma of Prostate; Report of Case. J. B. Squier, New York.—p. 341.
- 123 Eventration of Diaphragm and Dextrocardia; Report of Case. H. G. Wood, Galesburg.—p. 344.
- 124 Ganglioncuroma; Report of Case. R. J. Behan, Pittsburgh.—p. 348.
- 125 Application of Bone Graft in Treatment of Partial or Complete Avulsion of Adolescent Tibial Tubercle (Schatter's Disease). R. E. Soule, New York.—p. 353.
- 126 Cylindroma of Tongue; Report of Two Cases. R. H. Baker, Ann Arbor, Mich.—p. 356.
- 127 Fluoroscopic Roentgen Injection of Bladder. E. H. Skinner, Kansas City, Mo.—p. 361.
- 128 *Unusual Hydrocele Content. J. Eduque, Manila.—p. 362.
- 129 Modified Purse String Bladder Suture. A. H. Peacock, Seattle, Wash.—p. 364.
- 130 Pituitary Extract in Post Abortion Curetment. H. D. Furniss, New York.—p. 365.

108. Abstracted in THE JOURNAL, June 3, p. 1818.

110. **Precancerous Changes in Uterus.**—It seems to Stone that the evidence in the literature and the material which he presents justifies the conclusion that as the positive identification of a malignant neoplasm cannot be made histologically until definite destructive capacity is recognized it seems reasonable to relate more definitely the other histologic criteria of cancer to the developmental stage of its growth. In the study of uterine pathology there are seen numerous morphologic alterations of epithelial growth which differ but little from the regenerative activity of benign lesions, but which after a longer or shorter time show features that are differentiated with difficulty from malignant neoplasm. The strongest support of this assumption is derived from the reproduction of types which are seen in the different stages of their progress. There are the atypical features of a healing erosion, for example, determined by the original type of the primary erosion—simple, papillary, follicular; and we find the atypical types again reproduced in the different types of fully established uterine cancer. In Stone's cases there are atypical healing erosions which are prototypes of either an epidermoid cancer or a papillary adenocarcinoma. There are leukoplacias which are prototypes of adult acanthomata. There are glandular hyperplasias which lead to adenoma or adenocarcinoma. Finally, there are focal areas of leukoplakia, combined with adenomatous hyperplasia, which may well furnish an origin for tumors designated as adenoacanthomata. In short, for each type of fully developed carcinoma there is a corresponding type of benign and intermediary change. The decision regarding the proper therapeutic procedure in these cases should be assumed by a competent clinician.

111. Abstracted in THE JOURNAL, June 17, p. 2033.

112. **Syphilis of Body and Uterus.**—In the case cited by Norris the changes were typical of those produced by syphilis elsewhere in the body. The patient contracted syphilis six years ago, antisyphilitic treatment was discontinued nine months ago. Menorrhagia and other symptoms of syphilis of the body of the uterus developed three months later. The Wassermann test was at this time strongly positive. The chief clinical symptom was the menorrhagia and the chief pathologic lesion the great softening and friability of the uterus together with the more typical changes usually produced by syphilis.

113. Abstracted in THE JOURNAL, June 3, p. 1818.

114. **Syphilis—University of Michigan Clinic.**—Out of 2,000 inpatients in the University Hospital excluding two services the proportion of syphilitics was 6 per cent. The percentage of syphilis in 381 cases in the University Maternity was 4.7 as shown by the Wassermann reactions and expert physical examinations. In eighteen cases of syphilis among the number examined only eight gave a history of syphilis. In only the same number (eight) were there positive physical signs of syphilis. As shown by the histories of

the eighteen cases there is a greater chance of the syphilitic mother treated by salvarsan and mercury to give birth to a living, full-term child than where no treatment be given during pregnancy. Out of 390 gynecologic patients subjected to the Wassermann test, twenty-two, or 5.6 per cent., gave positive reactions. In only five of the twenty-two syphilitic patients was there a history of syphilis.

116. Abstracted in THE JOURNAL, June 17, p. 2033.

119. **Transplantation of Articular End of Bone.**—The material for Haas' report was obtained from seventy-five experiments on dogs, mostly in the early growing period. He found that the epiphyseal cartilage line ceases to functionate after reimplantation and autotransplantation, either when transplanted by itself or with a small or a large piece of adjoining diaphyseal or epiphyseal bone, or even when transplanted as an entire intact bone. The longitudinal growth ceases in every case. The articular cartilage undergoes practically no changes after reimplantation. In autotransplantation there occurs at times evidence of degenerative and regenerative changes. The marrow of the transplant appears to undergo an early complete necrosis. The trabeculae show early evidence of degeneration as is indicated by the loss of staining property of the nuclei. The cortex shows an early loss of nuclear staining. Following the first operation in the two-stage autotransplantation of the epiphyseal end of a bone, there is a considerable disturbance in the function of the epiphyseal cartilage line, even though the epiphysis is not separated from the surrounding tissue.

The vitality of the various components of bone after transplantation is directly related to the ability of that part to withstand the loss of its vascular supply. From these experiments and the results in general on transplanted bone the following conclusion is offered regarding the fate of bone after transplantation. Although each part of transplanted bone possesses the power to regenerate independently and without the aid of neighboring bone, this autonomous newly formed tissue does not possess that property which is necessary for a continued existence, and it will ultimately entirely disappear. Some additional stimulus is needed and such conditions are only obtained when the transplant is in direct contact with normal growing bone. It is possible that certain chemical or physiologic stimuli are supplied by the living intact bone, after which the regenerated bone on account of these additional factors is able to persist permanently. Undoubtedly some definite osseous elements from the bone of the host invade the transplant and either replace the temporary bone or give to it certain requisites for its perpetuation. Although function may play a factor in the development of bone it is not of prime importance in determining the permanency of that tissue. Haas is convinced that the differences of opinions of the various investigators is in part due to the failure to allow sufficient time to elapse before drawing final conclusions, as well as to take into account the influence of different environmental conditions on the transplant from both young and old animals.

128. **Unusual Hydrocele Content.**—When Eduque operated on his patient a sac was encountered in the scrotum, containing the stomach, cecum, about 6 feet of jejunum and duodenum all plastered together. During manipulation one loop of intestine was incised. This was sutured with linen. The appendix was found to be big and long and bound to the posterior surface of the cecum by adhesions.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

August, XXI, No. 3

- 1 Roentgenography of Bronchial Lymph Nodes. W. Overend and C. Riviere.—p. 73.
- 2 Renal Calculi; Report of Case. C. T. Holland.—p. 83.

Brain, London

June, XXXIX, Parts, 1 and 2

- 3 Electric Reactions of Muscles Before and After Nerve Injury. E. D. Adrian.—p. 1.

- 4 *Disturbances of Vision From Cerebral Lesions, With Special Reference to Cortical Representation of Macula. G. Holmes and W. T. Lister.—p. 34.
5 *New Familial Infantile Form of Diffuse Brain Sclerosis. K. Krabbe.—p. 74.
6 Acute Poliomyelitis. F. E. Batten.—p. 115.

4. Disturbances of Vision from Cerebral Lesions.—According to Holmes and Lister the upper half of each retina is represented in the dorsal, and the lower in the ventral part of each visual area. The center for macular or central vision lies in the posterior extremities of the visual areas, probably on the margins and the lateral surfaces of the occipital poles. That portion of each upper quadrant of the retina in the immediate neighborhood of, and including the adjacent part of, the fovea centralis is represented in the upper and posterior part of the visual area in the hemisphere of the same side, and vice versa. The center for vision subserved by the periphery of the retina is probably situated in the anterior end of the visual area, and the serial concentric zones of the retina from the macula to the periphery are probably represented in this order from behind forward in the visual area.

5. New Infantile Form of Diffuse Brain Sclerosis.—The so-called diffuse sclerosis of the brain in children are divided by Krabbe into at least three quite distinct types: (1) A syphilitic form; (2) Schilder's encephalitis periaxialis diffusa; (3) a familial infantile form, of which five cases are discussed in this paper; the literature probably contains one other case. This form shows the following characteristics; it is usually a familial disease; it sets in somewhat acutely in about the fifth month in a child who up to then has been quite healthy; it progresses on a chronic course, ending with death, five to six months after the onset; universal rigidity of the musculature, violent tonic spasms, probably causing pain, and brought on by touching or noise form characteristic symptoms. As a rule, nystagmus is present, and in the latter stages atrophy of the optic nerve. Periodic elevations of temperature occur without perceptible cause, outside the central nervous system. Finally, extensive paresis and pronounced debility close the scene.

The pathologic anatomic findings are: A marked hardness of the white substance of the brain without alteration of its shape. Microscopic examination of three cases showed relative intactness of cortex and the basal ganglia, the nervous centers of the brain and of the spinal cord; destruction of the medullary sheaths and axis cylinders throughout the white substance of the cerebrum (a 2 mm. layer, however, is preserved immediately under the cortex). Complete destruction of the white matter of the cerebellum and degeneration of the spinal nerve tracts are present. The destroyed tissue is replaced by dense fibrillar glia, in which are seen a considerable number of variously shaped glia cells, mostly rotoplasmic; the vessel sheaths are infiltrated with fatty granule cells and other apparently gliogenous scavenger cells. There is a total want of new formation of vessels or infiltration of the vessel sheaths with plasma cells, lymphocytes or leukocytes. Krabbe is of the opinion that the affection must be regarded as a purely degenerative and not as an inflammatory process. The disease presents a certain relationship to Pelizaeus-Merzbacher's disease, aplasia axialis extracorticalis congenita, on one side, and to Tay-Sachs' form of familial amaurotic idiocy on the other side. In other respects, however, it differs conspicuously from both these groups.

British Journal of Children's Diseases, London

August, XIII, No. 152

- 7 Congenital and Acquired Scleroderma in Childhood. E. A. Cockayne.—p. 225.
8 Case of Hemihypertrophy with Postmortem Examination. R. Hutchison.—p. 233.
9 Gangrene of Leg Following Diphtheria. E. B. Gunson.—p. 237.

British Medical Journal, London

August 12, II, No. 2902

- Contractures of Hand After Wounds of Upper Limb. W. M. Macdonald.—p. 209.
Distant Effects of Rifle Bullets; With Special Reference to Spinal Cord. J. S. Bury.—p. 212.

- 12 Treatment of Gunshot Fractures. D. M. Aitken.—p. 213.
13 Treatment of Convalescent Soldiers by Physical Means. R. T. McKenzie.—p. 215.
14 Trismus During Serum (Antistreptococcus) Sickness (Septic Finger). R. F. Bolt.—p. 218.
15 Babinski's Sign From Point of View of Comparative Anatomy. M. Astwazaturof.—p. 219.

August 19, No. 2903

- 16 Injuries of Bladder and Urethra in War. A. Fullerton.—p. 245.
17 *Case of Cyst of Intestine. C. Bolton and T. W. P. Lawrence.—p. 248.
18 *Three Cases of Gastropexy Treated by Gastropexy (Rovsing). M. Connon.—p. 250.
19 *Perforation of Gastric Ulcer Occurring in Sac of Large Congenital Diaphragmatic Hernia. L. Gordon.—p. 250.
20 Injuries and Destructive Effects of Aeroplane Bombs. H. V. Wells and H. G. Anderson.—p. 252.
21 *Appliance for Use in Severe Injuries of Upper Extremity. G. Arnold.—p. 254.
22 Simple Method of Repairing Defects of Scalp. C. Wallace.—p. 256.
23 *Simple Method of Putting Up Fractures in Region of Elbow Joint in Fully Flexed Position. L. C. Rivett.—p. 256.

17. Cyst of Intestine.—The patient whose case is reported by Bolton and Lawrence was a baby 3 months old. The child was born at full term, and was breast-fed till the age of 5 weeks. From birth it vomited a little after its feeds, the milk being returned unchanged. At the end of five weeks, this symptom becoming worse, the child was weaned and various kinds of foods administered without any relief to the vomiting. Wasting supervened after the first week. The bowels were from birth very constipated, being opened about once in four days until the end of the fourth week, when eight days elapsed on one occasion without an action occurring. The child died about two weeks after she was first seen by the authors. A necropsy was performed. Adhering to the terminal part of the ileum was a cyst, measuring 3 cm. by 2.5 cm., ovoidal in shape, with its long axis parallel with that of the bowel. The cyst lay on the mesenteric aspect of the ileum, between the layers of the mesentery, its cavity having no communication with the lumen of the intestine. The terminal portion of the ileum, as it coursed over the cyst, was flattened against the convex surface of the latter and stretched transversely; consequently the lumen of the bowel was linear in transverse section, and its opposed walls were held in contact firmly. The cyst extended slightly beyond the lower limits of the ileum, its lower pole causing a low convex projection of the wall of the cecum just beyond the ileocecal valve.

18. Gastropexy Treated by Gastropexy.—The three cases detailed by Connon seem worthy of being placed on record for the following reasons: The patients were the subjects of well marked gastropexy, but (1) were males; (2) they were not neurasthenics; (3) occupation appeared to be a predisposing factor in the causation of their complaint. They were all workmen who, over long periods, had, from the nature of their daily employment, to lift heavy weights, a considerable amount of strain being thereby put on their abdominal muscles and viscera; (4) great benefit has accrued from the operations, as reported in one case after three years and in another one year. The third case is comparatively recent.

19. Perforation of Gastric Ulcer.—Few reported cases of congenital diaphragmatic hernia have been diagnosed during life. A sign which in Gordon's case was of interest and which may be of some diagnostic value was the peculiar attitude the patient adopted. He stood, or sat up in bed, with the body bent well forward and the knees bent. He refused to lie down, stating that the pain was increased when he tried to do so. The attitude appeared to be one which most relieved the tension of the diaphragm.

21. Appliance for Use in Injuries of Arm.—Arnold employed a rectangular plate about 45 by 38 cm., usually a plate of perforated aluminum 4 to 5 mm. in thickness. This plate, splint, tray, or supporting appliance can be fashioned from other material than aluminum, provided the material selected is nonabsorbent, readily cleaned, sufficiently rigid as not to bend in use, and light in weight. One corner of the splint is fitted close into the axilla, and here the upper arm is secured to the plate by means of a fold of gauze passing through holes in the plate on either side of the limb just

below the shoulder. Extension is obtained in part by the weight of the limb below the fracture, but is assisted by the tension of the pad and band at the bend of the elbow, which secures the arm to the lower posterior corner of the support.

A cushion in the axilla is interposed between the splint and the thorax, the cushion being kept in position by attachments which pass over the opposite shoulder. The plate and limb together are well slung up and in the early stages of very severe injuries the patient should be in bed with the splint in an inclined position resting on a firm pillow. If there is a wound on the surface of the limb toward the plate the latter should be fenestrated at the corresponding area in order to allow the necessary frequent dressings to be done without removing the injured member from its supporting splint. In the case of fractures of the forearm with shortening and displacement of the fragments, the splint is applied in the way already described, but extension and counter extension will be required, and the splint affords an efficient and easy means for this. This splint, it is said, affords a very complete degree of rest to the entire musculature of the upper extremity, and that without being burdensome by any exaggerated restraint imposed, for while it provides very perfect immobilization, it opposes little restriction to movements of other parts of the body.

23. Fractures of Elbow Joint Put Up in Fully Flexed Position.—Two strips of adhesive plaster are required with Rivett's method each about 1 foot long and from 1½ to 2 inches wide. The first strip is used to maintain the forearm fully flexed on the upper arm. It is so placed as to encircle the arm and forearm just below the fold of the axilla, and immediately above the wrist. It should be sufficiently long to overlap about 1 inch, and, if applied direct to the skin, it will not tend to slip down in the direction of the elbow. The second strip is used to support the arm and hand, and is applied to the back of the forearm and hand, extending only as far as the first strip. The other end is then placed over the same shoulder and fixed to the back.

Lancet, London

August 19, II, No. 4851

- 24 Rivers as Sources of Water Supply. A. C. Houston.—p. 311.
- 25 *Effect of Addition of Fresh Human Blood Serum to Artificial Media. L. S. Dudgeon, F. Bawtree and D. Corbett.—p. 314.
- 26 *Three Cases of Entameba Histolytica Infection Treated with Emetin Bismuth Iodid. G. C. Low and C. Dobell.—p. 319.
- 27 *Intravenous Injection of Oxygen Gas as Therapeutic Measure. F. W. Tunnicliffe and G. F. Stebbing.—p. 321.
- 28 *Gluteal Fold in Sciatic Neuritis. H. Carlill.—p. 323.
- 29 Case of Dilatation of Hepatic Flexure of Colon. W. J. Morrish.—p. 325.
- 30 Shiah Pilgrimage and Sanitary Defences of Mesopotamia and Turco-Persian Frontier. F. G. Clomow.—p. 333.

25. Human Serum and Artificial Media.—The addition of normal fresh human blood serum to artificial media in the culture of micro-organisms according to Dudgeon and his associates has the following effects: It provides a most favorable medium for growth in cases in which culture under artificial conditions may otherwise fail. It greatly increases the amount of growth in those media to which it has been added compared to those prepared without it. It stimulates the growth of pathogenic organisms as opposed to non-pathogenic. It prolongs the life of organisms which are prone to die out under artificial conditions as shown in the case of the meningococcus. It greatly facilitates the culture of the diphtheria bacillus, and in its combination with different media helps to illustrate all aspects of the morphology of this organism. It exercises considerable influence on other organisms of variable morphology tending in the case of the pneumococci to reproduce the true type as found in the body fluids. It profoundly alters the fermentation reactions of the streptococci and pneumococci, tending to obliterate the finer differences between types or the differences due to particular environment.

26. Entameba Histolytica Infection Treated with Emetin Bismuth Iodid.—Clinical experience has convinced Low and Dobell that emetin bismuth iodid is far more efficacious than emetin hydrochlorid, given hypodermically, in removing the cysts from the feces of chronic carriers. So far the drug

has been given in a single dose of 3 grains, this representing a little more than 1 grain of emetin—once a day in the evenings with the last meal, for five days and never on an empty stomach, as was customary with ipecacuanha.

27. Intravenous Injection of Oxygen.—The result of Tunnicliffe and Stebbing's observations is that oxygen gas can be introduced into the veins in quantities from 500 to 1,000 c.c. at the rate of from 600 to 1,200 c.c. per hour. Cyanosis and the dyspnea attending it are rapidly relieved; the rate usually begun with is 500 c.c. per hour. The more cyanosed the patient, the better is a rapid rate tolerated. As the cyanosis is reduced the rate should be diminished. During the administration the pulse should be watched and the heart auscultated frequently. Irregularity in a previously regular pulse or increased irregularity in a previously irregular pulse is an indication to cease the injection. This phenomenon is preceded by a soft systolic murmur heard over the area of the tricuspid valve, and this murmur should be listened for. The best method is to inject the gas for periods of from ten to fifteen minutes with pauses of two or three minutes between, injecting during these pauses just enough gas to prevent clotting in the cannula. The ideal case for reaping benefit from this treatment is one in which the cyanosis and dyspnea are due to acute respiratory difficulty and in which the heart is fairly healthy. The object of this preliminary note is not to indicate the specific pathologic conditions in which the intravenous injection of oxygen should be used, but simply to point out that in those cases in which the inhalation of oxygen either cannot be practiced or gives inadequate relief, the intravenous method of oxygen administration, if carefully carried out, is available and will give therapeutic results.

28. Gluteal Fold in Sciatic Neuritis.—Carlill calls attention to a fact in the diagnosis of sciatic neuritis. It is that the gluteal fold may be very poorly developed in this condition. Commonly it is absent altogether, and this may be the case whether the affection is unilateral, bilateral, or part of a multiple peripheral neuritis.

Medical Journal of Australia, Sydney

July 15, II, No. 3

- 31 Undiagnosed Dislocations. J. G. Edwards.—p. 35.
 - 32 Headache From Otorhinologist's Point of View. W. N. Robertson.—p. 38.
- July 22, No. 4
- 33 Asthma; Its Cause and Treatment. W. W. Ewbank.—p. 53.
 - 34 Treatment of Eclampsia. J. Harris.—p. 55.
 - 35 Tumbling Cubes. I. Silverman.—p. 56.

July 29, No. 5

- 36 Genito-Urinary Cases; Treatment of Ureteral Fistula Following Ureterolithotomy; Extensive Ureterocele with Vesical Calculus; Two Stage Prostatectomy; Bilateral Renal Decapsulation for Post Eclamptic Suppression of Urine, with Recovery; Nephrectomy for Hypernephroma. S. H. Harris.—p. 69.

Quarterly Journal of Medicine, London

July, IX, No. 36

- 37 *Penetrating Wounds of Lung and Pleura; Report of Cases. R. D. Rudolf.—p. 257.
- 38 Researches on Perfused Heart. Some Factors of Cardiac Mechanism Illustrated by Reference to Certain Actions of Barium and Digitalis. W. Burridge.—p. 271.
- 39 Thrombo-Angiitis Obliterans (Nonsyphilitic Arteritis Obliterans of Hebrews.) F. P. Weber.—p. 289.
- 40 *Four Carbon Atom Acids of Diabetic Urine. W. H. Hurlley.—p. 301.
- 41 Case of Diffuse Fibromyoma of Esophagus, Causing Dysphagia and Death. A. J. Hall.—p. 409.
- 42 Trench Fever and Its Allies. W. P. Herringham.—p. 429.
- 43 Cases of Cerebrospinal Fever Treated at Isolation Camp Casualty Clearing Station. A. Presslie and W. E. Lindsay.—p. 437.
- 44 Trench Fever. G. H. Hunt and J. W. McNee.—p. 442.

37. Penetrating Wounds of Lung and Pleura.—Rudolf emphasizes the fact that penetrating wounds of the chest are by no means always fatal, and apparently hopeless wounds judging from their anatomic positions in the chest, may give rise not only to no danger symptoms but almost to no discomfort. A man may be shot through the chest and scarcely know it at the time nor have symptoms or signs afterward. On the other hand, what may appear to be almost a safe

wound, anatomically considered, may quickly end in death. The wound of entrance may not be in the chest at all and yet terrible and even fatal injury to the chest supervene. Pneumothorax is common after penetrating wounds of the chest. Usually, but not always, there is blood as well as air in the pleura, and very commonly, but not always, infection of the pleura follows. The pneumothorax usually happens at the time of the injury, but may occur days after it. If the air enters the pleura from the external wound, infection with pus-forming organisms is much more apt to occur than if the wound which admits the air is in the lung. As a rule the axiom holds good that the sudden occurrence of pneumothorax is accompanied by severe dyspnea, but there are exceptions to this. As regards the physical signs of pneumothorax, the textbook descriptions mostly hold good, but the coin sound (bell sound) is very elusive. In many cases it is not present at all, although the diagnosis of pneumothorax is confirmed by the Roentgen ray. In others it comes and goes.

The percussion note is usually hyperresonant, but may be almost dull, in cases in which the air is under pressure. The breath sounds are always very distant and vesicular, with one exception; that is, in cases in which there is a large opening into the collapsed lung. Here the type of breathing may be most characteristically amphoric and often very loud. The vocal fremitus and resonance are usually present to about the normal extent, and the latter may have a resonating tone which is very special in character. Tinkling râles are sometimes heard, of a peculiarly musical character. Hippocratic succussion can easily be elicited where fluid also is present, but as a rule the patients are too ill to permit of the shaking. In most cases of pneumothorax, in cases in which the air has come from the lung and infection is absent or not severe, the air is absorbed with a rapidity that greatly varies. In those instances in which the air has come through the chest wall, and especially where the opening remains, infection is nearly always a sequence and the case becomes one of pyopneumothorax, and the only hope is free drainage.

In hemothorax the bleeding here usually is from the lung, but may be from a vessel in the parietes. The greatest danger that threatens these cases is acute infection of the blood in the pleura. The infection may be received from the lung, from the skin surface, or from foreign body carried in with the missile. The physical signs of hemothorax are, generally speaking, those of fluid in the pleura. As regards the treatment of sterile or mildly infected cases of hemothorax, if the amount of blood be small, say not reaching above the angle of the scapula, and there be few or no symptoms of infection, the case may well be left to nature. In cases in which the bleeding has been greater than this and there is displacement of the heart, then something more than expectant treatment seems to be called for. When the lung is traversed by pieces of shell or shrapnel the laceration is very extensive, far more than would be expected from the size of the foreign body. In many cases the missile carries in with it pieces of clothing, which are found at operation, or very likely at postmortem examination. Sepsis being now almost certainly present, these cases usually do badly and their only hope is free drainage.

40. Four Carbon Atom Acids of Diabetic Urine.—To determine the sugar, nitrogen, aceto-acetic acid, oxybutyric acid and ammonia in a few cases, Hurtley says, is not sufficient. All these determinations should be made, and the blood and alveolar carbon dioxide, the bases and the acids of the urine, the nitrogen and fat of the feces, should be determined as well in many cases. Not only so, the diet should be analyzed with the view of determining the amount of bases and of acid producing substances it contains, and, what is equally important, the nature of the protein which is being given to the patient.

Archives de Médecine des Enfants, Paris

July, XIX, No. 7, pp. 337-392

45 *Present Status of Knowledge Concerning Meningitis. (Points de vue dans l'étude générale des méningites.) E. Suñer (Valladolid).—p. 337.

46 Paroxysmal Hemoglobinuria from Chilling. (Etude sur l'hémogloburie paroxystique à frigore.) E. Gorter and A. A. Huinink. —p. 363.

47 Pseudo-Tetanus. (Le pseudo-tétanus d'Escherich envisagé comme entité nosologique). A. A. Santos Moreira.—p. 368.

48 Infectious Origin of Duodenal Uleer. J. Comby.—p. 375.

August, No. 8, pp. 393-448

49 *Acuté Accidents and Syndromes from Disease of the Brain, Meninges and Spinal Cord. (Accidents et syndromes aigus méningo-encéphalo-médullaires.) L. Guinon and Pouzin.—p. 393.

50 *Prophylaxis of Tuberculous Meningitis and of Miliary Tuberculosis in Children. L. Jeanneret (Lausanne).—p. 414.

51 Three New Cases of Infantile Scorbutus. J. Comby.—p. 422.

52 "Pseudotetanus" Merely One Form of Tetanus. (Un nouveau cas de pseudotétanus.) E. Gorter (Leyden).—p. 426.

53 *Precocious Maturity in Girls. J. Comby.—p. 428.

45. Study of Meningitis from Different Standpoints.—Suñer discusses meningism, serous meningitis and tuberculous and epidemic meningitis. He cites typical cases in children to illustrate each point he mentions to emphasize the differentiating features. He has found that serous meningitis may come on suddenly, with convulsions and prove fatal in a few hours, or chronic hydrocephalus may be its only manifestation for a long time. There is no certain sign of tuberculous meningitis except discovery of tubercle bacilli in the spinal fluid, and this is a difficult matter as they are always scanty. It may be necessary to examine the precipitate thrown down, cold, by the end of twenty-four hours, spreading it carefully on a slide. Negative findings do not exclude it, and he is convinced that errors are often made in its diagnosis. The skin reaction to tuberculin cannot be relied on, he says, as this is usually negative in this type of tuberculous. Some of the "cured" cases thus labeled were probably cases of infantile paralysis. Epidemic meningitis often appears in attenuated and atypical guise, especially in infants. Mere clinical examination is not sufficient to exclude other causes for convulsions. The spinal fluid may exceptionally be limpid through the entire course of the disease, notwithstanding that meningococci may be numerous. He has found leukocytosis the rule, with from 60 to 80 per cent. polynuclears. The precipitin reaction, agglutination, fixation of complement, and bacteriologic search for the meningococcus help to clear up all doubt. With negative findings, cultures should be started. Inoculation of rabbits in the subarachnoid spaces always proved negative in his experience. In examining a patient it is necessary to exclude meningeal inflammation secondary to disease in the eye, nose, maxillary and frontal sinuses, lungs, or digestive apparatus. Hypostatic pneumonia frequently accompanies epidemic meningitis, and is liable to prove misleading as in the case of a boy of 6 who developed fever and prostration forty-eight hours after a fall from a toy wagon. No sign of fracture could be found but there was impaired resonance over the base of both lungs and no distinct meningitic symptoms. Lumbar puncture the fifth day revealed meningococci.

The prognosis depends in large measure on the character of the epidemic, statistics showing wide variations, and the mortality is high even with serotherapy. Patients still die under it, although the spinal fluid usually clears up and the clinical picture shows improvement for a time after introduction of the serum. In the cases with favorable outcome under serotherapy, Suñer was never convinced that this had been the unmistakable result of the specific action of the serum. The lavage of the subarachnoid space attracts active polynuclears to the spot, and this alone may explain the benefit, without assuming a specific action from the serum. Physiologic salt solution might answer as well.

Suñer says in conclusion that those who advocate injecting the antiserum directly into the ventricles fail to mention the dangers of such a procedure. He describes a case in which symptoms apparently called for it as a last resort. Necropsy showed that the needle had entered the lateral ventricle properly but there was no fluid in either ventricle. It had accumulated around the bulb and below the cerebellum and contained meningococci. The child of 4 collapsed and stopped breathing after 18 c.c. of the tepid antiserum had been injected very slowly into the ventricle. Twenty minutes elapsed before respiration and pulsation were restored and rhythmic traction of the tongue had to be kept up for another hour before the child was breathing regularly. She was unconscious for hours afterward and died five days

later after alternating periods of improvement and aggravation.

49. Curable Acute Brain, Meninges and Spinal Cord Trouble in Children.—Guinon and Pouzin report sixteen cases of acute brain and nervous troubles developing in children most of which they are unable to classify with the ordinary syndromes. With a meningitis, even with malformed cells and lymphocytosis, if we cannot find the tubercle bacillus we are justified in reserving the prognosis in the hope of a spontaneous recovery. Such have been comparatively numerous in the Paris hospitals recently. In two of the cases reported, after a brief febrile period, with nightmares, complete incoordination developed, lasting for a week or two, with final recovery. The children could move their legs while reclining but collapsed on the floor when stood up on their feet. Infantile paralysis in an atypical form was evidently responsible for some of the other cases. The children were left with slight sequels. During the fall of 1914 Guinon knew of over fifty cases of infantile paralysis, and reports here a few cases in older children that terminated in recovery. The acute amicrobian meningitis with mononuclear reaction subsided, leaving scarcely a trace, although the children had tuberculous glands. In all the cases cited lumbar puncture was applied repeatedly, and mercurial treatment was given when there was suspicion of inherited syphilis. In the last case described an injection of anti-meningococcus serum seemed to aggravate the condition. The diagnosis had been advanced tuberculous meningitis in a girl of 11. The high fever was combated with wet packs, and after a period of delirium, alternating with prostration, convalescence set in. Three weeks after defervescence the child developed fever and total inability to move the legs, any effort to do so causing severe pain. This lasted only two days, and then all the symptoms disappeared. Except for impetigo on head and neck, the child seemed quite normal two weeks later.

50. Prophylaxis of Tuberculous Meningitis.—Jeanneret insists on the necessity for impressing on every pregnant woman where there is a case of "open" tuberculosis in the immediate family that the coming child must be separated at once and kept entirely away from contact with the tuberculous parent or other relative. Any furtive kiss or brief visit compromises the success of the sacrifice. As soon as the child has passed the period when generalization of tuberculous infection is most menacing, that is, when it reaches its eighteenth or twentieth month, it can be restored to the family. The risk for the child is comparatively small by that time. As it is a question of life or death for the infant, the transient separation can generally be arranged when the parents have the matter presented to them in the right light. Jeanneret thinks that the ideal is to organize an institution where the newborn children of indigent parents could be segregated from contact with the tuberculous. The relatives could visit the baby regularly and inspect its progress through a glass partition. Switzerland has already several such asylums for the newly born, and he regards them as an indispensable adjunct to the antituberculosis dispensaries. A number of typical cases are cited showing the necessity for removing the newborn at once and the evil that results when this is neglected or delayed.

In case the nursling is already infected, we must act quickly and act vigorously, and his reliance is on tuberculin. He gives it by the Mantoux technic, intradermally. This imitates Nature's processes by the localization; it creates in the child's skin an artificial focus, corresponding to a spontaneous focus without living bacilli, from which the tuberculin is gradually absorbed and gets into the general circulation, and thus stimulates the production of the specific reactions of defense. This artificial focus is maintained by repeated injections of tuberculin, and in his experience it seems to have been fully as potent as a bone or gland lesion in protecting against generalization of the infection. Intradermal injections are simple and easy. The skin is pinched up into a fold, and the very fine needle is introduced, parallel to the surface. He injects 0.01 c.c. of a 1:1,000 solution, repeating the injection every third day and increasing the strength very

gradually till 0.1 c.c. of a 1:10 solution is reached in time. The local reaction is less in infants than in older children. A febrile reaction is common, but brief. As the child grows older, it manufactures its own tuberculin in its tuberculous glands, and does not need artificial tuberculinization. Jeanneret is confident that he has saved certain infants by these prompt measures, and does not hesitate to recommend them even when the prognosis is quite grave.

53. Precocious Maturity in Girls.—Comby reviews what has been written recently on this subject, especially F. Beekman's study of the question last year.

Bulletin de l'Académie de Médecine, Paris

August 1, LXXVI, No. 31, pp. 89-106

- 54 *Serotherapy of Typhus. (Résultats de la sérothérapie dans le traitement du typhus exanthématique.) C. Nicolle and L. Blaizot.—p. 95.
- 55 Typhoid Agglutinins in the Cerebrospinal Fluid. (Transsudation des agglutinines typhiques dans le liquide céphalo-rachidien de l'homme.) F. G. Daumezon.—p. 101.
- 56 *Kidney Functioning in Soldiers on Active Service. (Le fonctionnement rénal chez les troupes en campagne et ses rapports avec les néphrites de guerre.) P. Ameuille and J. W. MacLeod.—p. 103.

54. Serotherapy of Typhus.—Nicolle and Blaizot inoculated every three or four days horses and asses with an emulsion of organs from guinea-pigs conserving the virus of typhus. They selected the most virulent and the least toxic of all the organs, namely, the suprarenals and the spleen. They report here the results in thirty-eight cases of typhus fever treated with the antiserum derived from an ass or a horse that had been inoculated, respectively, 132 and 98 times with this emulsion. There was only one death among the thirty-eight patients and an intercurrent affection during convalescence from the typhus was responsible for this fatality. In 20 per cent. of the cases the disease seemed to be aborted, and, in all, the usual delirium, stupor and prostration failed to develop or else rapidly retrogressed. The other nervous symptoms subsided also and the general condition materially improved. According to recent writers, typhus runs a two weeks' course, but under serotherapy defervescence occurred from the sixth to the twelfth day in a number, and the average for all was 11.61 days. There were no complications in any case. The dosage ranged from 10 to 20 c.c. a day, by subcutaneous injections.

56. Kidney Functioning in Soldiers on Active Service.—Ameuille and MacLeod were much impressed with the frequency of spontaneous acute nephritis among the soldiers in the trenches. To investigate the causes of this susceptibility of the kidneys, they have examined the urine from those still apparently healthy. They found albuminuria in 1.87 per cent. of 1,175 infantry soldiers in an active sector, and 1.31 per cent. in 686 in a sector quiet at the time. Among 2,229 British troops from two to eight days after serving their turn in the trenches there were 4.73 per cent. unmistakable cases of albuminuria, and 3.53 per cent. among 311 still in the trenches. Fully 2.91 per cent. of 2,069 English male hospital attendants presented albuminuria, and 10.12 per cent. of 553 new recruits after six months of military training in England. Among 231 attendants at the French base hospitals less than 1 per cent. had albuminuria and these were old chronic cases of nephritis. Reexamination a week or so later showed that in men under 30 the albuminuria was transient, subsiding as the men rested. In the older men it seemed to be a warning of impending or already installed nephritis. Tests of the blood pressure did not reveal any tendency to a pathologic influence on arterial tension from trench life. The urine collected from ten men in the French trenches averaged 1,200 c.c. with 12.35 gm. urea and 9.41 gm. chlorids. Parallel examination of the urine from fifteen men in the English trenches showed a daily average of 1,830 c.c. with 45 gm. urea and 10.34 gm. chlorids. Control examination of soldiers not in the trenches showed the same high figures for the British in comparison to the French, one English soldier excreting 73.4 gm. urea in the twenty-four hours, and all averaging 50 per cent. above the French soldiers.

Journal de Médecine de Bordeaux

August, LXXXVII, No. 10, pp. 189-208

- 57 *Differentiation of Strangulated Diaphragmatic Hernia. J. Vitrac.—p. 189.
- 58 Strophanthus in Therapeutics. Indications and Contraindications. (Strophanthus et strophantine.) H. Mallié.—p. 192.
- 59 The Action of the Interossei Muscles. L. Massé.—p. 198.

57. **Diaphragmatic Hernia.**—Vitrac relates an instructive case of ileus which was retrospectively explained as the result of strangulation of the bowel in a diaphragmatic hernia. Necropsy showed that "part of the large intestine was the old and habitual guest of the hernia while a loop of small intestine may have been an occasional guest." Nothing was known of the anomaly, the robust young man complaining merely occasionally of colic in the stomach region. Finally a second loop of small intestine found its way into the hernia, and strangulation ensued. The pain and tenderness in the epigastrium were relieved only when the man sat up and bent forward. The abdomen was moderately distended, with relative indolence to palpation. There was no vesicular murmur on the left side, but the resonance was not much modified, the incarcerated loops of intestines responding with a tympanic resonance in this case although, depending on the contents of the bowel, the findings in such a case might vary to complete dullness. It is necessary to open the chest to get at the hernia from above, as a rule; it is impossible to suture it through a laparotomy opening. The lung might be drawn down to reenforce the suture. In conclusion Vitrac exclaims that the surgeon is not a miracle worker; his success with strangulated hernia depends on the internist's calling him in time. In the case described five days had elapsed after strangulation had occurred before the laparotomy, and the strangulation then was ascribed to constricting bands, the hernia not being discovered until after death. The condition was so grave at the time that exploration was restricted to the minimum and the diaphragm was not palpated.

Lyon Médical

August, CXXV, No. 8, pp. 309-368

- 60 *The Iodin Reaction in the Urine. Its Importance for the Prognosis of Tuberculosis and in Diagnosis of Typhoid Fever. (Sur une nouvelle réaction urinaire.) M. Petzetakis.—p. 309.

60. **The Iodin Reaction in the Urine as Sign of Typhoid and as Grave Omen in Tuberculosis.**—Petzetakis reports after a year's test of this reaction that it does not occur in normal conditions. He says that it is negative likewise in "closed" pulmonary tuberculosis, but positive findings are encountered in "open" tuberculosis tending to a fatal outcome. It is also constant in typhoid fever. Here it becomes positive so early that it aids in differential diagnosis of the disease. Like other biochemical reactions, it is sometimes positive in other pathologic states, accompanied by high temperatures, but not in a way to detract from its semeiologic value in tuberculosis and typhoid. The technic is simplicity itself, merely the addition of two or three drops of a 5 per cent. alcoholic solution of iodine or of the aqueous solution, made with 1 gm. metallic iodine and 2 gm. potassium iodide to 300 gm. distilled water. The drops are dropped from a dropper on the surface of the urine, about 15 or 20 c.c. in a test tube. After waiting a little while, the walls of the test tube are given a few shakes in such a way that the iodine solution mixes with the urine to form a column of about 2 cm. After waiting a while, the upper layer of the urine in the test tube, thus mixed with the iodine, is compared with the lower layer of the urine in the tube or with urine in another tube. The reaction is positive when the upper layer shows a change of tint to a golden yellow. It is negative if the urine shows no change. Or, 5 c.c. of urine can be placed in each of two test tubes and three or four drops of the alcoholic solution be added to one, and the tint then compared. When the reaction is positive the urine retains the new tint for one, six, twelve or even more hours; this persistence of the color reaction is characteristic. The tint may even become more pronounced after the first few hours. The reaction is not modified by the presence of sugar, acetone, albumin or other pathologic elements, nor by heat, ether, benzene, chloroform or toluol,

but addition of lead acetate to the urine prevents the reaction from taking place. The research on this iodine reaction was done in Greece and at Lyons, France, during the last year.

Paris Médical

August 12, VI, No. 33, pp. 133-148

- 61 *Prophylaxis of Contagious Disease from and to Soldiers on Furlough. (Hygiène du soldat permissionnaire à Paris.) Borne.—p. 133.
- 62 *Drip Drainage of Bladder after Operations on the Kidney. (Drainage au goutte à goutte urétéro-vésico-urétral dans les néphrotomies et pyélotomies.) M. Devroye.—p. 136.
- 63 *Epidemic Meningitis. G. Rosenthal.—p. 140.
- 64 *Thread Drainage of Suppurating Arthritis. (Nouveau mode de drainage des plaies articulaires de guerre et des arthrites purulentes communes du membre supérieur.) H. Chaput.—p. 143.
- 65 The High Cost of Living. (Le prix de la vie.) M. Labbé.—p. 145.

61. **Hygiene of Soldiers on Furlough.**—Borne relates that one of the unprecedented features of the great war now is that soldiers are constantly coming and going across the country; the wounded are sent back to the home zone to convalesce, and others journey to take their places in the ranks, while the men are given frequent one-day and six-day leave of absence to enable them to visit their families. There is a constant network of passing and repassing men, and the danger of their spreading infection is great, bringing home germs and infested vermin from the war zone and carrying back with them disease contracted at their homes or on the way. This raises a host of new problems and he discusses how they can best be solved.

62. **Drip Drainage After Nephrotomy.**—After cutting off the tip of a No. 12 or No. 14 Nélaton catheter, Devroye introduces it through a longitudinal incision in the kidney pelvis, fastening it so the lower end is suspended in the funnel formed by the entrance to the ureter. The catheter is connected above with a drip irrigator ensuring a flow of some suitable antiseptic. He has found a fivefold dilution of Dakin's solution effectual in severe cases of infection of the kidney pelvis, but a 1:10,000 solution of potassium permanganate is generally sufficiently active. By this simple method of drip irrigation of the kidney proper or of the pelvis, the infection is combated, the region is drained by the natural routes, the ureter is dilated by the accumulating fluid so that the danger of stricture after removal of a concretion is reduced, and there is no chance for ascending infection. But the chief advantage of the method is that the wound heals without production of a fistula. He gives illustrations of the technic with both pyelotomy and nephrotomy, and reports three cases showing the prompt and complete healing in from one to three weeks after an operation for pyonephrosis, a calculus in the kidney pelvis, or uronephrosis. To control the draining, he colors the disinfecting fluid with a little methylene blue.

63. **Epidemic Meningitis.**—Rosenthal found that certain strains of meningococci took the gram stain in some recent cases of meningitis. He also calls attention anew to the way in which meningococci set up a typical focus of inflammation in the adenoid tissue of the throat. (See abstract 49 in THE JOURNAL, 1916, LXVII, 473.) He reiterates further that few as yet realize how the pathology of the rhinopharynx dominates that of the entire respiratory passages. Examination of the nasal sinuses is an indispensable part of every examination of the lungs, and it is folly to separate into special fields the nose and lungs, when they represent merely different stages of disease of the air passages.

64. **Drainage of Wounded Joints.**—Chaput applies the principle of thread drainage in treatment of badly shattered large joints, and here gives the technic for this "draining resection" in detail for the shoulder, elbow and wrist.

Presse Médicale, Paris

August 3, XXIV, No. 43, pp. 337-344

- 66 *Ionization Treatment of Adherent Cicatrix with or without Contracture. M. Chiray and G. Bourguignon.—p. 337.
- 67 *Glycuronuria and Its Variations. P. Gautier.—p. 339.

August 7, No. 44, pp. 345-352

- 68 *Methods of Amputation Considered from Point of View of Fitting Artificial Limb. A. Depage.—p. 345.

- 69 Devices to Overcome Radial and Popliteal Paralysis. (Appareils de suppléance dans les paralysies du radial et du sciatique poplité externe.) J. Privat and J. Belot.—p. 349.

August 10, No. 45, pp. 353-360

- 70 Treatment of Suppurating War Wounds of the Elbow. (Traitement des arthrites suppurées du coude par plaie de guerre.) L. Bérard.—p. 353.
- 71 *Soldier's Heart. (Le rythme cardiaque chez le soldat combattant.) L. Binet.—p. 356.

66. **Ionic Medication in Treatment of Deforming Scars.**—Chiray drives potassium iodid directly into the cicatricial tissue by means of the negative electrode of a constant current, and reports surprisingly fine effects on the vicious cicatrix itself and on the resulting contractures. As the cicatrix softens and separates from the adjacent tissues, the underlying tissues, nerves, etc., have approximately normal conditions restored. The mechanical and physiologic relief thus afforded permits mobilization and the cure of contracture of the hysteric and reflex types.

67. **Glycuronuria as Index of Liver Functioning.**—Gautier's experience confirms that of Roger, Chiray and others in regard to the importance of the glycuronic acid content of the urine as a sign that the liver is doing its work properly. In 100 healthy persons examined, the glycuronic acid content was pronounced, and a dose of camphor was followed by little if any increase in the glycuronuria on an average diet. The fasting healthy subject showed a slight increase after the camphor test. In cases of heart or kidney disease with insufficiency of the liver there was always a notable transient elimination of glycuronic acid after ingestion of the test dose of camphor. In fifteen diabetics the camphor test always proved negative. In advanced cirrhosis the liver is unable to respond to the camphor test. Roger believes that the glycuronic acid is manufactured by the liver to combine with certain toxic bodies in the organism and thus eliminate them. This assumption is confirmed by a recent case of attempted suicide with a preparation of phenol. The urine was black and showed the highest proportion of glycuronic acid Gautier has ever encountered. Then followed a phase in which there was no glycuronuria, after which normal conditions were gradually restored. With cirrhosis of the liver, the total absence of glycuronuria is a sign of a speedily fatal outcome. In tests of alimentary glycosuria, the glycuronuria was not modified even by ingestion of 150 gm. sugar, confirming the view that the glycuronic acid is produced only when needed to take care of toxic substances and get them eliminated. The Grimbert and Bernier test for glycuronic acid is reliable if the reagents are pure. (See abstract 57 in THE JOURNAL, 1916, lxvii, 80.)

68. **Stumps and Artificial Limbs.**—Depage has been consulting with manufacturers of artificial limbs, studying how in amputating to provide the best conditions for the fitting of an artificial limb. He pays high tribute to American-made artificial limbs which, he says, are now being adopted by the majority of surgeons in the present war. He describes the preferable technic for amputating at the various segments of the leg or arm, with illustrations, showing in particular what not to do.

71. **Soldier's Heart.**—Binet's study of the heart rhythm in soldiers in the trenches and on long marches has confirmed the possibility of bradycardia from fatigue, and of changes in the pulse under emotional influences, the dropping of shells, etc. A tachycardia may result which may persist indefinitely, or it may recur in paroxysms. A tendency to bradycardia may accompany wounds of the skull, while tachycardia prevails with wounds of the chest, unless the heart is affected, in which case the tendency is to progressive bradycardia. There is also a tendency to bradycardia in aviators after sudden descents—part of a vagobulbar syndrome explaining the *mal des aviateurs*.

Revue de Gynécologie et de Chir. Abd., Paris

XVIII, No. 6, pp. 441-611. Last indexed Feb. 5, p. 462.

- 72 *Interstitial Pregnancy. (La grossesse interstitielle.) C. Waegeli (Geneva).—p. 441. Commenced in No. 5.
- 73 War Wounds of the Abdomen. (Plaies de l'abdomen par projectiles de guerre.) G. Rouhier.—p. 504.

72. **Interstitial Pregnancy.**—Waegeli has encountered two cases of interstitial pregnancy during the last year at Geneva, and compares them with 150 he has compiled from the literature. In only fifty-two of the whole number were the records complete, specifying the Ruge-Simon sign—the more or less vertical position of the fundus of the uterus, rising from the sound cornu to the gravid cornu; the insertion of the round ligament laterally from the fetal sac, and, lastly, the asymmetrical position of the uterine adnexa in relation to the uterus. He illustrates and describes in minute detail the findings in his cases, and insists on the necessity for an immediate laparotomy as soon as the diagnosis of interstitial pregnancy is certain. Some women have recovered after conservative operations but he thinks the cornu should be resected, unless excessive hemorrhage compels supravaginal amputation.

Policlinico, Rome

August 6, XXIII, No. 32, pp. 967-994

- 74 Fish Poisoning from Fish Put Up in Oil. (Tonno sott' olio non commestibile. Tossicità per gli animali da esperimento e stato microbico.) M. Pergola.—p. 967.
- 75 Paraurethral Nodules and Passages of Gonorrheal Origin. (Sopra le forme blenorragiche di canali parauretrali. Nodi parauretrali.) G. C. Sanfilippo.—p. 979.

Riforma Medica, Naples

XXXII, No. 22, pp. 585-612

- 76 Self-Inflicted Emphysema-Edema of the Face in Malingering Soldiers. P. D. Siccardi.—p. 590.
- No. 23, pp. 613-640
- 77 Clinical, Anatomic and Bacteriologic Study of Cholera, Especially Cholera Nephritis. P. Guizzetti.—p. 613. Commenced in No. 22.
- 78 Simple Apparatus for Extension and Immobilization of Fractured Limb. B. Schiassi.—p. 621.
- No. 24, pp. 641-668
- 79 Unusual Types of Paratyphoid Bacilli Isolated from Soldiers in the War Zone. A. Azzi.—p. 645.
- 80 Frequency of Paratyphoid and Multiplicity of Bacterial Types Producing It. G. Galeotti.—p. 647.
- 81 To Limit Mutilations. (Per limitare le mutilazioni.) G. Perez.—p. 649.
- 82 Another Case of Helminthiasis from Dipylidium Caninum in Man. A. Ancona.—p. 652.

Semana Medica, Buenos Aires

XXIII, No. 19, pp. 519-546

- 83 The Immunity Process. (Nuevas consideraciones sobre el proceso de la inmunidad.) J. Howard.—p. 519.
- 84 Importance for the Public Health of Sanitary Guard, the "Hygiene Experts." (Los guardas sanitarios o peritos higienistas.) F. Otero.—p. 529.
- No. 25, pp. 677-708
- 85 Spontaneous Expulsion of Long Loop of Intestine through Perforation in Uterus Caused by Criminal Abortion. Recovery. J. B. Gonzalez.—p. 683.
- 86 Intravenous Iodid and Salicylic Medication. A. A. da Matta.—p. 691.
- No. 26, pp. 709-738
- 87 Sudden Blindness from Hematemesis and Melena. F. Belgeri and J. C. Labat.—p. 709.
- 88 Diagnosis of Twin Pregnancy. (Embarazo gemelar.) T. A. Chamorro.—p. 712.
- No. 27, pp. 1-24
- 89 Hematology in Obstetrics. T. A. Chamorro.—p. 1.
- 90 Sale of a Medical Practice. (Venta de la clientela medica.) A. Stucchi.—p. 9.

Finska Läkaresällskapets Handlingar, Helsingfors

LVIII, No. 1, pp. 1-239

- 91 *The Clinical Course of Gonorrhea in Women. Treatment and State Control. (Studier öfver det kliniska förloppet af gonorré hos kvinnan med särskild hänsyn till behandlingen jämte ett bidrag till belysandet af statskontrollens betydelse, grundadt på jämförande undersökningar af den veneriska morbiditeten i Köpenhamn, Kristiania, Stockholm och Helsingfors.) M. af Heurlin.—p. 1. Concluded in No. 2.
- 92 Physiologic and Chemical Tests of Domestic and German Digitalis Leaves. J. Gronberg.—p. 106.
- 93 Fifteen Years' Work at the Helsingfors Children's Hospital. W. Pipping.—p. 124.
- No. 2, pp. 241-466
- 94 Operative Treatment of Gallstones. (Bidrag till gallstensjukdomens operative behandling.) H. v. Bonsdorff.—p. 241.
- 95 Pasteboard Splints for the Arm. (Om pappskenor för de öfre extremiteterna.) R. Faltin.—p. 369.

No. 3, pp. 467-588

- 96 Anatomy of the Eye. Historical Sketch. (Grunddragen af ögon-anatomiens historiska utveckling.) V. Grönholm.—p. 467.
- 97 *Radium Treatment of Uterine Cancer. (Erfarenheter af radium-behandling vid livmoderkräfta.) O. A. Boije.—p. 485.
- 98 *Tuberculosis Mortality in Finnish City. (Om dödligheten till följd af tuberkulösa sjukdomar i Vasa under åren 1895-1915.) K. Ekholm.—p. 507.
- 99 *Local Anesthesia for Reduction of Luxations. T. Kalima.—p. 526.

No. 4, pp. 589-718

- 100 *Stab Wounds of the Heart. (Några fall af penetrerande hjärtsår.) B. Runeberg.—p. 589.
- 101 Action of Chloroform and Ether on the Circulation in Rabbits. (Om kloroformens och eterns verkningar på blodcirkulationen hos kaninen.) Y. Airila.—p. 609.
- 102 Abducent Paralysis from Otitis Media. T. Eklund.—p. 632.
- 103 Agonal Bacteriemia. C. Nyberg.—p. 647.

91. **Gonorrhea in Women.**—This extensive study of the clinical course and treatment of gonorrhea in women is completed by a statistical review of the comparative morbidity from venereal diseases in the capitals of the four Northland countries, with special regard to the influence of state control of prostitution. The article is based on 446 cases of gonorrhea, including 412 women and thirty-four little girls, given treatment at the Helsingfors hospital. Af Heurlin also tabulates statistics from eleven leading clinics, the total embracing 4,342 cases. The figures from seven clinics, with 2,178 cases, show involvement of the rectum in 27 per cent. The course of rectal gonorrheal trouble is extremely chronic and insidious. The younger the patient, the more protracted the course of gonorrhea. In Berger's report of 127 cases in girls from 5 weeks to 10 years old, the gonorrheal vulvovaginitis dragged along for three months in 61.5 per cent., for four and a half months in 32.4 per cent. while in about 2 per cent. the affection persisted at the end of ninety-four days. Cervicitis was apparently healed in an average of 35.9 days, and urethritis in 36.8, while the urogenital lesions healed in forty-three days, that is, the secretions were free from gonococci in from three to five separate examinations. The rectum is involved in fully 50 per cent. of all the cases of gonorrheal vulvovaginitis in little girls. There was metastasis in the joints in 1.4 per cent. of af Heurlin's 412 cases of gonorrhea in women, but Chiari's compilation of 23,599 cases showed arthritis in 3 per cent. The tubes and ovaries became involved in about 20 per cent. of af Heurlin's 412 cases in women. None of the data presented indicate that the adnexa are more liable to become involved with active or with expectant treatment of gonorrheal cervicitis, or when the patient is kept in repose or allowed to be up and about during the course of treatment. Internal measures never seemed to shorten the course of the disease. It ran on an average a six months' course in women, and in a few it persisted for a year or two. No direct influence on the disappearance of the gonococci could be detected under vaccine therapy. The reaction is not specific and the provocative action in the later periods is uncertain.

The venereal morbidity in the four cities reported on fails to show that state control is effectual as a means of combating endemic venereal morbidity. Its effect is shown most in that the statistics thus obtained show a higher gonorrhea morbidity in women. An extensive bibliography reviewing conditions in various countries is discussed, the comprehensive article filling 198 pages, with fifty-two tables of comparative statistics and nineteen charts. One table gives Stockmann's findings on reexamination later of 582 cases. He found gonococci months after the women had been dismissed as cured in 46.2 per cent. The maximum duration was two years.

97. **Radium Treatment of Uterine Cancer.**—In Boije's thirty-five cases the growth was inoperable and a clinical cure was realized under radium in seven of the women. There has been no sign of recurrence during the six to twelve months since. In two other cases the cancer returned after a year of apparent health. Radical removal of the growth became possible in two cases as it retrogressed under the radiotherapy.

98. **Tuberculosis in City in Finland.**—Ekholm found the tuberculosis mortality at Vasa 4.215 per thousand inhabitants per year during the last twenty years. The proportion was

7.57 per thousand among the children under 5, and 4.42 per thousand between 16 and 30. The tuberculosis mortality for women was only 3.91 per thousand while it was 4.69 for men. The tuberculosis mortality has declined somewhat for the well-to-do but not in working class circles.

99. **Local Anesthesia for Reduction of Luxations.**—Kalima has tried to reduce dislocation of the humerus under local anesthesia in eleven cases and of four other bones in one case each. In three cases it became necessary to resort to general anesthesia after all, but in all others reduction was simple and easy. In fifteen minutes after injecting the novocain, the dislocated extremity could be manipulated without causing the patient the slightest pain. This is particularly an advantage for the rural physician when there is doubt whether the bone is fractured or merely dislocated. The muscles relax under the local anesthesia so that sometimes the bone can be slipped into place without reduction maneuvers. Kalima cites similar experiences published by others. In two cases the femur was dislocated through the sciatic foramen, in two through the obturator, including his personal case. In all the luxation was reduced with ease. The anesthetic must be injected at a point where the skin is intact, using from 10 to 40 c.c. of a 1 per cent. solution of novocain, or, in case of the femur, up to 50 or 70 c.c. He has previously published his excellent results with local anesthesia in reduction of fractures.

100. **Stab Wounds of the Heart.**—Runeberg reports five cases with recovery under operative treatment. The symptoms indicating pressure on the heart may include apathy and somnolence approaching absolute unconsciousness. In other cases symptoms of internal hemorrhage dominate the clinical picture. In operating, he prefers the extrapleural route, cutting an osteoplastic flap to ensure better access. He emphasizes the importance of removing all the blood from the pericardium cavity. He rinsed it clean with warm saline, flushing the deeper recesses through a rubber tube. This reduces to the minimum the danger of pericarditis. He concludes the operation by carefully suturing the opening in the heart and in the pleura. Examination later in a number of cases of stab wounds has shown a surprising tolerance on the part of the heart.

Hospitalstidende, Copenhagen

August 2, LIX, No. 31, pp. 753-776

- 104 *Fracture of the Sesamoid Bones of the Great Toe. (Frakturerne af Stortaaens Sesamknogler.) T. Eiken.—p. 753.
- 105 Lupus on the Lips and Mucosa of the Mouth. (Om Forekomsten af Lupus erythematosus paa Læbernes Prolabium og Mundens Slimhinde.) P. Haslund.—p. 760. Commenced in No. 30.

August 9, No. 32, pp. 777-800

- 106 *Case of Phlegmonous Gastritis. P. V. Tuxen.—p. 777.

104. **Fracture of Sesamoid Bone of Big Toe.**—In reviewing the records of the Copenhagen hospitals for the last fifteen years, Eiken found only one case of this kind, and it was a pseudo fracture, the separation of the bone into halves being evidently congenital. A case of true fracture was recently encountered at Røvsing's private clinic. The roentgenograms of both cases are given. The fractured bone was removed about a year after the accident which occurred while the woman was walking on an asphalt pavement. The symptoms were pain starting at a point at the margin of the tibial sesamoid bone of the great toe, with tenderness and a slight cracking sound on moving the toe. It is impossible to differentiate the fracture from a sprain or contusion, acute gout or rheumatism, without roentgenography. This clears up the diagnosis at once. The foot had been treated for a year with baths, massage, etc., but without relief. A complete cure followed resection of the fractured bone. Eiken knows of only four other cases on record, all in adults. In one case the disturbances subsided under conservative measures; in the others not until part or all of the bone had been removed.

106. **Phlegmonous Gastritis.**—Tuxen relates a case which he says is the third on record in which phlegmonous gastritis was diagnosed before the operation or death. The patient was a previously healthy young man under treatment for

rubeola. He suddenly developed symptoms suggesting acute stomach trouble with pains in the stomach region and incessant vomiting, paresis of the intestines and high temperature. Under the diagnosis of either perforated gastric ulcer or phlegmonous gastritis, the stomach was opened and diffuse phlegmonous gastritis was found. The stomach was drained but death followed in three days. Tuxen discusses this form of gastritis from every standpoint, comparing his case with the 121 J. Jensen compiled from the literature, adding ten personal cases to the list. A phlegmon can retrogress, but as we cannot exclude perforated gastric ulcer in these cases, Tuxen thinks a laparotomy is indicated. When phlegmonous gastritis is discovered, he would refrain from further intervention.

Hygiea, Stockholm

LXXVIII, No. 14, pp. 993-1088

- 107 Simultaneous Incipient Tabes, Tuberculous Spondylitis, and Transverse Myelitis in Man of Forty-Two. G. Lundahl.—p. 993.
108 Polyneuritis in Young Woman Suggesting Menière's Disease. (Ett fall av polyneuritis cerebri menieriformis.) H. Key-Aberg.—p. 1009.
109 *The Dangers of Lumbar Puncture. (Om farorna vid lumbalpunktion.) V. Boivie.—p. 1023.

109. **The Dangers of Lumbar Puncture.**—Boivie had a patient with diffuse symptoms of a brain tumor who died suddenly nine hours after an extremely cautious lumbar puncture. Only 3 c.c. of cerebrospinal fluid had escaped, and it dripped a drop at a time. An hour later she screamed with sudden intense pain in the head and then became somnolent and died the ninth hour from failing respiration. Necropsy revealed a glioma 7.5 cm. long by 4.5 cm. wide, starting in the floor of the ventricle, with an offshoot extending into the foramen magnum. The ventricles were not distended, and hence he is convinced that the lumbar puncture could not have been directly responsible for the fatality in this case. There is always the danger, however, that the needle may go too far, especially in children, and puncture the abdominal aorta or a loop of intestine, but he has never heard of this being done. In three cases on record the needle passed through an abscess and carried germs into the spinal cavity. Von Lier suggests on this account to administer hexamethylenamin beforehand. It has also been recommended in case of bleeding. With unruly patients there is danger of breaking the needle. In some recent reviews of the subject a number of instances are related of sudden death before the contemplated lumbar puncture had been applied. A recent compilation by Schönbeck lists seventy-one cases of sudden death after lumbar puncture, but Boivie comments that they are listed without criticism of the actual share of the lumbar puncture in the fatality.

In a recent case in Billström's service, a woman of 40 with incipient tabes dorsalis was treated with lumbar puncture, 5 c.c. of fluid being withdrawn. The woman died suddenly twenty-three hours later and necropsy revealed embolism in the left coronary artery from thrombosis in the aortic valve. The release of the spinal fluid may have induced a hemorrhage *ex vacuo* or in some way interrupted the communication between the fluid in the brain and in the spinal cord. If there is much internal hydrocephalus any abrupt change in the tension of the fluid in the spinal cavity is liable to suck into the foramen magnum any loose tissue in the vicinity. This is manifested by an abrupt change in the tension of the fluid. Hence the manometer findings should be closely watched during lumbar puncture, stopping at the first sign of a sudden drop in the pressure. Exceptional care is necessary with high blood pressure and rigid blood vessels. Psychic irritation and alcoholism contraindicate it entirely. In conclusion, Boivie quotes Schönbeck's warning to keep the patient reclining for twenty-four hours before lumbar puncture, and for from twenty-four to forty-eight hours afterward, with the head low during the first twelve hours. Any change from the reclining position should be made extremely gradually. The fluid should never be aspirated under any circumstances, and no attempt should be made at lumbar puncture on outpatients. The mishaps that have been published can be traced as a rule to the bursting of an aneurysm or arteriosclerotic vessel under too rapid fluctuations of pressure in the spinal

canal, or else to part of an intracranial tumor being drawn into some opening thus plugging it.

Ugeskrift for Læger, Copenhagen

July 27, LXXVIII, No. 30, pp. 1251-1290

- 110 *Familial Chronic Anemia with Jaundice. J. U. Gerdes.—p. 1251.
111 *Occult Bleeding. (Undersøgelser over okkult Blødning.) J. P. Gregersen.—p. 1260. Commenced in No. 29.
August 3, No. 31, pp. 1291-1352
112 Instrument for Mechanical Clockwork Hammer Action for Uniform and Exact Percussion. C. Jørgensen.—p. 1291.
113 Acetonemia with Vomiting in Child of Five. H. Thorborg.—p. 1298.

110. **Familial Hemolytic Jaundice.**—In the family described by Gerdes seven of the ten members have chronic anemia, jaundice, enlargement of the spleen, microcytosis and urobilinuria. The mother is free from it and one of her three daughters and one son. There were also a number of cases in the preceding generation. Iron and arsenic is the main reliance, but no cure is known from them. Splenectomy may be followed by marked improvement. This does not cure the disease, but it removes a constant menace to the blood, the more dangerous as the resisting powers of the corpuscles are so far below par. It would be instructive if we could study the blood systematically in persons who have had the spleen removed, but the number is too small as yet.

111. **Occult Bleeding in Differentiation of Cancer.**—Gregersen here concludes his report of extensive research on occult bleeding. The previous instalments of the article have already been summarized in these columns. He found the benzidin test, as modified by Wagner, by far the most sensitive and reliable technic, and asserts that the findings can be accepted with confidence in differentiation of gastric ulcer and cancer. With cancer, the occult bleeding keeps up continuously, week in and week out, while with gastric ulcer a series of negative findings interrupts occasionally the series of positive responses. We can count on negative findings with chronic gastritis with achylia, colitis, simple dyspepsia and constipation, and gallstone trouble. His findings were constantly negative in 602 tests on 66 patients in these categories. The findings were also constantly negative with heart disease, edema, ascites, nephritis and cirrhosis of the liver, in 200 tests on twenty-five patients. Of the thirty-four patients with gastric ulcer, there was occult hemorrhage in thirty; twenty-six were under observation for a long time and in every case the occult hemorrhage stopped through longer or shorter periods or permanently. The thirteen patients with gastric cancer who were under examination for many months never failed to give a positive response to the benzidin tests for invisible blood in the stools. When the tests give a positive response, in a dubious case, for a few days and then a negative response for a few more days, cancer can be excluded with practical certainty. A number of specially instructive cases are described, among them that of a man of 61 who for four months had presented every sign of malignant disease of the stomach, even to extreme anemia and emaciation. But as the test for occult hemorrhage gave negative findings on five out of eight days of tests, cancer was excluded. The man's prompt recovery under treatment for ulcer confirmed the correctness of the diagnosis. During the five months since he has gained 10.5 kilograms. In another case a child, not quite 2 years old, presented extreme anemia, and invisible blood was found in forty-three tests of the stools while it was absent in four specimens. There were no complaints of pain, and the Weber test was consistently negative. On the basis of the benzidin findings the diagnosis of an ulcer in stomach or duodenum seemed certain. Necropsy confirmed this as it revealed idiopathic dilatation of the esophagus with a peptic ulcer.

Correction.—The articles in the *Semana Medica* of Buenos Aires, Nos. 16 to 18, reviewed in THE JOURNAL, July 15, 1916, p. 244, referred to the Argentine Republic, not to Brazil, as erroneously inferred by the translator. Titles 67, 71 and 74 should read "The Sanitary Condition of Argentina"; "Public Health Matters Throughout Argentina," and "Infant Mortality in Province in Argentina."

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SARCOMA OF THE INTRA-ABDOMINAL TESTIS

WITH REPORT OF A CASE *

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DENVER

This subject has attracted the special attention of a few recent writers in this country, notably Bulkley,¹ Coley,² Ewing³ and Hinman⁴ of Johns Hopkins. I am indebted to them for statistical and other interesting data.

Bulkley collects from the literature fifty-seven cases of sarcoma of the intra-abdominal testis; thirty-seven of the fifty-seven patients studied were single cryptorchids. Seventy-five per cent. of all the cases occurred in patients between 25 and 45 years of age, and 74 per cent. of the mortality occurred within one year after operation. The fatal progress was more rapid in the undescended than in the scrotal testis.

Hinman says that the malignancy is relatively more common in the undescended testis and this is the generally accepted view. Bulkley states that one in every four cases of malignant disease of an abnormally located testis is in the abdomen, and that there is one abdominal sarcoma to every fifteen sarcomas in the scrotum. Observations of others vary but little in this respect.

Ewing states that most testicular neoplasms originate in the sex cells and are primarily teratomas, and others declare that all malignant tumors of the testis are teratomas or derived from them.

The teratomas and mixed types of tumor grow more slowly and in these cases the lymph glands are not involved so early. When the disease is in the right

testicle the glands of the vena cava are the first involved in the metastases, and when it is in the left testicle the glands of the aorta are first involved.

Bulkley states that, in the forty-seven intra-abdominal cases in which operation was performed, only three of the patients were known to be living after two years.

Syphilis, tuberculosis and nonmalignant neoplasms of the abdominal testis are practically unknown.

Bulkley expresses the common opinion that spermatogenesis is lacking in the abdominal testis, but this statement admits of some qualification. He also says that transplanting into the scrotum does not improve it in this respect. This refers undoubtedly to the late operation in adult life.

Trauma is more common to the testis in its normal position, but it is not generally regarded as an important factor in the causation of malignant degeneration of the testicle.

Chevassu classifies all teratomas as cancerous.

With these preliminary observations, I desire to contribute one more to the brief list of reported cases of sarcoma of the intra-abdominal testicle.

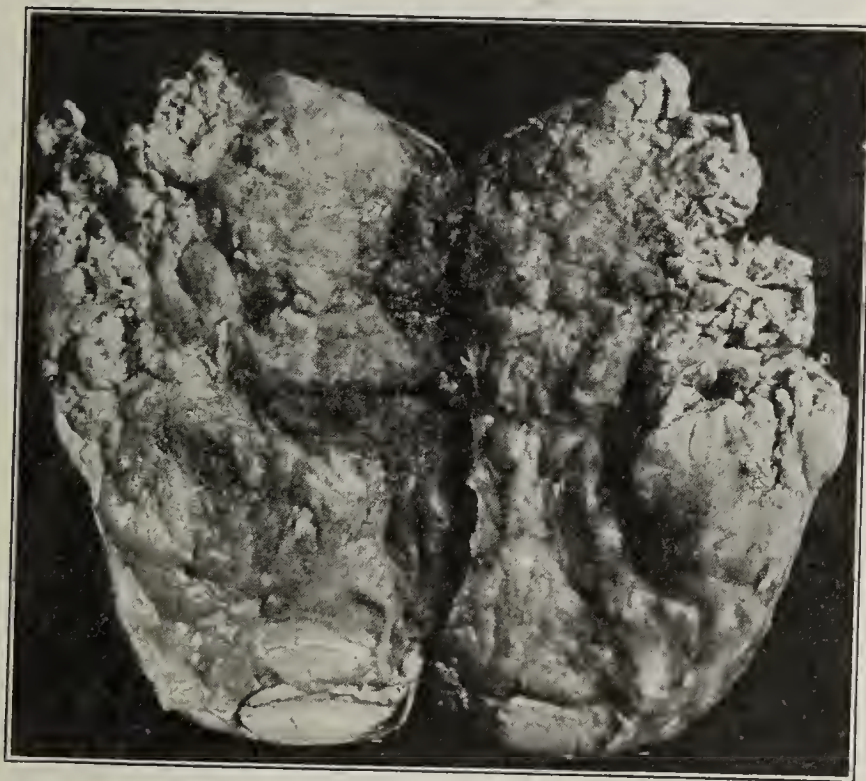


Fig. 1.—Gross appearance of neoplasm, diminished one third since operation.

REPORT OF CASE

The patient, L. W., was a miner, aged 37 years, married.

He had never had any venereal disease. When 17 years of age, he had consulted a physician in regard to an undescended testicle on the right side, but nothing important was done, and the man had no discomfort or inconvenience until April, 1913, when moderate discomfort in the lower abdomen with dull pain and stomach indigestion caused him to seek medical aid. He consulted me in November, 1913, and a large abdominal tumor extending above the umbilicus and filling the lower abdomen was readily observed. It seemed to have a fixed point in the pelvis and admitted of but slight motion laterally. More frequent micturition was believed to be due to pressure on the bladder. The urine was normal and cystoscopic examination by Dr. Oliver Lyons showed no pathologic condition of the bladder.

The insidious and finally rapid growth connected with, as I felt, the intra-abdominal testicle impelled a diagnosis of sarcoma of the retained testicle. Its operability I doubted, but an exploration was decided on and, Dec. 6, 1913, at St. Luke's Hospital, assisted by Dr. Lyons, I opened the abdomen by a liberal incision in the middle line. A large,

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Bulkley: Surg., Gynec. and Obst., 1913, xvii, 308.

2. Coley, W. B.: Cancer of Testis, Ann. Surg., July, 1915, lxii, No. 1.

3. Ewing, J.: Teratoma Testis and Its Derivatives, Surg., Gynec. and Obst., March, 1911, xii, 230.

4. Hinman, Frank: The Operative Treatment of Tumors of the Testicle, THE JOURNAL A. M. A., Dec. 5, 1914, p. 2009.

vascular appearing, solid tumor, with few adhesions to omentum or intestines, was apparent. The cornu of the right fundus of the tumor revealed a nodule the size of a hickory nut. The bladder was manifestly pressed downward or partially involved in the growth and could neither be seen nor felt. The hand in the abdomen posterior to the tumor discovered what seemed to be half a dozen nodules or enlarged glands connected with the growth at the base of the bladder. An aspirating needle was inserted into the middle of the tumor, and no fluid was withdrawn. With pressure around the puncture, a little grayish, brainlike substance escaped. Its sarcomatous nature seemed most probable.

The safe removal of the tumor being deemed most improbable, the abdomen was closed. The patient recovered promptly. On the third day, I commenced the use of the erysipelas and *Bacillus prodigiosus* toxin (Coley). I was determined to push it to the limit and to give it a fair and impartial trial. My assistant in the case (an accomplished genito-urinary surgeon) gave the patient a ninety days' lease of life.

The toxin, prepared by Dr. Martha Tracy of Philadelphia (Coley's formula), was administered three times a week. The dose, commencing with half a minim, was increased rapidly until a reaction of from 102 to 103.5 degrees of temperature was produced. At the end of one month, there was hardly a perceptible change in the growth, but certainly there was no increase. In seven weeks there was manifest decrease.

In February, 1914, the patient was given a few ordinary Roentgen-ray treatments by Dr. S. B. Childs. February 23, he left for Redcliff to resume his duties as foreman in a copper mine. I taught his wife and gave her written instructions with regard to the method and technic of giving the toxin. The patient visited me every two or three weeks for report and examination. This treatment was continued steadily with but two brief intermissions for eleven months. A written record was kept of his condition, chill and temperature especially being noted.

During this period there was not a single local infection from the injections, which were given chiefly in the loins and gluteal regions. Coley advises that the injection be made preferably in the tumor, but, when the lesion is within the abdomen, it is not safe to do this, unless adhesions to the abdominal wall are evident and sufficient to prevent extravasation and peritonitis.

It seems remarkable that even a naturally vigorous, healthy young man could work with hardly the loss of a day under such conditions, but it was made possible in this way: He went off duty every afternoon at 4 o'clock, and as soon as he reached home his wife, quite an intelligent woman, gave the injection. He immediately went to bed. Usually he had a chill followed promptly by a rise in temperature which not infrequently reached 104 and occasionally a little higher. In two hours the temperature would begin to decline at a rapid rate. He was then given a dose of quinin and liquid food. He slept very well the latter part of the night, and by morning was ready for breakfast and work.

The patient was very susceptible to the influence of the toxin, and during the eleven months, when more than 100 doses were given by injection, the maximum dose was 18 minims. In many reported cases of sarcoma, much larger doses have been administered with impunity in a short period of time. In this case it was continued faithfully and per-

sistently, because the growth was steadily diminishing in size, and I hoped it would reach a point where it could be successfully removed.

In April, 1914, for three weeks, the injections were discontinued that I might observe the effect. I examined the patient at the beginning and at the end of this period and could not fail to observe, as did the patient and his wife, an increase in the size of the growth. The toxin was resumed and the tumor soon decreased in size. In August, 1914, the toxin was again discontinued with the intention of an early operation, the tumor being much smaller. In ten days the tumor was perceptibly larger. The patient came to Denver, and I verified the fact. The use of the toxin was immediately resumed with prompt arrest in the increase of the growth.

Sept. 24, 1914, the patient called me over the telephone and stated that one leg was swelling. October 30, he came to Denver. Both legs were finally involved from the groins to the feet. The swelling was not due to phlebitis, but to lateral pressure of the tumor, or inflammatory tissue, on the iliac vessels. The patient was put to bed and his legs were bandaged. I now injected the toxin myself directly into the tumor to the depth of 2 inches, feeling satisfied that adhesions to the anterior abdominal wall rendered it safe. The reaction was much more severe and profound, and I found it necessary to reduce the dose to 50 per cent. of that usually given him. This was an interesting fact, showing a

rapid and more extensive distribution of toxins into the system, when injected into the tumor, which, in a weakened patient, might prove not only dangerous, but fatal. This method of injection was continued twice a week for five weeks, and during most of this time the patient was confined to bed on account of the weight and discomfort of his legs in walking. The swelling of the legs rapidly disappeared, and the tumor slowly decreased in size.

After Dec. 6, 1914, the patient was sent to the office of Dr. Childs for a series of Roentgen-ray treatments. Thirteen ordinary gas-tube treatments were given in December, 1914, while the Coolidge tube was used in serial treatment one day only in January, 1915.

During the year 1914, the tumor under toxins felt harder and more circumscribed on palpation. The Roentgen ray seemed to have the same effect; it also vastly increases, Dr. Childs states, the inflammatory adhesions connected with growths.

Jan. 30, 1915, with the assistance of Dr. Lyons at St. Luke's Hospital, I removed the growth completely and successfully.

The tumor and immediate surroundings differed in some respects from those observed at the exploratory operation, Dec. 6, 1913. The neoplasm was now quite uniform and regular in outline. The projecting nodular appearance at the fundus had disappeared. The adhesions in front had obliterated the peritoneum. The tumor was surrounded by a thick capsule of fibrous and connective tissue. Adhesions to the colon and omentum were extensive, but there were few to the small intestine. The inferior half of the transverse colon was buried by adhesions in the fundus of the tumor. Its safe dissection without damage to the integrity of the intestine was the most difficult part of the operation. The bladder, though adherent, was not involved in the growth. With the hand beneath the outer capsule, I shelled out the tumor, leaving the iliac vessels, on the right side especially, freely exposed. No lumbar glands were enlarged nor were any discovered about the base of the

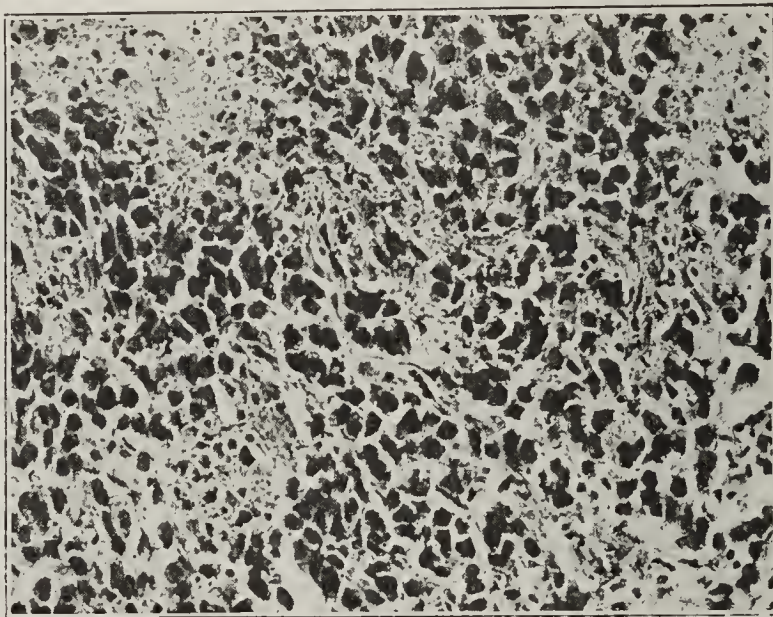


Fig. 2.—Typical sections of tumor showing large round cells and sarcomatous structure; stroma and vessel arrangement well seen. Zeiss apochromatic, 8 mm. Leitz projection ocular (R. C. Whitman).

bladder. The large cavity left at the base and sides bled quite freely and it was necessary to pack it with gauze for forty-eight hours. It was then removed and a double rubber drain inserted. Necessarily such a wound would heal slowly, and, fortunately, adhesive ileus did not occur during the process.

The tumor was submitted to Dr. R. C. Whitman, pathologist of the University of Colorado, School of Medicine, who made the following report: "I regret to report that the tumor from Mr. Walker is a typical large round-celled sarcoma. It is also sometimes called carcinoma, mesothelioma, and malignant teratoma. This particular one is somewhat interesting in view of the fact that certain portions of it present a typical sarcoma structure, while others have some appearance of the usual carcinoma." This shows a mixed type.

The patient recovered promptly and resumed his position at the mine in five weeks. A fistulous opening, extending to the full depth of the wound, remained for a year. This was attended with an annoying sequel and for a short time excited some apprehension. From the date of operation, January 30, the toxin was continued until June 24. At this time the patient was suffering from local infection of the fistulous tract and a small, deep, unhealed cavity.

Before leaving Denver, I injected bismuth paste to complete the healing. When the patient went to the copper mine, I showed him and his wife how to use it, and it was now the only treatment, injection being repeated two or three times a week, but technic imperfect.

June 24, as indicated, he had a slight rise of temperature with headache. There were local swellings in the abdominal wall and the glands in the groin were slightly enlarged, suggesting metastasis.

I found the old fistulous wound infected, June 26, with a small nozzle syringe, I washed out the paste and pus with a dilute solution of hydrogen peroxid. The temperature was normal in thirty-six hours. The serial Roentgen-ray treatment with Coolidge tube was begun June 29 and discontinued July 5. I continued the irrigation with a 2 per cent. solution of liquor formaldehydi in glycerin for ten days at least.

Improvement was continuous and the patient gained 37 pounds in weight in two months, and all local indications of disease disappeared in a short time. He has had no toxin since, and no Roentgen-ray treatments since July 29, 1915.

The improvement of the patient was so prompt and rapid that I felt this temporary setback was due to infection from the small pus cavity chiefly, but I attribute benefit to the use of the Roentgen ray. Its chief use, in my opinion, is after, not before, operation in any operative case.

The superficial veins of the abdomen were conspicuous for a year before operation. Their appearance today is nearly normal and so is the patient's general health.

He is 5 feet, 6½ inches in height, and weighs at this time 175 pounds. June 30, 1915, he weighed 137 pounds and his weight had slowly but steadily increased since the operation, January 30. The frequent use of the toxin with severe reaction, no doubt, operated to prevent rapid increase in weight.

COMMENT

Treatment of this condition is by radical operation, and its success depends chiefly on early recognition. The disease is quite insidious in its early stage, and unfortunately diagnosis is made usually at an advanced stage. Hinman places the operative cures at from 15 to 20 per cent. This is better than formerly recorded.

Prevention is worthy of consideration. This can only mean the transplantation of the organ to its normal position in early life, or its removal in early adult life. Bulkley expresses the opinion that if only one testicle is undescended and the other is in normal position, the former should be removed; but if both are undescended the operation is not advisable, probably for certain assumed sexual or biologic considerations.

To assume that an abnormally placed organ is relatively more prone to degeneration or malignant growth is not, in my opinion, a surgical superstition, but is in accordance with sound biologic laws. Neither an entire organism, nor a part, develops as naturally in structure and function in an unhealthy environment. Decay or degeneration under such conditions is a natural response to the exacting demands of natural biologic laws.

The cure of an advanced case is exceptional and requires several years to determine. The mixed toxin in the case reported undoubtedly had a repressive or inhibitory influence on the growth and progress of the tumor and must have been instrumental in promoting the disappearance of the nodular condition, observed in the exploratory operation, Dec. 6, 1913.

There should be no question as to the propriety and advisability of removing the testicle in early adult life in case only one is misplaced, whether the testicle is in the inguinal canal or within the abdomen. In the latter case, the Roentgen ray may be utilized in determining its location, if this is not revealed by palpation. If both are misplaced, one testicle being in the abdomen and the other in the canal, discretion and sound judgment would dictate the removal of the intra-abdominal testis, but not the inguinal, unless manifest disease of the organ demands it. The inguinal testis is always subject to observation and watching, the intra-abdominal never. It is, therefore, whether more prone to malignant change or not, the greater menace to life because of its secluded position, and of the insidious character of malignant disease and of the fact that the tumor has reached the point of great danger before it is observed.

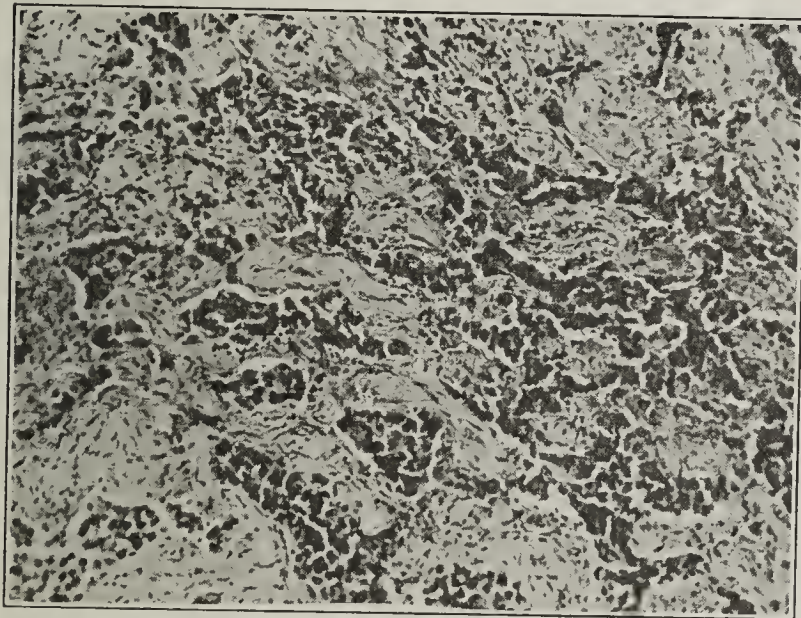


Fig. 3.—Carcinoma-like area, showing cell nests sharply differentiated from the connective tissue stroma. Zeiss apochromatic, 16 mm. Leitz projection ocular (R. C. Whitman).

ABSTRACT OF DISCUSSION

DR. WILLIAM B. COLEY, New York: I believe the very remarkable result obtained by Dr. Grant was largely due to the excellent judgment which he exercised in the administration of the treatment, and to his perseverance in keeping it up for a long period. Dr. Grant has brought up a number of important points for discussion: First, the tendency of the undescended testis to undergo malignant degeneration. There is a very wide diversity of opinion on this point. Originally I agreed with W. McAdam Eccles, who held that there was no evidence of such tendency. My first twenty-five cases of sarcoma of the testis showed no evidence of an undescended testicle, the twenty-sixth and twenty-seventh both were of the undescended variety. In 1914 I reported 64 cases of cancer of the testis in which

not less than twelve occurred in the undescended testis, and of these five were of the abdominal ectopia. Since I have observed six other cases none of which were of the abdominal variety. With regard to the treatment of this condition, I do not agree with Bulkley, who advocates the removal of every abdominal ectopic testis unless double. In cases in which the testis does not descend before the age of puberty, it is possible in nearly every instance to bring the testicle down into the scrotum by Bevan's operation. In rare cases in which the testis cannot be brought down, I believe it wiser to remove it rather than to place it in the peritoneal cavity. Inasmuch as antecedent trauma has been observed in about one-third of all the cases of sarcoma of the testis one would have to consider the operation of bringing the testicle down, as a possible factor in causing malignant degeneration. In one case which I observed there was good reason to believe that the trauma, incident to the operation of bringing the testicle down into the scrotum, was the immediate exciting factor in the causation of a sarcoma which developed shortly after the operation. On the other hand, in 281 operations for undescended testis in addition to nearly 100 cases which were operated on in other hospitals, no case of sarcoma developed after operation. The prognosis of sarcoma of the testis in general is very bad while that of sarcoma of the undescended testis is still worse. In view of the generally admitted hopelessness of malignant disease of the testis, there has been a strong tendency during the last two or three years to advocate a very extensive and radical operation, consisting in the removal of all of the retroperitoneal and preaortic glands—a very grave operation and thus far attended with a mortality of 11 per cent. I hold the opinion that it is unwise to submit the patient to such a prolonged and grave operation when the chances of saving his life by the operation are outweighed by the chances of death from the operation. I would propose the following method as a substitute to the radical operation just discussed: In primary cases, as soon as the diagnosis has been made, I would advise the immediate removal of the testis and cord, as high up as possible through the Bassini incision for inguinal hernia. Second, I would advise, beginning, as soon as the wound has healed, a routine prophylactic treatment with the mixed toxins of erysipelas and *Bacillus prodigiosus*, the same to be carried out for a long period of time, at least six months and in some cases a year. This treatment could easily be carried out by the family physician without interfering with the patient's ordinary occupation.

DR. W. W. GRANT, Denver: In reference to the post-operative treatment of these cases: If you will remove the growth completely these patients ought then to have some treatment of a prophylactic character. There are but two methods that we know of of any value whatever. One is the use of the toxin made by Dr. Martha Tracy of Philadelphia and the other is the Roentgen ray. I believe these measures ought to be continued for a long time, for many months, if not for two or three years, because we never know when the patient has reached the period of complete cure. It may be three years, five or more. I therefore commend that feature always to your earnest consideration.

THE SURGICAL PROBLEM OF UNILATERAL SYMPTOMLESS HEMATURIA

ITS CAUSE AND SURGICAL RELIEF*

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CHAPEL HILL, N. C.

Nearly every surgeon is occasionally confronted with a case of symptomless, unilateral bleeding from the kidney, and in most instances he must face the difficult problem of solving the pathologic problem if possible and then directing his treatment accordingly.

The first purpose of this paper is to exclude those specific causes of unilateral hematuria, namely, stone, tuberculosis, new growths and hydronephrosis, and secondly to discuss only that type which has in the past been classified under the misnomer of "essential." In order that this term "essential" shall be aptly applied we must have a case of painless bleeding in which the kidneys show absolutely no infectious agent, no organic changes and no clinical evidence of functional insufficiency. We do not recognize that such a negative condition can exist with a hematuria, and believe that in every case of unilateral renal bleeding there occur definite changes in the kidney which act as the direct causative factor.

The etiology of the so-called essential hematuria has been discussed at length in many valuable articles appearing during

the last five years, but it is the purpose of this paper to consider only our findings in the human and experimental cases we have personally studied.

In considering the many theories and deductions so far advanced as to the cause of this condition, one is forced to conclude from the evidence in hand that there is only one of material value, and this is nephritis. There is little room to doubt that the bulk of the pathologic evidence is in favor of some form of chronic inflammatory change in the kidney acting as the exciting factor in symptomless, painless and more or less continuous unilateral hematuria.

The great drawback to this evidence being accepted as conclusive is the wide variance in the pathologic observations so far recorded, and the chief obstacle seems to lie in our interpretation of what is nephritis. Recent experimental work would not exclude a com-

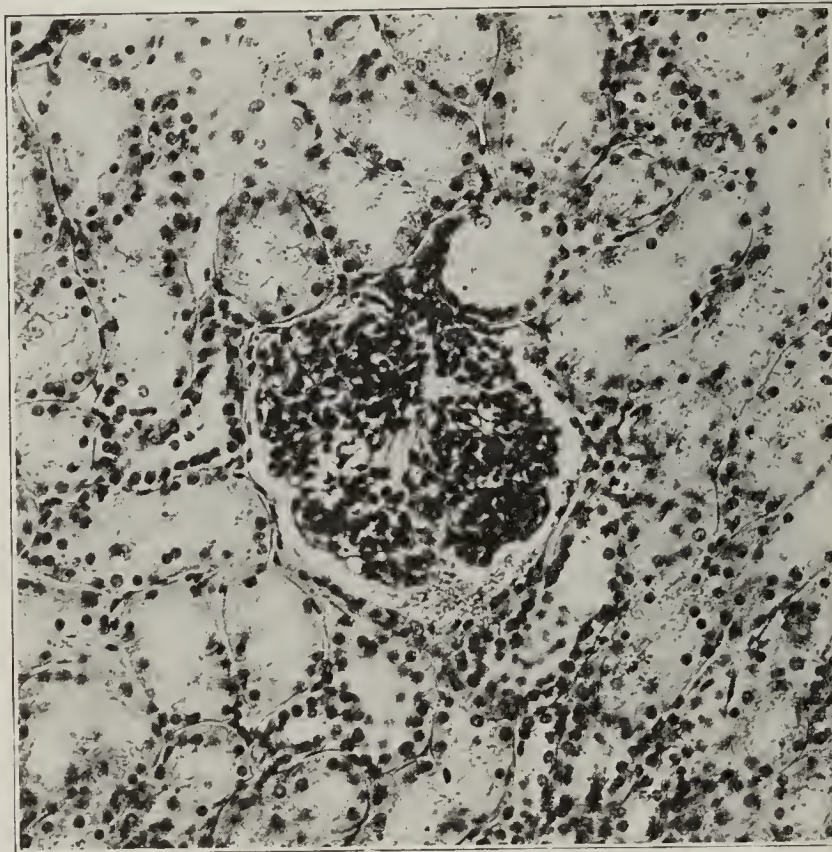


Fig. 1.—Normal cortex, $\times 390$, in same tissue section from which the following pictures were made.

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

bined vascular and epithelial nephropathy, but changes in the kidney resulting in hemorrhage as the one symptom must necessarily be confined principally to the vascular elements. In order to prove that certain chronic inflammatory changes in the kidney are the cause of this bleeding, we must first demonstrate a

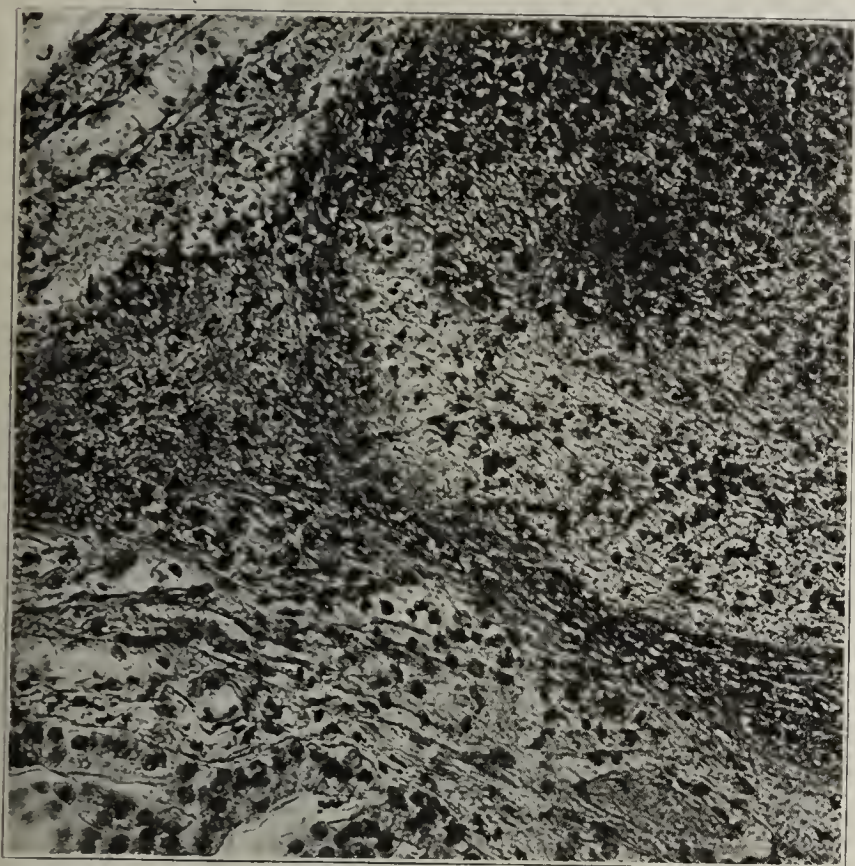


Fig. 2.—Area of recent infection in papilla, $\times 188$. Exudate consists of fibrin, blood cells and polymorphonuclear leukocytes.

direct relationship of these changes to the renal vessels, and then show these vessels to be the actual source of the bleeding.

There has been but one type of lesion so far reported which would seem to us to be the probable cause of bleeding in this condition, and that is the renal varix reported by Fenwick,¹ Cabot,² Braasch,³ Newman,⁴ Pilcher,⁵ Baum,⁶ Payne⁷ and Ballenger.⁸

Our studies are confined to eleven human and six cases of experimental hematuria which we have succeeded in producing on the dog. In the first eight human cases our findings seemed to coincide with those of other investigators, namely, nephritis, interstitial nephritis and glomerulonephritis. It is to be recorded, however, that nephrotomy was done in these cases and sections of the cortex only were studied. Fifteen months ago we did our first nephrectomy for this condition, and in this case we were able to demonstrate for the first time the actual source of the bleeding to be from dilated veins in the pyramids and on the free surface of the papillae. Since this first case we have had two more human cases which showed the same pathologic changes, namely, few if any changes in the cortex, a marked overgrowth of chronic inflammatory tissue in the medulla and pyramids which surrounded the vessels of this zone, and these vessels in turn dilated and resembled varicosities. In those cases of experimental nephropathy in the dog in which we have

succeeded in securing a condition of hemorrhage analogous to the clinical type under study, the same changes in the kidney have obtained.

In our experimental study of hematuria we have learned to recognize two distinct types resulting from infection: first, the early form of bleeding from acute inflammation with diapedesis, and second, a cessation of this hemorrhage with return of more or less constant bleeding when chronic inflammatory changes occurred in certain definite areas of the kidney. In any chronic progressive infectious process, sooner or later there results a secondary damage to the tubules and a replacement fibrosis. The effect of this fibrosis on the circulation in the kidney depends on its relationship to the renal vessels. Certainly in two human cases of symptomless unilateral hematuria which we have studied, this overgrowth of connective tissue in the papillae and at the corticomedullary junction had resulted in such impediment to the return venous flow from within the kidney that varicosities had been produced, both within the substance of the medulla and on the free surface of the papillae, and actual hemorrhage from these vessels was demonstrated.

We do not want to draw from these studies any dogmatic conclusions; but we can say definitely from our observations in the human and experimental kidneys examined by us that the hemorrhage is due to chronic inflammatory changes in the medulla and pyramids resulting in an obstruction to the venous return and subsequent hemorrhage by diapedesis or actual rupture of the capillaries. Of special importance in this connection, our studies show the formation of connective tissue at the corticomedullary junction which hinders the return venous flow from those veins found in the medulla below this point, the

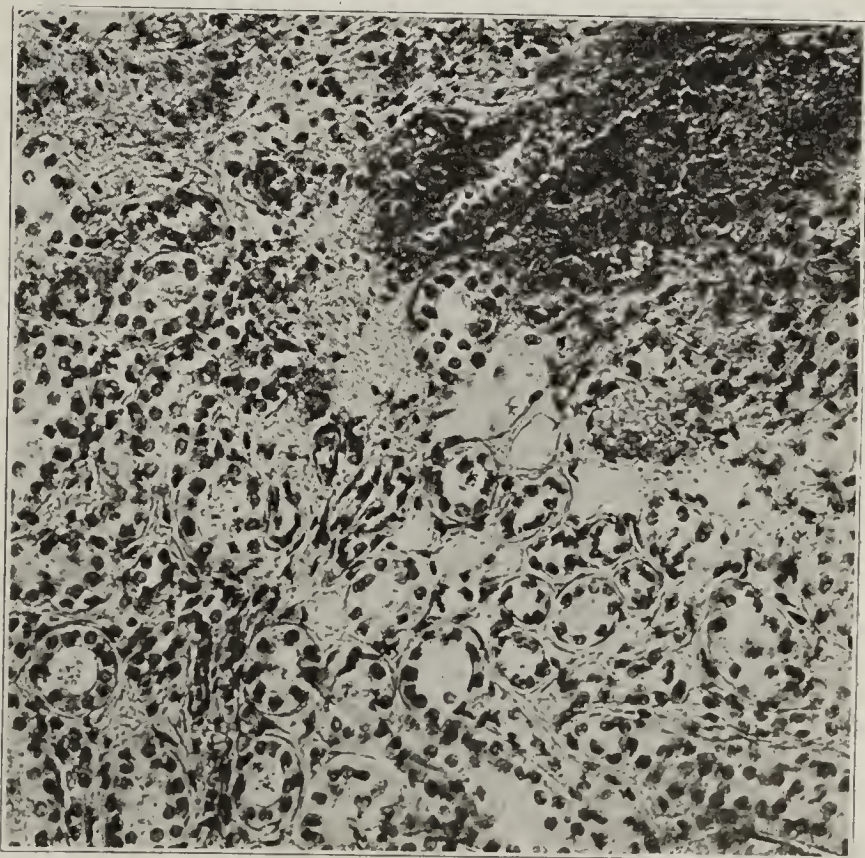


Fig. 3.—Overgrowth of connective tissue in medulla with distention of capillaries, $\times 190$.

venulae rectae, which pass up to the corticomedullary junction to unite with other veins before finally leaving the kidney.

In this connection we wish to record three cases, one human and two experimental in the dog, that we have observed to have microscopic stone formations in

1. Fenwick: Brit. Med. Jour., June 17, 1905.
2. Cabot: Am. Jour. Med. Sc., January, 1909.
3. Braasch, W. F.: Clinical Observations on Essential Hematuria, THE JOURNAL A. M. A., Sept. 20, 1913, p. 936.
4. Newman: Brit. Jour. Surg., No. 1, 1913.
5. Pilcher: Ann. Surg., 1909, p. 65.
6. Baum: München. med. Wchnschr., 1913, No. 5.
7. Payne: Tr. Southern Surg. and Gynec. Assn., 1915.
8. Ballenger: Jour. Rec. Med., Atlanta, 1915.

the pyramids surrounded by an overgrowth of chronic inflammatory tissue which obstructed the return flow in the straight veins with coincident hemorrhage. A possible explanation of the relationship between this type of calculus formation and the hemorrhage is that the stones resulted from a chronic focal infec-

lesions, will cause hematuria, but these are specific causes which do not obtain in the type of case under study. Again, congestion from extrinsic causes will usually produce a mild hematuria, while most of those so-called essential cases bleed profusely at times.

TREATMENT

Nephropexy.—This has been advocated, but one can readily see how futile this would be in the type of case in which definite focal lesions in the kidney are producing the hemorrhage. It should be applied only in those cases in which marked mobility can be shown to interfere with the blood supply of the kidney.

Decapsulation.—This is a procedure which has been reported as curative in seventeen cases found in literature; but the rationale of the operation is not such as would commend it for routine use. A collateral circulation would be the most reasonable explanation for a cure after decapsulation, but according to the conclusive experiments of Katzenstein,¹¹ stripping of the capsule absolutely prevents rather than favors the formation of a new circulation. The question of a new growth or a small tuberculous focus is always a serious possibility in these cases, and decapsulation without nephrotomy does not provide for inspection of the kidney substance or pelvis. We had one such case seven years ago, diagnosed essential hematuria, which showed a small focus of tuberculosis in the lower pole when nephrotomy was done. Similar reports have come from Israel, Rovsing and others, and it is just these serious possibilities in this unsolved pathologic problem which should preclude decapsulation alone as a safe surgical procedure. On the other hand, there are several cases reported in which decap-



Fig. 4.—Dilated venules at tip of papilla, $\times 45$. In some, the blood has not coagulated; in others, clotting has occurred, and hyaline degeneration of the thrombus is beginning; in others, the hyaline change is complete, while some show beginning organization.

tion and they in turn stimulated the connective tissue overgrowth. We are not in a position to say that all cases of so-called symptomless hematuria are due to the changes here described, but report our observations as additional light on the unsolved pathologic problem.

The one great argument brought forth by many observers against nephritis being the cause of this condition is the comparatively large number of chronic nephropathies which do not bleed. In reply to this well taken point we would say that in the ordinary severe types of chronic nephritis the bulk of the changes are in the cortex, whereas the changes here recorded are found in the medulla and pyramids. Further, in our studies of experimental nephropathies we have so far found a bleeding kidney only in those cases in which the principal changes have occurred in the medulla and pyramids. In this connection it would be interesting to know what those cases observed by other men would show if viewed from this light and careful studies made of serial sections taken from the pelvic zone. Certainly small sections from the cortex would show nothing convincing, as evidenced by the eighty-odd histologic reports found in literature.

The contentions of Randall⁹ and Spitzer¹⁰ that congestion or venous stasis is the true cause of this condition more or less coincides with our findings, only these observers failed to locate the exciting factor as a focal lesion within the kidney proper. It is a fact that certain extrinsic causes, such as movable kidney, pressure stasis from tumors, and cardiac and hepatic

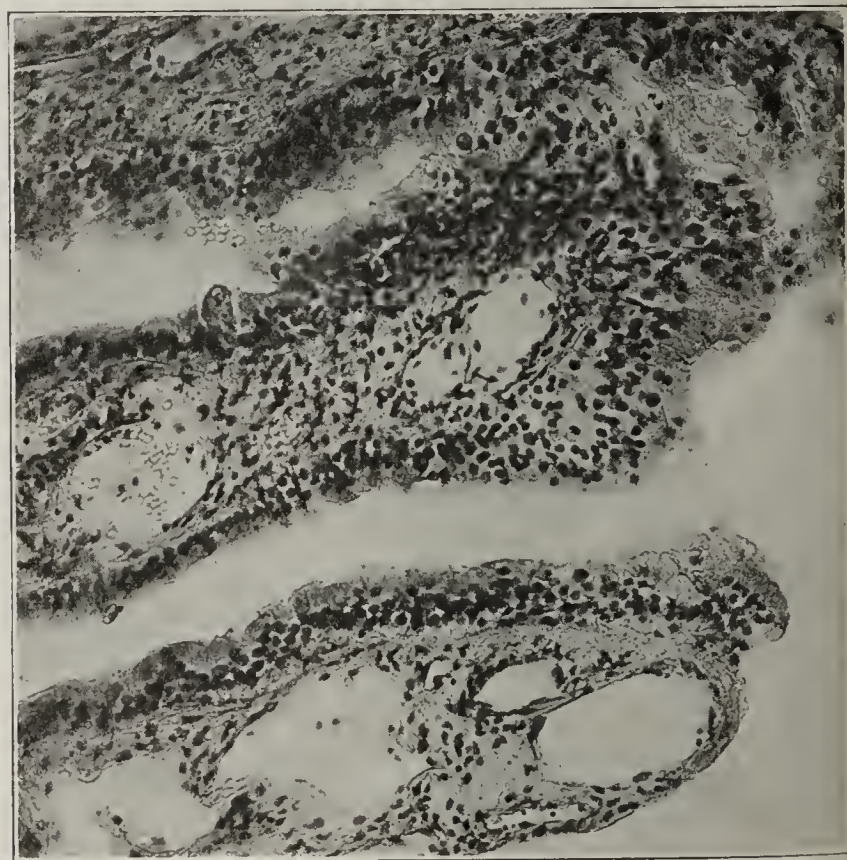


Fig. 5.—Greater portion of papilla, $\times 116$. Here is shown the opening of a duct of Bellini and numerous distended venules; some venules show no blood; others have noncoagulated blood, and yet others show thrombi undergoing hyaline degeneration.

sulation failed to cure and nephrectomy was later done.

Nephrotomy.—The one procedure which has yielded the best results is nephrotomy with bisection from pole

9. Randall, Alexander: The Etiology of Unilateral Renal Hematuria, THE JOURNAL A. M. A., Jan. 4, 1913, p. 10.

10. Spitzer, W. M.: Continuous Painless Renal Hemorrhage and Its Treatment, THE JOURNAL A. M. A., Dec. 12, 1914, p. 2110.

11. Katzenstein: Ztschr. f. exper. Path. u. Therap., 1911, ix.

to pole and down to the pelvis; but we find nine cases reported in which this method failed to cure. We have had eight cases treated by nephrotomy with suture in which cure followed in every instance. Some of the failures accredited to this procedure may be due to the insufficient method of performing the

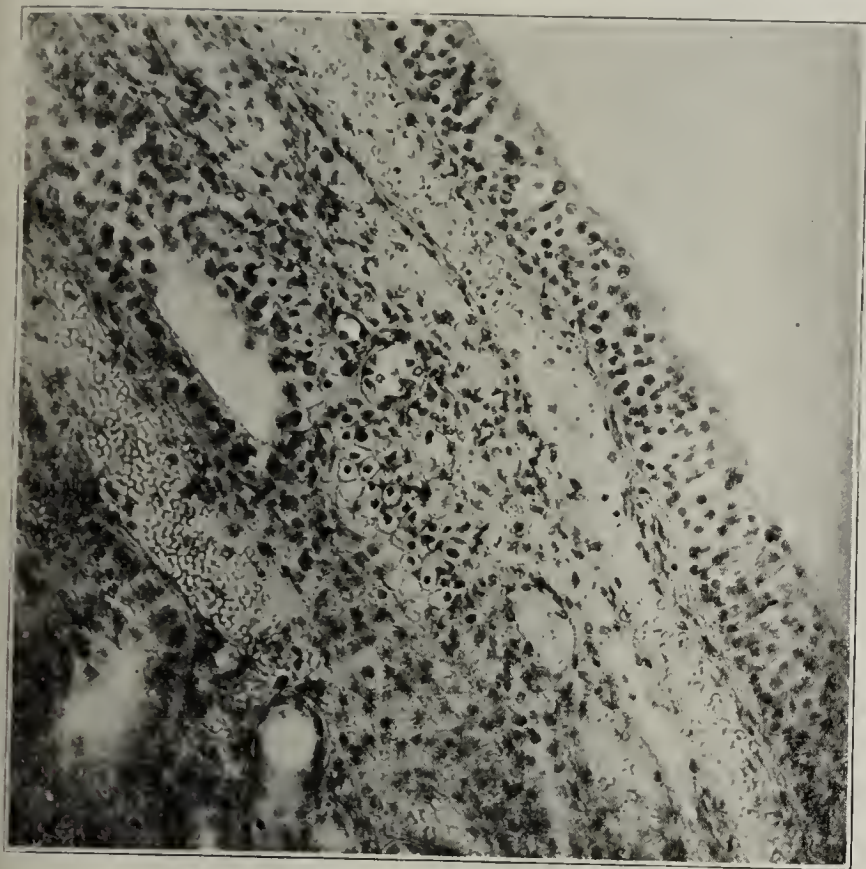


Fig. 6.—One long dilated venule just under the epithelium covering the papilla, $\times 300$.

nephrotomy. We know of two such instances in which the operator explored the kidney and pelvis through an opening just large enough to introduce one finger. Certainly in many of these cases the condition is essentially an infectious process, and this may explain why nephrotomy in some instances has failed to produce a cure. Since nephrotomy does not remove the infection, we may expect a temporary cure in a small percentage of cases, for it is possible that the same sequence of pathologic events as described above may recur, which would result in a return of the hemorrhage and finally demand nephrectomy for an ultimate cure. There are also numerous cases of nephrotomy reported in which nephrectomy was done within the succeeding forty-eight hours because of severe post-operative hemorrhage. Since we have had no such experience, we believe this complication is probably due to the technical fault of improper coaptation with mattress sutures. The method of complete bisection probably cures through thrombosis or the establishment of a collateral circulation within the kidney, which relieves the distention of the varicosities.

Nephrectomy.—This is a certain method of cure, but too radical to commend itself as a routine procedure. We have removed the kidney in two cases in which the exigency of the occasion demanded it. One showed such large and numerous varicosities, a condition unlike anything observed by us before, that nephrectomy was deemed wise. In the other case both main renal veins were accidentally lacerated, and we were afraid to leave the kidney in situ. This fear was emphasized by the belief from our human and experimental cases that the clinical condition is primarily one of focal venous stasis within the kidney. In cases in which the bleeding has produced a critical condition of

the patient, and in those cases in which nephrotomy has failed to relieve, nephrectomy is clearly indicated, provided the other kidney is present and its functional capacity good.

Nonoperative Treatment.—This consists of styptic injections into the kidney pelvis and the hypodermic administration of vaccines, horse serum, human serum and whole blood into the circulation. The conservative treatment of these cases, however, demands serious consideration, for one can never know, until a case is proved cured, but what a new growth, a tuberculous focus or an undetected stone may be the exciting cause of the one symptom hemorrhage. In acute or subacute cases in which an infectious agent can be isolated, it is well to try vaccines. Given a case of mild unilateral renal hemorrhage without pus, a negative roentgenogram, a normal pyelogram and little or no functional impairment, which can be kept under constant observation, we believe that it should be treated conservatively by epinephrin to the kidney pelvis and serums hypodermically. Where the bleeding can be controlled by the use of epinephrin or serum, it is possible to study the urine free from blood, and for this purpose can be recommended in every case. With this method there is always the danger of masking the one symptom hemorrhage, while a possible malignant or tuberculous process is left unrecognized to progress. In dealing with such a case of unknown pathology these procedures are to be condemned unless the patient can be kept under our control and constant observation. When the conservative treatment fails, or the bleeding has existed for several months with a resulting anemia coupled to an uncertain diagnosis, then we believe that surgery should be resorted to without delay.



Fig. 7.—Thrombosis of large vein just under the surface epithelium covering the papilla. Red blood cells are shown in the center, while the edges of the thrombus are beginning to undergo hyaline degeneration.

CONCLUSIONS

In our study of three human and six experimental cases we have demonstrated definite lesions in the medulla as the exciting factor, and believe that the term "essential" as applied cannot be maintained.

In our cases the following sequence of events has apparently taken place in the pathology of the kidney.

1. An infection which has been localized to foci in the medulla; no areas of infection have occurred above the corticomedullary junction.

2. The repair of these infected areas by the formation of dense masses of connective tissue.

3. This fibrosis has produced an obstruction to the venous return from the medulla and papillae through the venulae rectae.

4. As a result of this obstruction, varicosities have developed which not only appear in the substance of the papillae and just under the epithelium covering the papillae, but finally rupture on the free surface of the papillae and discharge their blood.

We hope that this work will help to clarify the true cause of these so-called cases of symptomless hematuria, and believe that other men will report similar findings if their cases are studied from the point of view here recorded.



Fig. 8.—Large vein which has ruptured on the free surface of the papilla and discharged its contents ($\times 45$).

ABSTRACT OF DISCUSSION

DR. HUBERT A. ROYSTER, Raleigh, N. C.: Dr. Payne has discarded the term "essential." The more we study disease the less use we have for such terms. I am sure Dr. Payne is correct in assuming that this condition of hemorrhage from the papillae does form a certain percentage of the unexplained cases. In regard to the etiology, there may be many and various factors to consider. The term nephritis is just as little understood today as it was some years ago and the expression nephropathy which the essayist used is probably as good as any to cover all the shades of etiologic meaning. Now what may be some of the causes back of the so-called nephropathies? In the first place alcohol and other toxic agents may cause a one-sided nephritis just as well as a bilateral nephritis. It may be taken for granted that these agents could produce an affection in one kidney without affecting the other kidney. Concerning the pathology, Dr. Payne is probably on the right track. In many cases it may not be possible to demonstrate any pathologic change whatever. In other words, there may be no organic evidence of bleeding; but, if one can discover uniformly such changes as have been described, it might be possible to solve the problem.

Given, then, a case of one-sided bleeding from the kidney, what shall we do about it? We must not overlook the very important point, that is, the possibility of an early tuberculosis in every case of bleeding kidney. I agree that decapsulation is to be condemned, but if it gives the results reported it might not be harmful. I remember the incision of the capsule to relieve pain and in some cases it also relieves hemorrhage. I would suggest that, in cases where nephrotomy has been done, and nephrectomy decided not to be done, instead of closing the kidney with sutures we might, as I have done in two instances, wrap it up in a bundle as we do a package. Instead of having needles going through after being sliced up, wrap the kidney together by catgut as you would tie up a bundle. Finally, if most of us had such a case as described by the author we would undoubtedly institute conservative treatment until the actual cause was demonstrated, except in the extreme cases referred to by him.

DR. J. SHELTON HORSLEY, Richmond, Va.: This question of essential hematuria has worried all of us who do general surgery. Of course, many cases of renal bleeding are due to stones, to tuberculosis, to

hypernephroma, but there remains a group which would have been difficult if not impossible to explain. Dr. Payne's sections show the pathology beautifully and also how easily the lesion might be overlooked. The section through the cortex showed perfectly normal structure. The papillae give the pathognomonic feature of the disease. It is common to find inflammatory lesions in the cortex where we would expect them, particularly in hematogenous infection or nephritis which occurs from toxic material in the blood. It is comparatively rare to find lesions in the papillae, but at the same time they do occur there, as Dr. Payne has demonstrated. The section showing a dilated vein bleeding seems to be conclusive. This corresponds with pathology elsewhere, for instance, dilatation of the veins in cirrhosis of the liver. Inflammation produces scar tissue which constricts the veins and causes them to dilate distal to the constriction. In regard to the treatment, I recall some excellent work done by Moore and Corbett regarding the type of sutures to be used for nephrotomy. They show that while the mattress suture controls hemorrhage it tends to destroy the kidney substance by necrosis, and they recommended simple interrupted sutures lightly tied.

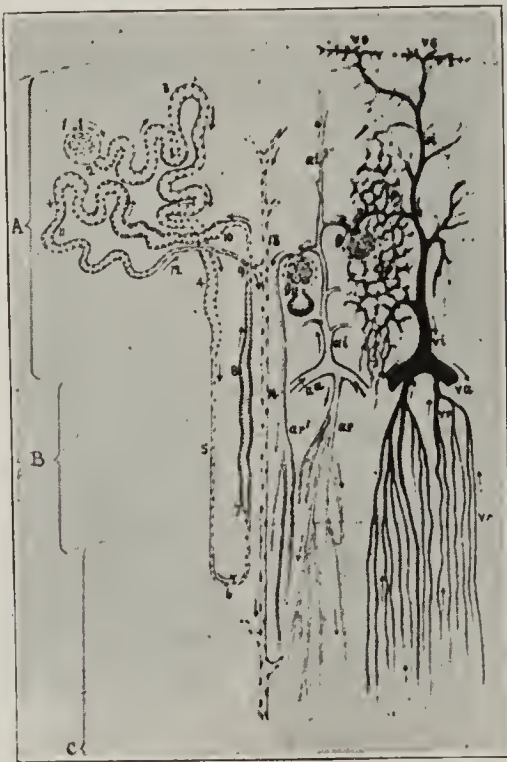


Fig. 9.—Diagram of renal vessels (from Beattie and Dickson): A, cortex; B, midzone (corticomedullary junction); C, medulla. Areas B and C represent points at which the connective tissue causes obstruction to the straight veins.

DR. R. L. PAYNE, JR., Norfolk, Va.: There is no question that many of these cases are bilateral, and one kidney may bleed at one time and one at another. It is very probable that the focal infections we have observed in the kidney follow along the line described by Eisendrath, namely, some lymphatic infection. The pathology we see in these slides shows vessels with free blood, some with clotted blood, some with hyaline degeneration; in some organization has occurred. These vessels originally dilated before occluding and organization later began in the vessels that bled when finally ruptured. That is probably the explanation of how some of these vessels bled and eventually wound up with an ultimate cure by organization and that will, in addition, explain how decapsulation helps to cure them. When you decapsulate, the handling causes trauma which produces a condition favorable to thrombosis, and that is probably how decapsulation cures. The condition is really self-limiting in the bulk of the cases.

COMPARATIVE RESULTS IN ANTIRABIC TREATMENT

WITH THE PASTEUR METHOD AND WITH DESICCATED VIRUS *

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ST. LOUIS

Pasteur's method for antirabic treatment stands as such an imperishable landmark of experimental medicine that one hesitates to point out even one or two minor defects. But the fact is that nearly all who now prepare the virus for treatment, including the Pasteur Institute, have made changes in the original method of preparation. In the original method Pasteur found that the serial passage of rabies virus from rabbit to rabbit by subdural inoculation resulted in a steady shortening of the incubation period until it becomes stationary or fixed, with an incubation period of six days. The spinal cords of these rabbits gradually lose their infectivity if dried over potassium hydroxid. When the temperature is kept at 23 C., the cords are not infective after the ninth day.

Pasteur's method of treatment began with the injection of 1 cm. of cord dried for fourteen days, followed, day by day, for eighteen to twenty-one days, with cord of increasing infectivity, the two-day cord being the most infective which he felt could be used without infecting the patient. The effect of these injections is that in the course of three weeks immune bodies appear in the blood; and those patients survive in whom the incubation period of the infection is longer than the time required for the establishment of an active immunity. This required time is from fifteen to twenty days after the completion of the treatment. The success of the treatment depends, therefore, on the fortunate circumstances that in man the incubation period of rabies is seldom less than three or four weeks and is usually about seven weeks. Pasteur regarded as complete failures only those patients who developed hydrophobia later than fifteen days after the completion of the treatment.

The preparation of the cords according to Pasteur's scheme requires the daily inoculation of one or more rabbits and the removal of the cords. It is therefore expensive and demands facilities which are

to be found only in large, well-equipped laboratories. Modifications of the method have had for their object the establishment of an immunity which would appear earlier and be greater than that afforded by the Pasteur treatment. This has been sought for by the injection of virus of greater infectivity; by other methods for altering the infectivity of the virus, as, for example, heat, chemicals, dilution, dialyzing; by the simultaneous injection of serum, or sensitized vaccine.

Of the various modifications adopted, the earliest was proposed by Högyes.¹ This method is based on the fact that Pasteur's attenuation of cords by drying resulted only in a numerical destruction of the organisms. Högyes therefore devised a scheme of diluting fresh virus and injecting increasing quantities from day to day. The use of this scheme has been followed by excellent results. Ferran advocated and used small quantities of emulsified fresh cord. Proeschler injects a relatively thick emulsion of fresh brain, and gives fewer injections. Calmette introduced the use of glycerol for preserving the cords. Fermi kills the organism by emulsifying the cord in 1 per cent. phenol (carbolic acid) and injects this noninfective material. He claims his results are better than can be attained with the Pasteur method. Marie,² in the Pasteur Institute, gives a sensitized virus which has been acted on by antirabic serum. His results are better than those obtained in the institute before the adoption of this modification. Excellent results have followed the use of virus dialyzed according to the method proposed by Cummings.³

The modification of the Pasteur method which I wish to describe now is founded on Shackell's⁴ very original investigations on the effect of desiccation in vacuo at a low temperature. The earlier experiments are recorded in a joint article with Shackell.⁴ This method has for its object the preservation of fixed virus, in order that it may be prepared in quantity and be always available for treatment. By using both brain and cord, enough material is obtainable for thirty complete treatments with the virus from a single rabbit; and since the material can be stored until needed, there is no waste and no unnecessary work is required of the laboratory staff during periods when patients are lacking or very few. Furthermore, with this product, treatment may be administered in less than half the number of days required by the original method.

The preparation of the material is as follows: Brain and cord, stripped of pia and blood vessels, are ground in a mortar into a homogeneous, thick, paste-like mass; carbon dioxid snow, collected from a tank into a sterile cloth, is added to the paste until freezing is complete and until further grinding reduces the mass to a fine powder. This powder is transferred quickly to a cold beaker and placed in a Schibler's jar which has been submerged in a mixture of salt and ice (—18 C.). In the upper part of the jar is a beaker of concentrated sulphuric acid. A vacuum of less than 2 mm. is produced and the powdered brain is kept at —18 C. in the salt and ice until desiccation is complete. A single brain and cord will be completely dehydrated in from thirty-six to forty-eight hours. A more detailed description of the technic may be found

* Read before the Section on Practice of Medicine at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Högyes: *Lyssa*, in *Nothnagle's Spez. Path. u. Therap.*, Vienna, 1897.

2. Marie: *L'étude expérimentale de la rage*, Paris, 1909.

3. Cummings: *Jour. Infect. Dis.*, 1914, xiv, No. 1.

4. Shackell: *Am. Jour. Physiol.*, 1909, xxiv, 325.

in the published papers relating to this method.⁵ If the brain and cord have been thoroughly ground, completely frozen and absolutely dried at a temperature not above -18°C ., the resulting powder will be almost as infective as the fresh untreated brain and cord. When kept in vacuo at 0°C . there is no appreciable loss in infectivity for several months. When kept in an ice box (8 to 10°C .) for 500 days this powder is five times as infective as an equal quantity by weight of Pasteur's cord that has dried five days.⁶

Harvey and McKendrick⁷ have shown that when cords are dried slowly over potassium hydroxid the loss of infectivity is proportionate to the loss of water. They conclude that the small amount of water remaining in the cord after the ninth day is insufficient to keep the rabies organisms alive. Vansteenberg⁸ had already succeeded, some years before our experiments, in preserving the infectivity of rabies virus by drying this very rapidly in vacuo. In his experiments the material was spread out in a very thin layer and the vacuum produced very quickly at room temperature. The dried powder retained its infectivity for some months if kept in the dark, free from moisture; but the amount of infectivity so preserved was very small. Our explanation of the apparently contradictory results of these two methods of dehydration is that in slow dehydration the salts and other soluble materials in the cells of the brain and cord become more and more concentrated until a point is reached at which this concentration becomes sufficiently toxic to kill the enclosed organisms of rabies by direct chemical action. In the brain and cord dried over potassium hydroxid the loss of infectivity is proportional to the resultant concentration of the soluble substance. Vansteenberg's partial success in desiccation in vacuo is due to the rapidity of the dehydration and partial avoidance of too great concentration. If the cord and brain are frozen and then desiccated, cell after cell is deprived of its ice, molecule by molecule, by volatilization, and, depending on the degree of freezing, there is therefore little or no possible concentration of salts or other soluble products. So long as the dried brain is kept dry its infectivity alters very slowly; but if this powder, which is hygroscopic, is exposed to air, water is absorbed, deliquescence occurs, chemical action begins, and all the infectivity is quickly lost. The amount of infectivity remaining after vacuum desiccation depends on the degree to which the material is kept frozen during the extraction. The preservation of infectivity afterward depends on its absolute freedom from moisture.

Numerous tests made with various lots of our desiccated virus showed the loss of infectivity to be constant and uniform, and demonstrated the value of the method as a means of preserving the virus. Experiments were therefore begun on dogs and rabbits to determine its value in immunization, and these showed conclusively that the material could be used with great advantage in antirabic immunization of rabbits and dogs. The results have recently been confirmed by Poor, Jelnick and Gibson in the New York City Health Department laboratories. In a personal communication, Dr. Poor has kindly furnished the following protocols of some of the work carried on to determine

the comparative value of various modifications of the Pasteur methods with that of the original:

EXPERIMENT 1.—Pasteur's cord and Harris' desiccated virus were used. The animals in each series were treated ten days. The virus was sent from Dr. Harris' laboratory; age of virus two years. The minimal infective dose was supposed to be 0.1 mg. for the first day's treatment and 0.01 mg. for that of succeeding days, but according to our tests they were much lower. The exact minimal infective dose was not determined by us. The animals treated with this virus received the following doses, which constitutes the ordinary scheme proposed by Dr. Harris for treatment of human beings:

Day	Units
1st	500
2d	1,000
3d	1,500
4th	2,000
5th	3,000
6th	3,000
7th	3,000
8th	3,000
9th	3,000
10th	3,000

Unless otherwise stated this scheme was followed in all subsequent experiments. The rabbits in the Pasteur series received the full doses given to human patients on the first ten days of the regular course of Pasteur treatment.

Forty-three days after the end of treatment the animals were infected intracerebrally with the following dilutions of mixed virus:

One to 8,000 Harris' Virus:

Rabbit 1, discharged after seven weeks.

Pasteur Virus:

Rabbit 1, paralyzed in thirteen days.

Rabbit 2, paralyzed in seven days.

Controls:

Rabbit 1, paralyzed in seven days.

Rabbit 2, paralyzed in seven days.

One to 4,000 Harris' Virus:

Rabbit 1, remained well for thirty-two days, then developed snuffles and died.

Rabbit 2, discharged after seven weeks.

Pasteur Virus:

Rabbit 1, paralyzed in seven days.

Rabbit 2, paralyzed in six days.

Control:

Rabbit 1, paralyzed in seven days.

One to 1,000:

Rabbits of all series showed beginning symptoms of rabies in six days.

EXPERIMENT 2.—Pasteur and Harris' methods were used, and all animals were treated eleven days. Harris' virus was sent from Dr. Harris' laboratory. The minimal infective dose for the first day's treatment was 0.1 mg.; that of virus for succeeding days $\frac{1}{10}$ mg. The animals were infected the day after the last injection with the following dilutions of fixed virus:

1 to 12,000

Control: Rabbit 1, paralyzed in ten days; Rabbit 2, paralyzed in seven days.

Pasteur virus and Harris' virus: Rabbit 1, discharged in forty days; Rabbit 2, discharged in forty days.

1 to 8,000

Control: Rabbit 1, paralyzed in seven days; Rabbit 2, paralyzed in eight days.

Pasteur virus: Rabbit 1, paralyzed in eight days; Rabbit 2, paralyzed in eight days.

Harris' virus: Rabbit 1, discharged in forty days; Rabbit 2, discharged in forty days.

1 to 4,000

Control: Rabbit 1, paralyzed in eight days.

Pasteur virus: Rabbit 1, paralyzed in eight days.

Harris' virus: Rabbit 1, discharged in forty days.

5. Harris: Jour. Infect. Dis., 1912, x, 369; *ibid.*, xi, 397; *ibid.*, 1913, xiii, 155; *ibid.*, Ann. de l'Inst. Pasteur, 1912, xxvi, 372.

6. Harris and Shackell: Jour. Infect. Dis., 1911, viii, 47.

7. Harvey and McKendrick: Theory and Practice of Antirabic Immunity, Calcutta, 1907.

8. Vansteenberg: Compt. rend. Soc. de biol., 1903, lv, 1046.

EXPERIMENT 3.—Harris' series, treated ten days; Pasteur series treated twenty-one days, starting eleven days ahead of the Harris series.

Harris' virus: Virus used for the first day's treatment made by Eli Lilly & Co.; minimal infective dose 0.1 mg. That for the succeeding days, made by us; minimal infective dose $\frac{1}{200}$ mg.; virus one month old. On the day after the last injection all animals infected with the following dilutions of fixed virus:

1 to 8,000

Control: Rabbit 1, paralyzed in seven days; Rabbit 2, paralyzed in seven days.

Harris' virus: Rabbit 1, discharged after thirty-eight days; Rabbit 2, paralyzed in seventeen days.

Pasteur virus: Rabbit 1, discharged after thirty-eight days; Rabbit 2, paralyzed in ten days.

1 to 4,000

Control: Rabbit 1, paralyzed in seven days; Rabbit 2, paralyzed in seven days.

Harris' virus: Rabbit 1, discharged in thirty-eight days; Rabbit 2, paralyzed in seven days.

Pasteur virus: Rabbit 1, paralyzed after six days; Rabbit 2, paralyzed in seven days.

The conclusions reached by Poor, Jelnick and Gibson is that the desiccated virus produces immunity more quickly than the Pasteur cords.

I have used this material during the past four years in the treatment of patients, and have been able to collect data on 1,159 patients treated with it. Of these cases, 359 were treated by me, 222 in the State Board of Health laboratory of Indiana by Dr. William Shimer, and 618 in the Charity Hospital, New Orleans, by Dr. M. Couret. Of this number, one died during the treatment, and one fourteen days after the first injection. With these two exceptions, there were no deaths and no cases of paralysis. If we follow the example of Pasteur and exclude these two cases the mortality is zero. But excluding one death in which symptoms developed on the tenth day during the treatment, and including the other, in which treatment had been completed, but in which symptoms developed on the fourteenth day after the first injection, there is a mortality of less than 0.1 per cent., a result that compares favorably with any of the other modifications.

Table 1 includes 319 patients treated by me in St. Louis and 618 by Dr. M. Couret in New Orleans.

TABLE 1.—DATA OF NINE HUNDRED AND THIRTY-SEVEN PATIENTS TREATED FOR RABIES

	Head	Hand and Forearm	Body and Lower Extremity	Contact	Total
Rabid.....	40	209	124	98	471
Probably rabid.....	25	159	95	..	279
Unknown.....	7	61	67	1	136
Probably not rabid....	6	28	17	..	51
Total.....	..	...	...	..	937

Table 2 includes 222 patients treated by Dr. William Shimer, director of the Indiana State Board of Health laboratory, with virus furnished by Eli Lilly & Co.

The amount of desiccated virus and the number of injections used in the experimental work and in the cases treated were decided on after a study of the scheme of Högyes. In this scheme Högyes injected 54.575 mg. of cord in fourteen days in light cases, and 94.47 mg. in twenty days in bites on the face and head. Most writers agree that immunity is produced by the more or less altered rabies organism, and that the degree of immunity is proportional to the number

of infective specific organisms injected. The infectivity of the cord is such that $\frac{1}{40}$ mg. is the least amount that will constantly infect rabbits.⁷ Expressed in terms of infectivity, Högyes injected in mild cases 2,183 times the minimal infective dose; in severe cases, 3,898. Harvey and McKendrick calculate that in the Pasteur light scheme this number of times the minimal infective dose is 2,160.

TABLE 2.—DATA OF PATIENTS TREATED BY DR. SHIMER

Sex	No. Patients
Male patients	67
Female patients	32
Children, both male and female.....	123
Total.....	222
Where Bitten or Exposed	No. Patients
Head	2
Face	26
Hands	67
Feet	13
Legs	36
Arm	25
Body	5
External genitals	1
Cut by knife.....	1
Abrasion on hands.....	45
Handling child dying of hydrophobia.....	1
	222

TABLE 3.—RESULT OF EXAMINATION OF ANIMALS

Exposure	No. Patients
Bitten by rabid dogs.....	99
Bitten by dogs with positive gasserian ganglion.....	60
Bitten by dogs, probably rabid.....	28
Bitten by dogs which got away.....	25
Bitten by dogs, probably not rabid.....	1
Cut by knife.....	1
Bitten or exposed to infection from saliva from cows whose brains were found to contain Negri bodies...	8
	222

TABLE 4.—TREATMENT

	No. Patients
Seven injections, 6,750 units.....	62
Fourteen injections, 19,250 units.....	71
Eighteen injections, 27,350 units.....	99
	222

TABLE 5.—NATURE OF THE WOUNDS AND EXPOSURE

Character of Exposure	No. Patients
Slight bites	74
Severe bites	103
Exposed to infection by contact.....	44
Handling hydrophobia patients.....	1
	222

The minimal infective dose of desiccated brain and cord is $\frac{1}{250}$ mg., and one can easily inject many times the total infective doses usually contained in Pasteur's scheme with a much smaller proportion of foreign nerve material. I prefer to give 500 minimal infective doses, or units, at the first injection; 1,000 units at the second; 2,500 each at the fifth, sixth and seventh. In severe cases the daily dose after the fourth injection may be 3,000. The usual mild case is treated in six or seven days; severely bitten patients are treated ten to fifteen days. Mildly injured persons received from 7,000 to 10,000 units. Dangerously bitten patients have received 30,000 to 70,000 units, or twenty times more than that given by Pasteur. In the treatment of a dangerously bitten patient the following record will serve as an example:

J. M., man, aged 24 years, bitten July 8, 1915, on the septum of the nose by his own dog. The wound bled freely, but was not cauterized. The dog developed rabies two days later, and died five days later. Negri bodies were present. Treatment was begun six days after the injury. Injections were made as shown in Table 6.

Of the 1,159 persons treated with this material, two died of hydrophobia. Couret⁹ states the single failure

9. Couret: Personal communication to the author.

in the Charity Hospital cases was that of a 2-year-old negro child who received a slight wound over the right eye Oct. 6, 1915. Eight days later the mother applied for treatment, and the treatment was begun on that day. On the eleventh day of a fifteen-day treatment, the child developed symptoms of hydrophobia, and

TABLE 6.—ILLUSTRATIVE ANTIRABIC TREATMENT

Date	Amt., Mg.	No. Units
7/14	50	500
7/15, a. m.....	15	1,000
7/15, p. m.....	25	2,000
7/16, a. m.....	10	2,000
7/16, p. m.....	15	3,000
7/17, a. m.....	15	3,000
7/17, p. m.....	15	3,000
7/18	20	4,000
7/19, a. m.....	15	3,000
7/19, p. m.....	15	3,000
7/20, a. m.....	15	3,000
7/20, p. m.....	20	3,000
7/21	20	4,000
7/22	15	3,000
7/23	20	4,000
7/24	20	4,000
7/25	20	4,000
7/26	25	5,000
7/27	20	4,000
7/28	20	4,000
7/29	20	4,000
Total	315	66,500

the treatment was discontinued. The child died two days later. The wound was not cauterized at the time the injury was inflicted, and when the patient came for treatment, the wound was completely healed.

The other death occurred in my own series. The history in this case is as follows:

L. P., man, aged 52, farmer, was bitten July 1, 1913, by his own dog, which was killed and in whose brain Negri bodies were abundant. The patient was thrown to the ground by the dog, which then grabbed the hand in his mouth with the resulting extensive lacerations and deep penetrating wounds. Treatment was begun five days later, the injections being as shown in Table 7.

TABLE 7.—TREATMENT IN THE CASE OF L. P.

Date	Mg.	No. Units
7/ 6/13, a. m.....	40	500
7/ 6/13, p. m.....	20	1,500
7/ 7/13, a. m.....	..	1,000
7/ 7/13, p. m.....	..	1,500
7/ 8/13, a. m.....	..	2,000
7/ 8/13, p. m.....	..	2,000
7/ 9/13, a. m.....	..	2,500
7/ 9/13, p. m.....	..	2,500
7/10/13 .....	..	2,500
7/11/13 .....	..	2,500
7/12/13, a. m.....	..	2,500
7/12/13, p. m.....	..	3,000
Total	60	24,000

The twelve injections were given within a period of seven days at the urgent request of the patient, who desired to return home at harvest time. After his return he worked in the sun during exceedingly hot weather and became very much exhausted. On July 21, twenty days after he was bitten and fifteen days after the first injection, symptoms of hydrophobia appeared. He died of convulsions on the twenty-seventh.

If the value of this material in antirabic treatment can be judged by this record of 1,159 cases treated with but these two failures, in both of whom the disease developed before the possibility of antibody formation, the results obtainable will compare favorably with those obtained by other modifications of the original method.

Assuming from these data that the material has an efficient immunizing power, we can see that it possesses another, though minor, advantage over the Pasteur method. The average time required for the complete administration of the treatment is less than one-half the time required by the Pasteur method. The 936 patients treated by Couret and by me averaged less than ten days per patient, a saving of more than 9,000 days of treatment over what would have been required had we followed the Pasteur scheme. This is a matter of great importance to those who are obliged to travel from home to the city for treatment. As a concrete instance, the State Board of Health of Indiana has a fund for caring for indigent patients while they are receiving antirabic treatment. In one year the amount spent by the state for board was \$900 less than it would have been had these patients received the usual Pasteur scheme.

704 Metropolitan Building.

ABSTRACT OF DISCUSSION

DR. SAMUEL JAMES MELTZER, New York: I would like to ask Dr. Harris whether the dried virus could be pulverized and whether it could then stand the sterilization by dry heat without the effective part of the virus being destroyed. That the tissue, when dried, is more effective, reminds me of the statement of Dr. Novy that the addition of water to some substance reduces its anaphylactic effects.

DR. W. W. TOMPKINS, Charleston, W. Va.: I wish to report a case in which there was a short period of incubation. One year ago last August a patient was bitten on the hand by a dog. The wound was sucked and over the wound was placed ordinary tobacco. The following Saturday the patient developed rabies with violent strangulation and choking and could not swallow fluids. On Saturday, one week later, I was called to travel a distance of seven miles, and found the patient with distressed and drawn features. He was rational, but afraid. I asked him to drive to town, and he said he would. The symptoms had already developed. At 2 or 3 o'clock that night he got out of the hospital and went back home. At 5 o'clock he had a severe convulsion and died. In this case I was impressed by the fact that in crossing the creek he had no difficulty about his larynx, but only when fluids were present. Three boys had been bitten by the same dog; the dog was killed and the head and spinal column sent to a pathologist, who said it was a case of genuine rabies. He advised that no time be lost, but that the cases be treated at once. One case was treated with serum, another by a "mad stone," the third by application of nitric acid to the wound. The question arises, was it a case of rabies or a mistaken diagnosis? A variety of treatments were tried and with equal good results.

DR. ROBERT ALWAY PEERS, Colfax, Calif.: We have had considerable experience with rabies during the past few years in California where rabies was epidemic and spread from the southern to the northern part of the state. Several hundred cases were treated at the State Laboratory at Berkeley. The length of time necessary to immunize a patient is extremely important, and any method which shortens the time of immunization is an advance. Not infrequently a person is bitten by a dog while an epidemic of rabies is prevalent in the community. It is not advisable to kill the dog at once because of the danger of killing the animal before the disease is advanced sufficiently to make a laboratory diagnosis possible. The dog should be kept chained and if he has rabies he will die within a few days. If the dog is kept several days before a diagnosis of rabies is made, there are then required twenty-one days treatment by the Pasteur method, and later fifteen days for immunization to become complete—more than forty days altogether, which is very near the danger line. For this reason, the method the doctor described, by shortening the time of immunization, is a great help.

UREMIA

A DIFFERENTIATION OF TYPES *

NELLIS B. FOSTER, M.D.

. NEW YORK

When Bright noted an increase of urea in the blood and fluids of patients with severe nephritis and gave the name uremia to a group of symptoms likely to develop with these cases, he believed urea to be a highly toxic substance. The name uremia remains to us, although the term embraces now considerably more than urea intoxication. Under it are grouped several syndromes referable chiefly to the nervous system and with which no constant lesions are noted at necropsy outside the kidneys. Bright's observation that urea is increased in amount in the body fluids with certain renal defects established a principle which has been remarkably stimulating to later studies. This idea initiated that conception of uremia commonly called the retention theory, by which one means that some or all of the nitrogenous bodies normally excreted through the kidneys are, when these organs become diseased, retained in the body and give rise to symptoms. The corollary to this proposition, that the urine is specifically toxic, was debated and abandoned in the last century without elucidating any undisputed scientific facts.

So then we are still confronted by the question: Is the syndrome uremia due to a retention in the body of normal urinary substances, or is it induced by a wholly abnormal type of metabolism, resulting in new toxins? I am not intending to labor this question unduly, but I wish to bring to your attention some well-known facts which show just what may be expected from the retention of urinary bodies and then to apply these facts to uremia.

The state of complete anuria, that is, absolute retention, bears directly on this point. Whether induced by impacted renal calculus or by the removal of the only kidney or by such poisons as mercuric chlorid, the symptoms resultant are in all cases almost identical.

I have had an opportunity to study three persons in whom the only functioning kidney was removed surgically because of some diseased condition; the remaining kidney in these cases was infantile, atrophic and of no use. These cases all presented a condition of anuria, hence of complete retention in the body of all substances normally excreted through the kidney. It is well known that with such cases there are few or none of those symptoms which demark our conception of spontaneous uremia. Convulsive seizures, for example, are not observed. Nervous phenomena are conspicuously wanting, gastro-intestinal disturbances absent or appear only as moribund manifestations. The last case I saw was without significant symptoms for eight days and then an increasing sopor developed and death ensued within a few hours. This is the common experience and Ascoli was positive that the picture is quite different from that associated with renal disease and he called this syndrome urinary poisoning. The same symptoms are found with anuria due to mercuric chlorid poisoning, of which we see so many cases in New York; and I have induced an analogous state in dogs by nephrectomy, by ligation of both ureters, and by ligation of the renal arteries. The essential positive symptoms, either with man or

in experimental animals, resulting from absolute retention, are progressive asthenia and anorexia; later, stupor and death. These facts I bring out with some prominence, since they enter into the more complex picture of true uremia. Urinary poisoning is a pure type.

Urinary poisoning, as I have described it, is produced by some rather sudden change in the excretory organs resulting in a prompt flooding of the tissues with nitrogenous waste products. Death is then a matter of days only. Now when the failure of elimination is not so rapid and the waste products accumulate in the tissue fluids more gradually, it is conceivable that the cells acquire a certain degree of tolerance and are not so injured as appears to be the case when the change is sudden. This conception has ample basis in analogy and explains prolongation of life under conditions which if effected suddenly lead quickly to dissolution. It is necessary to bear this possibility in mind as we proceed.

A rather close resemblance to the clinical picture of urinary poisoning is produced when, with advanced chronic nephritis of the hypertensive variety, there is added the complicating factor of cardiac dilatation and insufficiency. Let me explain just what appears to happen. With this type of nephritis the kidney has lost the power to secrete a concentrated urine and this is most conspicuous with respect to nitrogen. While a normal kidney on demand secretes urine containing 1.5 per cent. of nitrogen, the granular kidney may at best attain only 0.6 or 0.7 per cent., and not infrequently cannot arrive at 0.5 per cent. of nitrogen. Success then in freeing the body of its nitrogen waste is attained by increase of the urine volume. The normal kidney in secreting 1,000 c.c. of urine containing 1.5 per cent. nitrogen, has secreted 15 gm. of nitrogen, but the diseased kidney in order to secrete 15 gm. of nitrogen must secrete 2,500 c.c. of urine containing 0.6 per cent. nitrogen.

But with the increased urine volume the burden of work is transferred from kidney to heart. Now if the heart breaks down under its burden the volume of urine of course falls, and the nitrogen excretion falls with it, since the kidneys cannot accommodate themselves by concentration of urine as in pure cardiac disease. These conditions lead to nitrogen retention and an accumulation of slag in fluids and tissues. You will note that these conditions are the same in kind as with urinary poisoning; the difference is in degree, and therefore the clinical picture is slower in developing and more protracted. There is here gradually developing stupor, asthenia and anorexia. There is added one important symptom, namely, a mild delirium, which may be simply a mental clouding associated with disorientation, chiefly of place; occasionally there are real delusions of the persecution type. Edema may or may not be marked, dependent apparently on the degree of cardiac embarrassment, since when a patient improves the edema is prone to diminish as the blood pressure becomes more elevated. Symptoms indicating irritation in the motor centers are not observed when this type is pure.

This type of uremia is a mixed picture, but fundamentally it is a urinary poisoning, a retention syndrome induced directly by cardiac failure. There is found, of course, in the blood an increase in nonprotein nitrogen, which may be considerable, occasionally but slight, in degree. This type of uremia has in my experience been a rather common sequel to protracted

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hypertension; existing in the beginning without marked evidence of renal damage, what we commonly regard as primary arteriosclerosis. When these cases escape their chief danger, cerebral hemorrhage, a nephritis usually develops, but the kidney found at necropsy, while showing fibrosis, does not present the degree of destruction of renal elements noted in some other types of nephritis.

The clinical picture of nephritis which we associate with the large white kidney appears to be as little complex in reference to physiologic function as any type of renal disease. The clinical manifestations are related chiefly to disturbances in water and salt excretion. There is no unanimity of opinion as to the interpretation to be given the facts, but all concur that the conspicuous departure from normal relates to poor excretion of water and salt, the consequent anasarca, and the relatively normal excretion of urea and other nitrogen fractions. This type of nephritis but seldom progresses to uremia, it being the rule in my experience that protracted cases develop some terminal infection. Exceptionally, however, during the last period of life some uremic symptoms are in evidence. These are vomiting, headache, stupor, amaurosis due to edema of the retina, and finally coma.

Contrary to the statement of some, I have never seen convulsive seizures. The blood pressure remains normal, or subnormal. The blood and tissue analyses do not indicate any notable degree of nitrogen retention, even when corrected for the water excess. At necropsy, aside from nephritis, the conspicuous condition is edema, and this is peculiarly notable in the brain and meninges. Arguing from analogy, that is, the similarity of this picture clinically with some others associated with marked cerebral edema, I have felt that this edema must be in some way accountable for the cerebral symptoms. In our present state of ignorance concerning the causation of edema generally this idea cannot rest on a firm scientific basis. I have but one supporting fact, namely, that when lumbar puncture is done in these cases, the cerebrospinal fluid is found to be under increased pressure and after some fluid is removed there is a temporary clearing of the mental state of the patient. This hypothesis as to the causation of the stupor and coma observed in cases of nephritis with chlorid retention is advanced with every reservation. Until we understand edema we will not understand this type of uremia. The type is, I think, clear cut and associated with a form of nephritis which is well demarked by the functional change in respect to water and salt excretion,¹ the chloremique of Widal. Pathologically the kidney shows parenchymatous nephritis, that is, the large white kidney.

When this type of uremia is unmixed, there is never convulsive uremia as a sequel. On the other hand, a mixed nephritis may give rise to edema as a conspicuous symptom; but there is associated then also an increased blood pressure and an increased nonprotein nitrogen. When uncomplicated, the chlor-retention nephritis shows a normal or subnormal blood pressure and low nonprotein nitrogen. The degree of albuminuria helps not at all in the diagnosis.

Of the various manifestations due to uremia, none demarks a type so clearly as convulsive seizures. Convulsive or epileptiform uremia has been regarded by all students as different in causation, peculiar and spe-

cific. In discussions of uremia with convulsions it is commonly classified as a toxemia, although a toxin has never been isolated. There are several facts that I wish to call to your attention which lend some support to the idea that a toxin may be present. In the first place these cases, on metabolic study, all show periods of clear-cut nitrogen retention. There is as a rule an increase of nonprotein nitrogen in the blood also. Now, whereas the urine shows but 6 or 7 per cent. undetermined nitrogen, the blood nitrogen may be 20 per cent. or even more undetermined. This fact indicates either a selective excretion or formation of non-excretable substances. These facts apply more or less to all types of nephritis with retention. Finally, all the organic poisons known are nitrogen containing compounds. Considerations of this sort brought out in my studies several years ago led me to think that an effort might be made to isolate a specific toxin from the blood or tissues in these cases and I believe this has been accomplished. A crystalline substance has now been separated from the blood in a series of cases of convulsive uremia. This substance is highly toxic; 200 c.c. of blood contains enough to kill a guinea-pig. The substance cannot be detected in normal blood or in blood in any diseased state except uremia of this type. The symptoms produced in animals after injection into the peritoneal cavity are dyspnea, fecal discharges, convulsions or muscular twitchings, coma and death. Of the chemical nature of this compound, its source in the body, its effect in producing organic changes, we cannot speak at this time.

Granting for the moment that this substance is specific and peculiar for one type of uremia, then the question arises, is it a normal catabolic substance which is in health excreted in urine, or is it a product of abnormal metabolism, a result of perverted processes instituted by renal disease? If this compound is a normal excretory product, then it should accumulate in blood and tissue in conditions of anuria; but as already mentioned, these cases do not resemble uremia. One case of complete anuria due to the removal of the sole functioning kidney (the other being infantile and atrophic) was investigated. This patient died nine days after the operation and immediately post mortem about 1 liter of blood was aspirated from the jugular vein. This blood yielded no toxic substance. The degree of retention is indicated by the nonprotein nitrogen which was 126 mg. per 100 c.c. of blood. The evidence of one case is not adequate, but it supports the original conception that in the convulsive type of uremia there is an abnormal metabolism, as well as a nitrogen retention.

There are then, according to my present conception, three pure basic types of uremia. The first is a simple retention of urinary nitrogenous waste, a urinary poisoning; the second is due to defective water and salt metabolism, resulting in cerebral edema; the third type is a toxemia, resulting from an abnormal catabolism. Two of these are dependent wholly on failure of excretion, either of nitrogen, water, or salt; a third, while it may show each and all of the three enumerated defects, is demarked by another element foreign to normal catabolism and resulting in toxin formation, which is manifested clinically by convulsive seizures.

Now clinically we see only exceptionally these types uncomplicated; just as we see but exceptionally pure types of renal disease; and this is so whether we consider the case from the functional physiologic aspect or that of microscopic pathology. The majority of

1. While the nitrogen metabolism shows no conspicuous abnormality, yet in every case that I have had an opportunity to observe a careful metabolic study has revealed a slight degree of nitrogen retention, a plus balance.

cases that evidence nitrogen retention also have more or less edema, at least at periods. Those in which edema is the striking phenomenon have usually slight or marked nitrogen retention if the case is studied for sufficient periods. The sections from these kidneys do not disclose a uniform picture; in one field the tubules or some part of these tubules appear chiefly diseased, in another section from the same kidney it may be that glomeruli seem more damaged, or the arterioles. And it is impossible to surmise from the appearance of a damaged tubule as to its degree of functional impairment. Hence uremia is ordinarily a complex picture, resulting from a mixture of physiologic defects and stamped clinically by that one which is predominant. Only by a rather careful study of many cases at bedside, in the laboratory, and at the necropsy table does one arrive at a conception of pure types. Pure types do occur, but they are the exception in my experience. These types fall into three main groups, depending on the nature of the functional defect in the kidney: (1) retention type, the urinary poisoning of Ascoli; (2) cerebral edema type; (3) toxic type, or epileptiform uremia.

THE VALUE OF RECENT LABORATORY TESTS IN THE DIAGNOSIS AND TREATMENT OF NEPHRITIS

WITH SPECIAL REFERENCE TO THE CHEMICAL EXAMINATION OF THE BLOOD *

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Chemical researches have recently added much to our knowledge of many pathologic conditions, but it is doubtful if any disorder has profited more than nephritis. The investigations have given us a clearer insight into this condition, have aided in diagnosis and prognosis and finally have been a guide to treatment.

For a long time the clinician has been accustomed to rely on the examination of the urine for his index of the efficiency of the kidney. In nephritis the volume, specific gravity, albumin, casts, and occasionally, the chlorids and total nitrogen or urea have covered the examinations made. More recently the ability of the kidney to eliminate various substances administered, either per os or parenterally, has been practically employed as a means of determining its functional activity. The phenolsulphonephthalein test of Rowntree and Geraghty¹ and the lactose and potassium iodid tests of Schlayer² have found extensive use, especially the former. The phenolsulphonephthalein test, although introduced only six years ago, has received almost universal recognition.

The finding of albumin and casts in the urine is unquestionably of great diagnostic value in nephritis

and of considerable prognostic value in the acute and subacute forms of the disease. In the chronic forms, however, there has been a growing tendency to place less and less reliance on this information from the standpoint of prognosis.

Recently Mosenthal³ has excellently discussed a number of well-known clinical observations on the urine. He has pointed out that a very considerable amount of information may be obtained from the observations of the volume, specific gravity, chlorids and nitrogen output of the night and two-hour day urine specimens of nephritic patients, when placed on a definite test diet. The normal individual is able to secrete at night a urine of high concentration, but in nephritis the specific gravity may be fixed at a constant level with a very definite concentration of chlorids and urea. The importance and diagnostic value of this has not been fully appreciated, primarily because of the time and care required in the collection and analysis of the specimens.

The introduction of the phenolsulphonephthalein functional kidney test by Rowntree and Geraghty in 1910 not only supplied us with a most valuable diagnostic and prognostic test, but furnished the impetus in this country to numerous investigations on the functional activity of the kidney. With the introduction three years later of simple methods of blood analysis, especially at the hands of Folin and his co-workers, the possibilities of these new methods as practical diagnostic tests were quickly appreciated.

In some quarters the nonprotein or incoagulable nitrogen alone has been employed as a test of kidney activity, while in others the urea has been utilized. McLean,⁴ in particular, has emphasized the value of a comparison of the urea of both blood and urine, somewhat after the method employed by Ambard. So far as we are aware, in institutions other than our own, the uric acid has been used chiefly in connection with the diagnosis of gout.

Although considerable attention has been given to the urea and nonprotein nitrogen⁵ of the blood in nephritis, scant consideration has been accorded the uric acid and creatinin. It is true that the greater part of the waste nitrogen is eliminated in the form of urea, but it does not necessarily follow from this that data on uric acid and creatinin are unimportant and uninteresting. We do not believe that it is possible to make satisfactory deductions regarding nitrogen retention from the urea or nonprotein nitrogen determinations alone. The scheme we now employ for the examination of the blood entails the determination of the uric acid, urea, creatinin and sugar as a routine with estimations of the carbon dioxid combining power according to Van Slyke in cases in which this appears to be indicated. The determination of the urea concentration of the blood is, we believe, of more value than that of the nonprotein nitrogen for the reason that it represents the retention of a definite compound and, further, is more easily and accurately determined.

The phenolsulphonephthalein test is so far superior to any other general functional kidney test that one scarcely need mention any other test in a brief discussion. In comparison with the chemical examination of the blood it is believed that the latter method gives

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¹ Read before the Section on Practice of Medicine at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

² Rowntree and Geraghty: Jour. Pharm. and Exper. Therap., 1910, i, 579.

³ Schlayer and Takayasu: Deutsch. Arch. f. klin. Med., 1910-1911, ci, 333.

³ Mosenthal: Arch. Int. Med., 1915, xvi, 733.

⁴ McLean: Jour. Exper. Med., 1915, xxii, 212, 366; Clinical Determination of Renal Function by an Index of Urea Excretion, THE JOURNAL A. M. A., Feb. 3, 1916, p. 415.

⁵ A very complete discussion has been given by Tileston and Comfort: Arch. Int. Med., 1914, xiv, 620.

much more definite information in many cases. In our work, however, we have almost invariably employed the phenolsulphonephthalein test, either previous to or in conjunction with the blood examination. Another very important point in favor of the chemical examination of the blood, compared with the quantitative examination of the urine, is the difficulty and time required in the collection of urine specimens. It is our opinion that the chemical examination of the blood, when good laboratory facilities are available, requires less of the physician's time and gives him more definite information.

Both Mosenthal⁶ and Foster⁷ have called attention to the fact that the increase in the nonprotein nitrogen of the blood in nephritis is quite insufficient to account for the amount of nitrogen retention. Despite this fact, the degree of the retention of the various waste products affords an excellent index of the severity of the condition, and probably a fair index of the retention in the later stages of the disease, particularly as regards the uric acid and creatinin.

acid is generally the first to become evident. In harmony with this hypothesis, we should next expect a retention of urea and lastly that of creatinin. That such is the case is quite evident from an examination of Table 1, giving analyses of typical cases of patients suffering from various stages of nephritis.

According to this view a retention of uric acid should constitute one of the early signs of incipient interstitial nephritis, while an appreciable retention of creatinin should indicate a grave impairment in the functional condition of the kidney and therefore should be a valuable prognostic test.

Theoretically, the creatinin of the blood should be a safer index of a lowered kidney activity than the urea, for the reason that creatinin on a meat free diet is entirely endogenous in origin and its formation (and elimination, normally) very constant. For the same reason it must be evident that a lowered nitrogen intake may reduce the work of the kidney in eliminating the urea and to a certain extent the uric acid, but cannot affect the creatinin to any extent. The handicap

TABLE 1.—URIC ACID, UREA NITROGEN AND CREATININ OF BLOOD IN INTERSTITIAL NEPHRITIS *

Date, 1915-16	Case	Age	Sex	Diagnosis	Condition	Mg. per 100 C.c. of Blood			Phthal- ein 2 Hrs., per Cent.	Systolic Blood Pres- sure	Urine	
						Uric Acid	Urea N	Creat- inin			Albu- min	Casts
I												
9/17	H. L.	23	♂	Pulmonary tuberculosis.....	Unchanged	6.5	16	2.7	58	130	++	+
8/10	E. H.	41	♂	Pericarditis.....	Unchanged	5.6	13	2.1	45	150	—	—
10/12	F. D.	45	♂	Interstitial nephritis.....	Unchanged	5.5	12	2.5	37	185	—	+
3/ 6	B. D.	35	♀	Diffuse nephritis.....	Unchanged	9.6	19	2.4	45	175	+	+
II												
8/11	J. J.	65	♂	Early interstitial nephritis.....	Unchanged	9.5	25	2.5	13	185	+	+
7/21	D. S.	56	♂	Early interstitial nephritis.....	Unchanged	6.6	24	3.3	26	185	—	+
9/21	D. D.	52	♂	Early interstitial nephritis.....	Unchanged	8.7	20	3.6	20	100	+	+
8/ 3	C. M.	54	♂	Early interstitial nephritis.....	Unchanged	6.3	31	2.0	23	150	—	—
III												
1/ 6	L. P.	57	♂	Moderately severe chronic interstitial ne- phritis.....	Improved	8.0	80	4.8	0	240		
3/ 1						4.9	17	2.9	10	170	++	++
4/23	J. P.	34	♂	Moderately severe chronic diffuse ne- phritis.....	Improved	8.3	72	3.2	25	238		
5/21						5.3	21	1.9	43	145	+++	++
1/15	W. C.	49	♂	Moderately severe chronic diffuse ne- phritis.....	Improved	9.5	44	3.5	38	210		
1/28						2.5	19	1.9	52	120	++	++
IV												
4/11	E. C.	50	♀	Typical fatal case of chronic interstitial nephritis.....	Died	22.4	236	16.7	0	210	++	Pus
3/23	M. D.	34	♂	Typical fatal case of chronic interstitial nephritis.....	Died	15.0	240	20.5	2-3	225	++	+
1/25	S. H.	37	♂	Typical fatal case of chronic interstitial nephritis.....	Died	14.3	263	22.2	0	220	++	+
4/15	J. W.	34	♂	Typical fatal case of chronic interstitial nephritis.....	Died	8.7	144	11.0	Trace	225	+	+

* Normal findings: uric acid from 2 to 3 mg.; urea nitrogen, from 12 to 15 mg.; creatinin, from 1 to 2.5 mg. per 100 c.c.
The symbol ♂ signifies male; ♀ signifies female.

In our studies⁸ on the uric acid, urea and creatinin of the blood it was soon noted that high uric acids were frequently found without any other retention, while creatinin appeared to be retained only in the last stages of the disease. In comparing the concentration of these waste products in blood and urine, it was observed that the kidney was able to concentrate the creatinin 100 times, the urea eighty times, but the uric acid only about twenty times. In other words, it would appear that, normally, creatinin is the most readily and uric acid the least readily eliminated by the kidney, with urea standing in an intermediate position. From this it is logical to expect that the excretion of uric acid would be the first to be impaired, and in nephritis our blood studies appear to indicate that a retention of uric

of a high creatinin accumulation, the kidney is, apparently, never able to overcome.

Our blood studies show that many early cases of nephritis, probably of the interstitial type, give blood pictures in which the essential feature is the high uric acid. The urea and creatinin are frequently normal, though sometimes appreciably increased. As the condition of the cases of this type becomes more severe, the retention of urea increases, until we have high values for urea as well as uric acid. If improvement takes place, the concentration of urea gradually falls until the picture is that of the preceding group. If, on the other hand, the case goes on to fatal termination, the retention of uric acid and urea is followed by that of creatinin, the concentration of which may reach twenty times the normal.

As already noted, the rise in the concentration of the uric acid of the blood appears to be an excellent early sign of chronic (interstitial) nephritis.⁹ The diagnostic value of the blood uric acid in comparison with

6. Mosenthal and Richards: Arch. Int. Med., 1916, xvii, 329.
7. Foster and Davis: Am. Jour. Med. Sc., 1916, cli, 49.
8. Myers and Fine: Jour. Biol. Chem., 1915, xx, 391. Myers and Lough: Arch. Int. Med., 1915, xvi, 536. Myers, Fine and Lough: Arch. Int. Med., 1916, xvii, 570. This paper describes the estimation of the uric acid, urea and creatinin in the blood. At the suggestions of one of us (M.), E. Leitz of New York has recently made a very simple and inexpensive colorimeter which may be used for these determinations.

9. Myers, Fine and Lough: Footnote 8.

other tests is well brought out in Table 2. It is obviously important in this connection to bear in mind the association of uric acid retention with gout,¹⁰ although the retention here must likewise be ascribed to the same cause, namely, a lowered kidney permeability.

As a prognostic test the blood creatinin has been found of very great value. It is superior to the phenolsulphonephthalein test, since changes in the patient's condition are clearly shown, while the phenolsulphonephthalein test is continuously negative. Attention was called to this test nearly a year ago,¹¹ but we now have more than three times as many cases on which to report. All patients whom we have been able to follow for any length of time who had over 5 mg. creatinin to 100 c.c. of blood have died. Our observation on these cases, together with the phenolsulphonephthalein outputs, are summarized in Table 3. In this list it will be noted that only three (one patient has since died) of the patients having over 5 mg. remain alive, and these are patients who have been allowed to leave the hospital only recently. Only one of these patients, however, can be called improved.

Our experience with the ratio between the urea of the blood and urine according to the formulas worked

chronic interstitial (or true) nephritis. The condition of the blood in parenchymatous nephritis (nephrosis) is in our experience very different from that of the interstitial type. In the parenchymatous form one finds only a moderately increased blood urea, but differing from the interstitial type; an increased concentration of chlorids is frequently present, as might be expected from an accompanying edema.

As is evident from dyspnea, many advanced cases of nephritis develop an acidosis, due not to an increased formation of acid substances as in diabetes, but to the impaired elimination of the normally formed acid substances. During the last two or three years we have been accustomed to ascertain the degree of this acidosis from the carbon dioxid tension of the alveolar air¹³ or the hydrogen ion concentration of the blood. Van Slyke¹⁴ has recently shown that the degree of this acidosis may be more simply and more accurately determined by ascertaining the carbon dioxid combining power of the blood plasma. For this purpose he has ingeniously devised a very simple apparatus. This instrument has been in continuous use in our laboratory for the past year. Normally the carbon dioxid combining power varies from 53 to 77 c.c. (corrected) per 100 c.c. of plasma. In nephritis it

TABLE 2.—THE URIC ACID OF THE BLOOD IN CASES OF INCIPIENT INTERSTITIAL NEPHRITIS

Case	Age	Sex	Diagnosis, Remarks	Mg. to 100 C.c. of Blood			Phthal- ein, 2 Hrs. Output, per Cent.	Blood Pressure		Urine	
				Uric Acid	Urea Nitrogen	Creat- inin		Sys- tolic	Dias- tolic	Albu- min	Casts
1. J. J.	65	♂	Interstitial nephritis.....	9.5	25	2.5	13	185	90	+	+
2. E. B.	46	♂	Fibrillation.....	9.3	14	2.9	44	120	90	—	—
3. D. D.	52	♂	Cirrhosis of liver, interstitial nephritis, chronic alcoholism.....	8.7	20	3.6	20	100	87	+	+
4. B. D.	25	♂	General edema.....	7.7	20	2.6	45	168	100	+	—
5. M. K.	49	♂	Carcinoma of stomach.....	7.5	16	2.2	50	150	90	—	+
6. D. S.	56	♂	Interstitial nephritis.....	7.1	16	2.0	26	185	110	—	+
7. A. R.	57	♂	Carcinoma of stomach, interstitial ne- phritis.....	6.8	20	1.8	40	140	80	—	+
8. H. L.	23	♂	Pulmonary tuberculosis, tuberculosis of kidney.....	6.5	16	2.7	58	130	90	++	+
9. C. M.	54	♂	Hypothyroidism, interstitial nephritis.....	6.3	31	2.0	45	150	90	—	—
10. M. McA.	44	♂	Syphilis, interstitial nephritis.....	6.3	17	2.7	38	185	80	++	+
11. W. B.	71	♂	Chronic arthritis, arteriosclerosis, intersti- tial nephritis.....	6.1	12	2.4	65	145	80	+	+
12. E. H.	41	♂	Pericarditis, moderate alcoholism.....	5.6	13	2.1	45	150	65	—	—

out by Ambard and by McLean has been rather disappointing. In comparing the uric acid, urea and creatinin of the blood and the phenolsulphonephthalein of the urine with the index of McLean⁴ in thirty cases, the index appeared to give no additional information over the blood urea with the possible exception of one case. In this case a blood urea nitrogen of 33 mg. was encountered with an index of 198. In the above thirty cases the indexes ranged from 3 to 342. It is quite possible that this is too small a number of cases from which to make deductions, although Addis and Watanabe¹² recently concluded that "The rate of urea excretion in man varies under physiologic conditions in a manner which cannot be explained by the concentrations of urea in the blood and urine." Dr. Watanabe has been kind enough to recalculate some of their data into terms of the McLean index, the results indicating that according to this formula the indexes on normal subjects may vary between 25 and 250, a rather wide variation.

The patients whom we have had an opportunity of studying have been largely patients suffering from

is generally somewhat reduced, 40 to 50, but may fall to as low as 25 shortly preceding death.¹⁵ It would appear that in some cases the acidosis was a more important factor in the terminal symptoms than the nitrogen retention. As a guide to the treatment of the acidosis the determination has been found very valuable. One case may be mentioned. W. C. (Table 1, Group 3, Case 3) was admitted in coma with a carbon dioxid of 22. After an infusion of sodium bicarbonate, the patient quickly revived and on the second day showed a carbon dioxid of 58.

That many advanced cases of diabetes develop nephritis is a well-known clinical observation. In the early cases of diabetes there is a direct relation between the hyperglycemia and glycosuria, but this is certainly not true in cases of long standing with nephritis. It has been recognized for some time that hyperglycemia was present in many cases of advanced interstitial nephritis, though glycosuria was absent. The blood picture that we have observed in some cases

10. Fine: The Relation of Gout to Nephritis, as Shown by the Uric Acid of the Blood, THE JOURNAL A. M. A., June 24, 1916, p. 2051.

11. Myers and Lough: Footnote 8.

12. Addis and Watanabe: Jour. Biol. Chem., 1916, xxiv, 203.

13. Very recently Marriott (The Determination of Alveolar Carbon Dioxid Tension by a Simple Method, THE JOURNAL A. M. A., May 20, 1916, p. 1594) has described a simple technic for carrying out this test, thus rendering it directly available to the clinician.

14. Van Slyke, Stillman and Cullen: Proc. Soc. Exper. Biol. and Med., 1915, xiii, 39.

15. Quintard and Fine: Unpublished observations.

of advanced diabetes is typical of interstitial nephritis,⁹ that is, high uric acid values, frequently with moderate retention of urea. These patients had marked hyperglycemias, in one case 1.1 per cent., but were unable to secrete urines of high sugar content. Cases might be cited¹⁶ with blood sugars up to 0.3 per cent. and above without glycosuria. The condition the clinician is endeavoring to treat by restricting the carbohydrate of the diet is the hyperglycemia, but the glycosuria is sometimes a very poor index to this condition. Since the determination of blood sugar may now be very simply carried out, the estimation of the sugar of the urine should be supplemented by the determination of the sugar of the blood.

COMMENT

Of the large number of methods used in the past few years to estimate the functional capacity of the kidney, we feel that the following are of practical use to the general practitioner: the phenolsulphonephthalein test, the determination of the fixation of the specific gravity and of nocturnal polyuria (an elimination of over 400 c.c. between 6 p. m. and 6 a. m. being an

The amount of nitrogen retention in the blood serves as a most excellent guide in the giving of protein. The use of a salt-free diet in cases of parenchymatous nephritis with edema and salt retention gives prompt results.

CONCLUSIONS

An increase in the uric acid of the blood would appear to be of considerable value as an early diagnostic sign of incipient nephritis.

The urea of the blood has been found very valuable as a guide to the treatment of moderately severe cases of nephritis, since any change in the patient's condition is quickly perceptible.

As a prognostic test the blood creatinin has been found of very great service, over 5 mg. to 100 c.c. having invariably proved fatal after the lapse of a comparatively short period of time. During the terminal stages of the disease the concentration of the creatinin gradually rises, reaching 15 to 30 mg. in most cases at death.

The determination of the carbon dioxid combining power of the blood plasma according to the method of Van Slyke is a valuable index to the acidosis of

TABLE 3.—THE PROGNOSTIC VALUE OF THE CREATININ OF THE BLOOD IN NEPHRITIS

Case	Blood Creatinin, Mg. to 100 C.c.	Phthalein, 2 Hr. Output, per Cent.	Termination	Case	Blood Creatinin, Mg. to 100 C.c.	Phthalein, 2 Hr. Output, per Cent.	Termination
1. W. F.	33.3	...	Died	18. J. W.	11.0	3 to 1	Died
2. E. M.	28.6	0	Died	19. J. D.	10.7	0-5-4-3-6	Died
3. S. H.	22.2	0	Died	20. C. G.	10.0	0	Died
4. T. D.	20.5	2 to 3	Died	21. S. W.	9.1	0	Died
5. I. D.	20.0	0	Died	22. V. A.	8.3	6-4-2	Died
6. P. J.	20.0	0	Died	23. J. S.	7.4	.....	Died
7. E. L.	18.9	0	Died	24. W. G.	7.0	.....	Died
8. M. M.	17.8	...	Died	25. E. W.	6.7	5	Died
9. E. C.	16.7	0	Died	26. A. F.	6.1	9	Died
10. W. O'C.	16.6	Trace	Died	27. M. R.	5.9	3	Died
11. M. K.	14.7	.....	Died	28. J. McC.	5.6	2-7-10	Improved
12. K. K.	14.7	0	Died	29. V. R.	5.5	.....	Died
13. J. H.	14.3	.....	Died	30. M. N.	5.4	13-4	Stationary*
14. E. P.	12.7	0 to 1	Died	31. E. E.	5.3	10	Died
15. W. W.	12.5	0	Stationary	32. A. D.	5.2	.....	Died
16. M. O.	11.1	0	Died	33. T. K.	4.9	.....	Died
17. K.	11.1	0 to 3	Died	34. L. P.	4.8	0-10-31	Improved

* This patient has since died with a creatinin of 12.5 at time of death.

indication of renal involvement), and the estimation of the blood content of uric acid, urea, creatinin, sugar and carbon dioxid combining power. These tests are distinct contributions to medicine and have come to stay.

The use of renal test meals gives us much valuable information, but because they necessitate the careful weighing of foodstuffs and the exact collection and analysis of specimens of urine, their use will be largely confined to institutions.

The modern dietetic treatment of nephritis is based on the ability of the body to metabolize food stuffs and to eliminate their end-products; also on the permeability of the kidney to salt, water and nitrogen. By means of the newer methods of urine and blood analysis, the effect of a given diet can at once be determined.

It is obvious that in cases of salt, water or nitrogen retention the indications are to give either a salt-free limited fluid or low protein diet, as the case requires. In cases of nephritis with high nitrogen retention, an almost exclusively carbohydrate diet, sugar in lemonade, arrowroot and cornstarch puddings are given for a few days.

nephritis, from the viewpoint of both diagnosis and treatment.

In cases of advanced diabetes complicated with nephritis, the glycosuria or absence of glycosuria is a very poor guide to the hyperglycemia, since the nephritis has lowered the permeability of the kidney for sugar. In these cases the estimation of the sugar of the urine should always be supplemented by the determination of the sugar of the blood.

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The Diagnosis of Venereal Diseases.—A recent report from the laboratory of the New York City Health Department shows the work that is being done in the examination of specimens from cases of suspected venereal infection during the first quarter of 1916. During this period there were 13,419 complement fixation tests for syphilis, of which 3,730 were positive and 8,042 negative, 1,112 doubtful, and 535 specimens received were not examined. There were 2,711 complement fixation tests made for gonorrhea, of which 248 were positive, 1,841 negative, 281 doubtful, and 341 received no examination. The specimens examined microscopically for gonorrhea numbered 2,055, of which 321 were positive, 1,220 negative, 410 doubtful, and 104 specimens received were not examined. The large number of negative reports indicates that physicians are taking advantage of the facilities the department offers in the way of diagnosis.

16. Myers and Bailey: Jour. Biol. Chem., 1916, xxiv, 147. This paper describes the method of blood sugar estimation.

A COMPARATIVE STUDY OF TESTS FOR
RENAL FUNCTION

PHENOLSULPHONEPHTHALEIN, NONPROTEIN NITROGEN
AND UREA NITROGEN OF THE BLOOD, AMBARD'S
COEFFICIENT OF UREA EXCRETION, AND THE
TEST MEAL FOR RENAL FUNCTION *

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The term "renal function" is generally accepted to mean eliminative power of the kidneys. For clinical purposes, many workers in this field have regarded renal function as a unit, and the phrase "testing renal function as a whole" has become a by-word in medical phraseology. While such a conception of the kidney's acting as an entity, all of its component physiologic factors diminishing or increasing their efficiency synchronously, may have the advantage of simplicity, it does not accord with the known facts. It is a matter of routine observation that the diseased kidney may retain water, or salt, or urea, or phosphates, or sulphates, or any of the urinary constituents, and allow the remainder to pass freely. We know that the glomeruli and the various subdivisions of the uriniferous tubules are structures with widely varying

in two hours is normal and that "when the drug was continuously excreted in traces or not at all, a grave prognosis was to be given even without signs of uremia." Following these hints and the deductions from our own experience, the degree of impairment of renal function, as indicated by the various percentages excreted, have been set down in Table 1.

It is impossible to be dogmatic in regard to what constitutes the upper normal level of nonprotein nitrogen and urea nitrogen of the blood. Foster² found a maximum of 44 mg. of nonprotein nitrogen per hundred c.c. of blood in supposedly normal individuals. Tileston and Comfort³ demonstrated 32 mg. after a meal in a heavy meat eater. Under ordinary circumstances, the maximum obtained by these authors was 25 mg., which agreed very closely with the results of Folin and Denis.⁴ It would seem that, unless there be a very high protein intake, 30 mg. of nonprotein nitrogen per hundred c.c. of blood is a reasonable upper normal limit. The usual hospital bill of fare certainly does not furnish such a diet. Any value above 30 mg. in the present series of cases has, therefore, been regarded as indicating some degree of renal insufficiency. It is generally acknowledged that a retention of over 90 mg. of nonprotein nitrogen per hundred c.c. of blood indicates a very great increase, and it has been so considered here (Table 1). The urea nitrogen has been plotted out on the scale of impairment of renal function with the nonprotein nitrogen as a

TABLE 1.—SCALE OF DEGREE OF IMPAIRMENT OF RENAL FUNCTION AS INDICATED BY THE TESTS EMPLOYED

Degree of Impairment of Renal Function	Phenol- sulphone- phthalein, per Cent.	Nonprotein N of the Blood, Mg. per 100 C.c.	Urea N of the Blood, Mg. per 100 C.c.	Ambard's Coefficient of Urea Excre- tion	Test Meal for Renal Function					
					Night Urine		Variations in Sp. G. When the Highest Sp. G. is:			
					C.c.	Sp. G.	18	17-15	14 and 13	12—
Normal.....	0	60+	30—	15—	0.090—	400—	18+	9+		
Slight.....	+	59-40	31-45	16-27	0.091-0.115	401-600	16 and 17	8-5		
Moderate.....	++	39-25	46-65	28-44	0.116-0.220	601+	15—	4—		
Marked.....	+++	24-11	66-90	45-64	0.221-0.350	.....	.....	5 and 4	6+	
Maximal.....	++++	10- 0	91+	65+	0.351+	.....	.....	3—	4 and 5	6+
									3—	5—

physiologic functions and are affected to an unequal degree by different toxic substances. Extrarenal factors, such as secondary anemia, fever, cardiac failure, cystitis, prostatic disease, etc., are all mirrored in changes in the renal function which do not resemble one another in the least. Therefore, to speak of "testing renal function as a whole" is to set a false standard. Of the various tests for renal function, each has its own significance, and a greater insight will be obtained into the characteristics of kidney disease when physicians will no longer advocate one test blindly to the exclusion of all others, but will endeavor to interpret each one according to its significance. It is from this point of view that the following studies are presented.

INTERPRETATION OF THE INDIVIDUAL TESTS FOR
RENAL FUNCTION

The phenolsulphonephthalein test is so widely used and its value so generally appreciated that it scarcely requires comment. Rowntree¹ and his collaborators have maintained that after intramuscular injection, a urinary excretion of the drug of 60 per cent. or more

guide, keeping in mind the fact that in normal individuals the urea nitrogen constitutes about 50 per cent. of the total nonprotein nitrogen, while, with retention of the nitrogenous waste products, the percentage has a distinct tendency to increase (Table 1).

The upper normal limits of urea nitrogen have also been the subject of frequent experimentation. Schwartz and McGill,⁵ after reviewing the extensive literature on the subject, consider urea nitrogen values above 12 mg. per hundred c.c. (0.25 gm. urea per liter) as abnormal. Myers, Fine and Lough⁶ recently expressed the belief that 15 mg. of urea nitrogen per 100 c.c. of blood was the upper normal limit. McLean⁷ demonstrated urea nitrogen as high as 23 mg. per hundred c.c. (0.5 gm. urea per liter) in normal individuals, but adds that within the limits of 14 to 23 mg. urea nitrogen per hundred c.c. of blood (0.3 to 0.5 gm. per liter) "a blood urea figure may be quite normal, or may occur with retention." It would seem,

2. Foster, N. B.: Functional Tests of the Kidney in Uremia, Arch. Int. Med., October, 1913, p. 452.
3. Tileston, Wilder, and Comfort, C. W., Jr.: The Total Nonprotein Nitrogen and the Urea of the Blood in Health and in Disease, as Estimated by Folin's Method, Arch. Int. Med., November, 1914, p. 620.
4. Folin and Denis: Jour. Biol. Chem., 1913, xiv, 29.
5. Schwartz, H., and McGill, C.: Blood Urea Determinations in Two Hundred and Eleven Cases, Arch. Int. Med., January, 1916, p. 42.
6. Myers, V. C.; Fine, M. S., and Lough, W. G.: Significance of Uric Acid, Urea and Creatinin of Blood in Nephritis, Arch. Int. Med., April, 1916, p. 570.
7. McLean: Jour. Exper. Med., 1915, xxii, 212.

* From the Medical Clinic of the Johns Hopkins Hospital.
* Read before the Section on Practice of Medicine at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.
1. Rowntree, L. G., and Fitz, R.: Studies of Renal Function in Renal, Cardiorenal and Cardiac Diseases, Arch. Int. Med., March, 1913, p. 258.

therefore, that the consensus of opinion points to determinations yielding a urea nitrogen figure above 15 mg. in 100 c.c. of blood as revealing the possibility of nitrogen retention, which is at least worthy of closer investigation. For the other tests discussed here, absolute values for the normal may be given. For the nonprotein nitrogen and the urea-nitrogen of the blood, however, this is impossible because of the great influence dietary habits have on the level of these substances in the blood.

Ambard's coefficient of urea excretion expresses numerically the relation which exists between the concentration of urea in the blood and the rate of excretion of urea in the urine. It is calculated from the formula:

$$K = \frac{Ur}{\sqrt{D \times \frac{70}{P} \times \frac{\sqrt{C}}{\sqrt{25}}}}$$

In which K = The coefficient of urea excretion.
Ur = Urea grams per liter of blood.
D = Urea grams excreted in urine in twenty-four hours.
C = Urea grams per liter of urine.
P = Body weight in kilograms.
70 = Standard body weight in kilograms.
25 = Standard concentration of urea grams per liter of urine.

The formula is derived from Ambard's laws of urea excretion, concerning whose details the reader is referred elsewhere.⁸ The normal coefficient usually ranges from 0.06 to 0.09. When the values rise above 0.09, some impairment of the power of the kidney to excrete urea is indicated. Inability of the kidney to eliminate urea in proportion to the concentration of the blood urea results in an increase in Ambard's coefficient. In a normal individual it will remain within the limits mentioned, no matter what the height of blood urea; in cases with impaired renal function, however, the kidney does not answer the diuretic stimulus of the blood urea adequately, too little urea is put out, and the result is a rising coefficient, whether the urea in the blood be high or low. The degree of impairment of renal function, as indicated by the various levels of Ambard's coefficient, are indicated in Table 1.

The test meal for renal function consists of the two hourly collection of urinary specimens during the day, while the patient is on a full diet, and of a ten to twelve hour specimen at night. No food or fluid is taken except at meal times. The collection of the night specimen is begun three hours after the evening meal. Under these circumstances, a normal test yields a maximum specific gravity of 1.018 or more, the specific gravity varies 9 points or more from the highest to the lowest, and the night urine is small in amount (400 c.c. or less) and of high specific gravity (1.018 or over). These criteria are the same as those originally demanded of a normal test, with the exception that a difference of 9 degrees between the highest and lowest observations has been called normal,⁹ instead of 10. A lowering of the maximal specific gravity, a fixation of the specific gravity and a nocturnal polyuria are the signs indicating a diminished renal function. Table 1 gives the various degrees of impairment as indicated by the test meal for renal function, as compared to the other tests. The salt, nitrogen and other urinary constituents may be deter-

mined in these specimens, and valuable information may be obtained as to the ability of the body to excrete these substances. However, the simple procedure of measuring the volume of the urine and determining the specific gravity yields sufficient data to give an adequate idea of renal function in many respects, and the quantitative chemical determinations may be resorted to when more detailed information is desired.

In order to study the relation to one another of the evidences of impaired renal function obtained by these various tests, a somewhat arbitrary scale of four degrees of impairment—slight, moderate, marked and maximal—was determined on. The exact figures which the majority of experienced observers consider as indicating normal function, and these various degrees of subnormal function, were selected, and are shown in Table 1. The findings in over 200 patients were grouped in accordance with this scale.

A comparative table of this nature has heretofore not been seriously advocated. It has very distinct advantages in that it makes the judgment of laboratory findings very precise. However, it has its drawbacks in that it would tend to make the physician more mechanical in the interpretation of the facts laid before him and lead him astray, if the figures were not judged in connection with other clinical data. It is our belief that a scale indicating impaired function, as this one does, is a distinct aid when used correctly. In the first place, it calls attention without fail to impaired function whenever it is present, and it brings before the observer a distinct conception of the degree of involvement. In the second place, it enables the physician in charge to judge which functions are impaired and to what degree. Further study may show that this particular tabulation is erroneous in some respects. However, it is hoped that it, or a similar table, may be used as a standard by which to judge of renal function. Other tests for changes in diseases of the kidney might be plotted in on the same scale. It should be clear that no functional test can be used as direct evidence for the diagnosis of the anatomic or etiologic type of disease present, or even as a therapeutic guide, but only indirectly as an assistance to the experienced in arriving at a final judgment. A low hemoglobin percentage, for instance, gives an exact measure of the degree of anemia present, but tells nothing of its cause or of the exact treatment indicated.

TECHNIC EMPLOYED

The phenolsulphonephthalein test of Rowntree and Geraghty was performed according to the method outlined by these authors.¹⁰ The procedure of Folin and Denis¹¹ was employed to obtain the figures for nonprotein nitrogen of the blood.

The method of Marshall¹² was used for the quantitative determination of urea nitrogen in the blood.

In ascertaining the figures for Ambard's coefficient of urea excretion, the same method for blood urea was employed; the urea of the urine was estimated according to Marshall,¹³ the coefficient itself was calculated according to the original formula of Ambard.¹⁴ The test meal for renal function followed the technic as previously laid down by one of us.⁹ The name of this test has been changed from "nephritic test meal" to "test meal for renal function," as suggested by Dr. L. F. Barker, since it has been employed in many other conditions besides nephritis.

8. Ambard: *Physiologie normale et pathologique des reins*, Paris, 1914. McLean, F.: *Jour. Exper. Med.*, 1915, xxii, 212.

9. Mosenthal, H. O.: *Renal Function as Measured by the Elimination of Fluids, Salt and Nitrogen, and the Specific Gravity of the Urine*, *Arch. Int. Med.*, November, 1915, p. 733.

10. Rowntree, L. G., and Geraghty, J. T.: *Jour. Pharmacol. and Exper. Therap.*, 1909, i, 579; *The Phthalein Test*, *Arch. Int. Med.*, March, 1912, p. 284.

11. Folin and Denis: *Jour. Biol. Chem.*, 1913, xiv, 29.

12. Marshall, E. K.: *Jour. Biol. Chem.*, 1913, xiv, 283.

13. Marshall, E. K.: *Jour. Biol. Chem.*, 1913, xv, 487.

14. Ambard: *Compt. rend. Soc. de biol.*, 1910, lxi, 411, 506.

GROUPING OF THE CASES STUDIED

Observations on over 200 patients are recorded in this series. The results obtained in cases of anemia, whether primary or secondary, are considered separately at the close of the article. This is done because anemia presents a condition whose cause for diminished activity of the kidneys can be definitely associated with abnormalities of the blood, and which furnishes one of the most clear-cut examples of dissociated involvement of the various renal functions. That is, the ability to secrete a concentrated urine is remarkably diminished, while the other tests show only slight if any depression of renal activity. There are other diseases, such as diabetes insipidus, which show similar characteristics. The interpretation of renal function in these as well as other abnormal conditions is quite impossible at present.

The remainder of the material has been grouped in various ways, intended to bring out certain points which study of the material has yielded. Because of lack of space, it is impossible to publish the tables in full.

GENERAL COMPARISON OF ALL THE TESTS EMPLOYED

A glance at Table 2 establishes the following facts:

1. The nonprotein nitrogen and urea nitrogen indicate a slighter degree of involvement of renal function than the other tests.

TABLE 2.—DEGREE OF INVOLVEMENT BY THE TESTS AS COMPARED TO PHENOLSULPHONEPHTHALEIN, ACCORDING TO THE SCALE OF TABLE 1*

Degrees Variation from Phthalein	Nonprotein Nitrogen	Urea Nitrogen	Ambard's Coefficient	Test Meal
++	1 per cent.	1 per cent.	6 per cent.	15 per cent.
+	5 per cent.	10 per cent.	21 per cent.	35 per cent.
Same	48 per cent.	45 per cent.	47 per cent.	34 per cent.
—	32 per cent.	31 per cent.	23 per cent.	14 per cent.
---	8 per cent.	10 per cent.	2 per cent.	2 per cent.
----	3 per cent.	3 per cent.	1 per cent.	
-----	3 per cent.			
Total cases....	85	162	156	136

* In this table, + signifies 1 degree greater involvement than that shown by phenolsulphonephthalein, and — 1 degree less. All the cases observed except those with severe anemia are grouped together in this table.

2. Phenolsulphonephthalein and Ambard's coefficient tend to show an equal degree of impairment of renal function.

3. The test meal for renal function demonstrates a greater degree of depressed function than the other tests.

The same relations hold true for each type of case when this whole group is subdivided into the following classes: hypertensive cardiorenal disease, passive congestion, nephritis without hypertension, and miscellaneous, which includes cases of prostatic hypertrophy, cystitis, polycystic kidney, etc. The significance of these findings will be discussed in greater detail in the remainder of the article.

1. *The Nonprotein Nitrogen and Urea Nitrogen of the Blood, and Ambard's Coefficient.*—These three tests all determine the ability of the kidney to excrete nitrogenous waste products. Ambard's coefficient may indicate such an impairment of function even when the nitrogenous products in the blood are within normal limits.¹⁵ In the present series (Table 3) this is

readily observed. It also shows how slight increases in the blood urea and total nonprotein nitrogen figures may be revealed in their true light by Ambard's coefficient, many of them evidently being due to renal insufficiency, while others are not.

In all the cases quoted in this article, the basis of classification has invariably been the highest value for nonprotein nitrogen or urea nitrogen obtained. By these means, the dietetic influence has been in great part obviated. It has been demonstrated what a great part diet plays in influencing the level of nitrogenous

TABLE 3.—COMPARISON BETWEEN THE DEGREE OF INVOLVEMENT OF RENAL FUNCTION, AS SHOWN BY THE NITROGENOUS PRODUCTS IN THE BLOOD, AND AMBARD'S COEFFICIENT

Degree of Impairment as Measured by Nonprotein Nitrogen and Urea Nitrogen	Total Number of Cases	Percentage of Cases Exhibiting the Given Degree of Impairment of Renal Function, as Indicated by Ambard's Coefficient				
		0	+	++	+++	++++
0	56	57	27	16		
+	64	17	28	50		
++	21	..	19	43	5	
+++	9	..	..	11	56	33
++++	15	..	..	..	7	93

waste products in the blood.¹⁶ Our experience has led us to the same conclusion, as may be noted in Table 4.

One of these cases is particularly noteworthy. The reduction of 145 mg. of nonprotein nitrogen to 32 mg. by dietary means is one of the most marked results of this kind thus far recorded. The partial data of this case are given in the accompanying chart.

The above and one other extrarenal factor must be borne in mind when blood nitrogen values are considered. This is the effect of an increased protein catabolism. It commonly occurs in the terminal stages of some forms of nephritis. That this condition in Bright's disease is not necessarily a rapidly fatal one is seen in this patient, who lived several months after these observations were made (see chart). Such a process may increase the blood nitrogen figures mate-

TABLE 4.—THE EFFECT OF A LOW PROTEIN DIET ON THE LEVEL OF THE NONPROTEIN AND UREA NITROGEN OF THE BLOOD

Before Low Protein Diet		After Low Protein Diet		Diagnosis
Nonprotein N Mg. per 100 C.c.	Urea N Mg. per 100 C.c.	Nonprotein N Mg. per 100 C.c.	Urea N Mg. per 100 C.c.	
26	17	16	7	Sec. Contr. Kid.
..	26	..	5	Chr. Diff. Neph.
36	..	30	..	Chr. Diff. Neph.
47	..	30	..	Chr. Diff. Neph.
97	61	22	15	Sec. Contr. Kid.
145	126	32	23	Sec. Contr. Kid.

rially without signifying altered renal function as shown by the phenolsulphonephthalein or nitrogen excretion. It should, however, always be considered a serious omen, as may be gathered from those cases in whom we have observed it, all of whom have suffered a fatal issue either immediately or within a few months. Studies on these points are in progress at our clinic and will be reported in greater detail subsequently.

16. Folin, Otto; Denis, W., and Seymour, Malcolm: The Nonprotein Nitrogenous Constituents of the Blood in Chronic Vascular Nephritis (Arteriosclerosis) as Influenced by the Level of Protein Metabolism, Arch. Int. Med., February, 1914, p. 224. Frothingham, Channing, Jr., and Smillie, W. G.: A Study of Different Nitrogenous Diets in Chronic Nephritis, Arch. Int. Med., February, 1915, p. 204.

15. Ambard (Footnote 14). McLean, F. C.: Clinical Determination of Renal Function by an Index of Urea Excretion, THE JOURNAL M. A., Feb. 5, 1916, p. 415.

The chart shows how in the first two weeks of observation, in spite of a negative nitrogen balance, the nonprotein nitrogen of the blood varied but slightly, and how it subsequently dropped to a lower level. Considering the fact that this patient was taking a low protein diet with a large caloric value in starches and fats, it is believed that these figures indicate a protein destruction. This is confirmed by the fact that during the third week the drop in the blood values was much more rapid than during the second period, although

TABLE 5.—RAPID CHANGES IN THE LEVEL OF THE NONPROTEIN NITROGEN OF THE BLOOD, DUE TO KIDNEY INSUFFICIENCY ALONE OR COMBINED WITH AN INCREASED PROTEIN CATABOLISM

Nonprotein Nitrogen of the Blood, Mg. per 100 C.c.		Days Between Observations	Diagnosis
First Observation	Second Observation		
35	426	23	Acute exacerbations of chronic nephritis; protein destruction
49	111	12	Chronic nephritis; bronchopneumonia; protein destruction
96	192	11	Chronic nephritis; uremia; protein destruction
127	304	8	Chronic nephritis; uremia; protein destruction
178	292	18	Chronic nephritis; uremia; protein destruction
63	222	54	Acute exacerbation of chronic nephritis; retention only
81	184	5	Mercury poisoning; anuria; retention only

the nitrogen loss was somewhat less. During this time, the protein destruction had evidently subsided. (The drop to 32 mg. of nonprotein nitrogen recorded in Table 4 occurred at a later period not included in the chart).

The last eight days of observation (see chart) indicate a marked retention of nitrogen without a corresponding increase in the urea nitrogen of the blood. This nitrogen was doubtlessly assimilated by the tissues. This series of events demonstrates how a nitrogen balance between the intake and the output in the feces and urine are not as valuable tests of the kid-

TABLE 6.—COMPARISON OF DEGREE OF IMPAIRMENT OF FUNCTION IN SEVENTY-THREE CASES OF ALL CLASSES EXCEPT ANEMIA IN WHICH ALL THE TESTS WERE CARRIED OUT, EXPRESSED IN PERCENTAGE OF THE TOTAL FIGURES

Degree of Renal Involvement According to Scale	Phenolsulphonphthalein	Urea N of Blood	Ambard's Constant	Test Meal
0	18 per cent.	40 per cent.	32 per cent.	10 per cent.
+	45 per cent.	35 per cent.	22 per cent.	27 per cent.
++	12 per cent.	14 per cent.	25 per cent.	27 per cent.
+++	11 per cent.	4 per cent.	12 per cent.	7 per cent.
++++	14 per cent.	7 per cent.	9 per cent.	29 per cent.

ney's ability to handle a given amount of protein food as the blood determinations and Ambard's constant.¹⁷

Very rapid increments may occur in the nonprotein nitrogenous constituents of the blood (Table 5) caused either by kidney insufficiency alone or combined with abnormal protein catabolism. Such sudden changes may invalidate many of the attempts to formulate averages for blood figures in any given type of nephritis; they also explain the low nitrogen values found in some instances a few days before death in uremia.²

17. Mosenthal, H. O., and Richards, A. E.: Interpretation of Positive Nitrogen Balance in Nephritis, Arch. Int. Med., February, 1916, p. 329.

THE EARLY DIAGNOSIS OF IMPAIRED RENAL FUNCTION

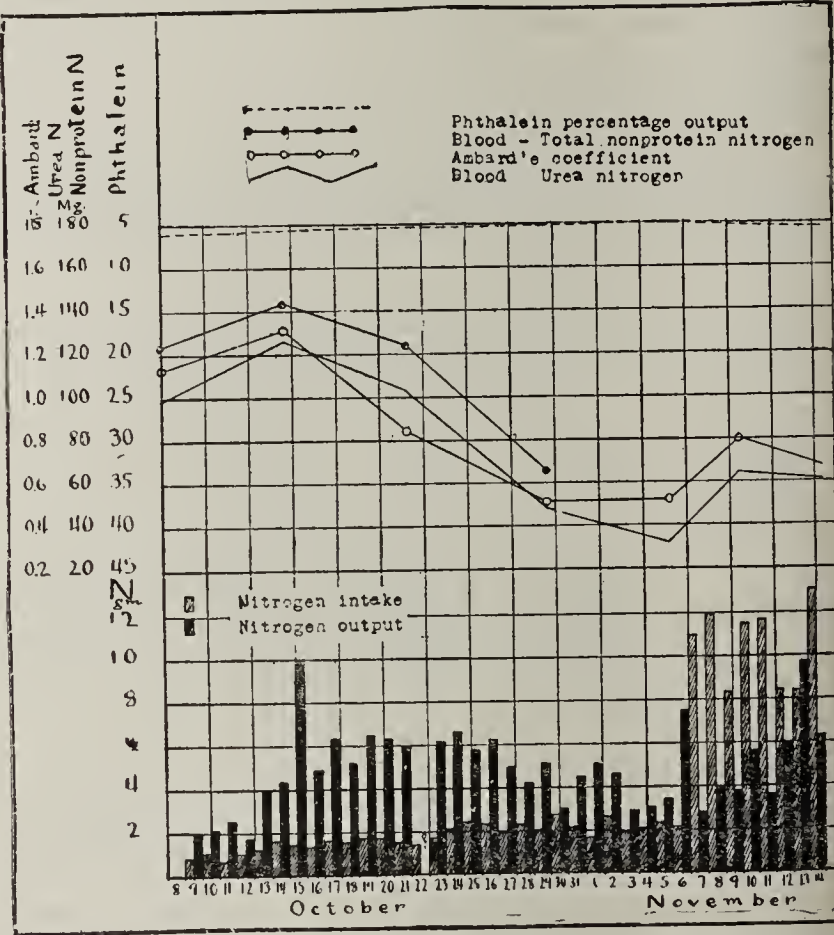
It has been shown (Table 2) that the test meal for renal function demonstrates a greater degree of depressed function than the other tests. This does not necessarily imply that it appears as the first sign of impairment. A better answer to this question can be obtained if only those cases (excepting the anemias) are compared in whom all tests were carried out (Table 6).

Table 6 shows that:

1. The tests in order of their positive appearance are: the test meal, phenolsulphonphthalein, Ambard's constant, urea nitrogen of the blood.¹⁸

2. A maximal involvement is most frequently seen in the test meal, less frequently in the phenolsulphonphthalein test and least often in Ambard's coefficient.

The second consideration will be discussed under prognosis. The first point, that the test meal gives the earliest positive indication of renal damage,



Data from a case of secondary contracted kidney, indicating the processes of protein destruction and assimilation and their relation to tests of renal function.

confirms the observation made in Table 2. This fact admits of an explanation, which indicates very beautifully how in many cases the negative finding in the phenolsulphonphthalein and Ambard tests is more apparent than real. As others¹⁹ have found, the present series contained some cases of chronic diffuse nephritis with an excessive phenolsulphonphthalein output (Table 7); besides these there were many instances of hypertensive cardiovascular disease exhibiting a similar phenomenon. All these patients also showed a very rapid elimination of urea, so that the figures for Ambard's constant were normal or subnormal.²⁰ These cases of overactivity in mild kid-

18. Christian and his associates have also found the test meal to be the most delicate indicator of renal function. Christian, H. A.: Am. Jour. Med. Sc., 1916, cli, 625.

19. Baetjer, W. A.: Superpermeability in Nephritis, Arch. Int. Med., June, 1913, p. 593. Pepper and Austin: Am. Jour. Med. Sc., 1913, cxlv, 254. Sellards: Bull. Johns Hopkins Hosp., 1912, xxiii, 298.

20. These findings as well as similar ones in fever and hyperthyroidism will be discussed in full in a future paper by D. S. Lewis.

ney lesions have been referred by Schlager and his associates²¹ to the excessive response evoked in an intact organ by the irritation resulting from inflammatory processes. As the lesions advance, the renal parenchyma becomes more severely damaged and exhibits a subnormal activity to the pathologic stimulus. The stage of overactivity is characterized by phenolsulphonephthalein excretions and Ambard's coefficients, which appear to surpass even the normal criteria as signs of renal insufficiency. However, it has a different effect on the test meal, since the kidney irritability expresses itself in an excess of fluid excretion which has the tendency to result in a nocturnal polyuria, and a fixation as well as a lowering of the specific gravity. It is for this reason that the test meal is so frequently the earliest sign of an involvement of renal function.

PROGNOSIS

The relationship between tests of renal function and prognosis in nephritis has been found to be very uncertain. The extrarenal factors, cerebral hemorrhage, myocardial insufficiency, intercurrent infections, etc., have caused a fatal termination so frequently as

TABLE 7.—CASES OF OHRONIO DIFFUSE NEPHRITIS AND HYPERTENSIVE CARDIOVASCULAR DISEASE SHOWING A NORMAL OR SUPERNORMAL RESPONSE TO PHENOLSULPHONE-PHTHALEIN AND AMBARD'S COEFFICIENT, WHILE THE TEST MEAL SHOWS SOME IMPAIRMENT OF FUNCTION

Diagnosis	Phthal- ein, per Cent.	Urea N of the Blood, Mg. per 100 C.c.	Ambard's Con- stant	Degree of Impair- ment Indicated by the Test Meal
Chronic diffuse nephritis.....	71	18	0.064	+
Chronic diffuse nephritis.....	78	11	0.054	+
Chronic diffuse nephritis.....	80	12	0.070	+
Chronic diffuse nephritis.....	70	8	0.068	+
Hypertensive cardiovas. disease..	76	8	0.048	0
Hypertensive cardiovas. disease..	63	12	0.050	++
Hypertensive cardiovas. disease..	70	9	0.050	+
Hypertensive cardiovas. disease..	85	9	0.059	0
Hypertensive cardiovas. disease..	67	16	0.077	++
Hypertensive cardiovas. disease..	81	15	0.080	+
Hypertensive cardiovas. disease..	65	..	.....	++
Hypertensive cardiovas. disease..	75	..	.....	+
Hypertensive cardiovas. disease..	65	..	.....	+
Hypertensive cardiovas. disease..	66	..	.....	++
Hypertensive cardiovas. disease..	67	..	.....	+
Hypertensive cardiovas. disease..	65	..	.....	++

to put a greater emphasis on the physician's clinical judgment than on the interpretation of tests for renal function alone. In certain patients, degrees of impaired kidney activity are found which are ordinarily considered incompatible with life. These as well as others who exhibit uremia with apparently fair functional kidney processes go far to show that uremia and renal lesions are not entirely dependent one on the other.

The most striking example of this kind in our series is I. S.; diagnosis, polycystic kidneys. In December, 1914, the total nonprotein nitrogen of the blood was 118 mg., the excretion of phenolsulphonephthalein yielded only a faint trace in two hours (Ambard's coefficient, if determined, would undoubtedly have been very high), and the test meal showed a maximal impairment of function (maximal specific gravity, 1.011; variation from the highest to the lowest specific gravity, 1 degree; a night urine of 1,290 c.c.). Fifteen months later (March, 1916), the phenolsulphonephthalein and test meal were unchanged, the blood nitrogen was 112 mg., and Ambard's constant 0.67. At present one and one-half years after tests which indicated an extreme impairment of renal function, he is working at his office every day.

A high nonprotein nitrogen (above 90 mg.) or a high urea nitrogen (of 65 mg. or higher) has been found to be the most reliable prognostic sign. Of eighteen such patients, fourteen died in the hospital or shortly after leaving it; of the other four patients, one is still in the hospital in a precarious condition, one is the case of polycystic kidney referred to above, one is a case of mercuric chlorid poisoning with recovery, and the last is a case of secondary contracted kidney who has followed therapeutic directions so closely that he may almost be said to have outlived his day. It is clear to the physician coming in contact with these cases of nitrogenous retention that a sharp line can be drawn between those suffering with increased protein catabolism and those who are not. An example of this kind has been given in detail. This factor when present almost invariably foreshadows an unfavorable prognosis; a retention, on the other hand, not coupled with an abnormal degree of protein destruction, may do very well (as the case of polycystic kidney mentioned previously). In the earlier stages of nephritis, the nitrogen of the blood is very likely to lag behind the other tests (Tables 2 and 6) and it has been shown how Ambard's coefficient is more reliable under these circumstances as a test of renal function.

In nephritis, whether of the chronic diffuse or of primary contracted type, an Ambard's coefficient of 0.20 or higher has usually been associated with a fatal issue within a few months at the most. Of 87 patients with an index less than 0.2, 63 were traced and 15 died, 7 of uremia and 3 of cerebral hemorrhage. Of 36 patients with an index above 0.2, 30 were traced and 24 died, 12 of uremia, 9 of myocardial insufficiency, and 3 of cerebral hemorrhage. It is only to be expected that the patients with a higher Ambard's coefficient should show a more unfavorable prognosis. However, here, as in the case of other functional tests, an infallible guide to prognosis is not demonstrated. The test meal usually reaches a point of maximal intensity some time before the other tests. Uremia, or death from some other cause, may occur at these periods, and thus lend an aspect of greater prognostic importance to the test meal than it actually possesses. It may be used as a valuable guide to prognosis in conjunction with the other procedures, but an opinion of maximal impairment of function should not be given without them.

The phenolsulphonephthalein test in this series has yielded results which have not varied from those reported previously.²² An output of less than 10 per cent. has usually, but not invariably, warranted an utterly bad prognosis; occasional instances of death from uremia have taken place with an excretion of the drug in the neighborhood of 50 per cent.

EXAMPLES OF "DISSOCIATED" RENAL FUNCTION

Up to the present, the most constant examples of this kind have been found among the anemias. A few of the results are given in Table 8. Case 1 typifies the test meal result in a case of severe anemia: a marked fixation of specific gravity at a low level, and a nocturnal polyuria, indicating a maximal degree of functional involvement. After transfusion, the specific gravity rises, but is still markedly fixed. As the blood returns to normal, the test meal tends to resume a normal curve (Case 2). Under ordinary circumstances the low fixed specific gravity is characteris-

21. For a summary of these views, see Schlager: Beihefte z. med. lin., 1912, viii, 211.

22. Thayer and Snowden: Am. Jour. Med. Sc., 1914, cxlviii, 781.

tic of anemia with a hemoglobin of less than 40 per cent. If the anemia persists over a long period, such results are obtained even when the hemoglobin assumes a higher level. This fact, coupled with the progressive diminution of phenolsulphonephthalein in Case 4, would indicate that anemia in itself may have a harmful effect on the kidney.²³ Cases 3 and 4 are examples of complete dissociation of function, the blood urea, Ambard's coefficient and phenolsulphonephthalein indicating only a slight or no impairment of function, the test meal a maximal one, whereas, in Cases 5, 6 and 7, with higher percentages of hemoglobin, the test meal reveals a slight or moderate involvement, as compared to the normal or slightly impaired state of the other tests.

The causes for extreme variance between urea nitrogen and nonprotein nitrogen of the blood and the other renal functional tests have been discussed. These tests are comparatively simple in their interpretation, and illustrate what great advances can be made when other problems can be attacked from a rational pathologic physiologic basis.

Occasionally cases are found in which there is extreme divergence of some of the tests, as in the following: In a woman, aged 37, the phenolsulphonephthalein excretion was 45 per cent. Ambard's coefficient 0.142, the nonprotein nitrogen of the blood

a significance apart from the others, comparison according to this method is an extremely valuable aid in the treatment and prognosis of diseases of the kidney.

2. The level of the nonprotein and urea nitrogen of the blood must be estimated largely as the resultant of three factors—kidney efficiency, diet and protein destruction. In judging of prognosis, when these substances are high in the blood of nephritics, due regard must be given as to whether their accumulation is brought about by retention alone or through retention coupled with protein destruction. The former offers a comparatively better prognosis than the latter.

3. The coefficient of Ambard is a better method of determining the ability of the kidney to excrete urea than the level of this substance in the blood.

4. The progress of renal disease is probably followed most minutely by means of the phenolsulphonephthalein excretion and Ambard's coefficient, as these tests furnish figures in which even small variations are of significance.

5. The test meal for renal function, of the tests employed, gives the earliest indication of diminished kidney efficiency. It likewise reaches the maximum degree of impairment before the others.

6. Each test for renal function covers only a limited range of the kidney's activities. It is, therefore,

TABLE 8.—THE RESULTS OF TESTS FOR RENAL FUNCTION IN PRIMARY AND SECONDARY ANEMIAS

Case	Phthal- cin per Cent.	Am- bard's Con- stant	Urea Nitrogen Blood, Mg. per 100 C.e.	Test Meal for Renal Function								Hb.	Red Blood Cells	Diagnosis
				Night Urine		Sp. G. in the Two Hourly Day Specimens								
				C.e.	Sp. G.									
1	..	....	..	430	12	..	11	12	12	11	12	25	1,088,000	Pernicious anemia After transfusion
				490	18	16	17	18	17	16	18	55	2,441,000	
2	..	....	..	520	23	17	21	25	20	22	13	95	4,028,000	Pernicious anemia; splenectomy; repeated trans- fusions
3	55	0.10	13	990	09	09	08	09	10	10	10	52	2,816,000	Secondary anemia for longer than 9 months
4	73	....	..	1,250	10	14	10	10	10	11	11	39	2,464,000	Secondary anemia for long period
	42	0.04	6	395	10	09	10	09	10	09	10	50	2,320,000	One year later
5	54	0.09	14	415	14	..	22	25	15	19	12	50	2,000,000	Primary anemia
6	54	0.06	14	455	21	16	16	17	18	18	18	48	1,960,000	Primary anemia
7	46	0.06	10	740	14	22	16	18	16	15	11	40	1,880,000	Secondary anemia

17, the urea nitrogen 9, and the test meal revealed a maximal involvement, as indicated by a low, fixed specific gravity. On first sight, this might be supposed to be a case of diabetes insipidus, as indicated by the low specific gravity and very moderate polyuria. However, such patients do not have a diminished phenolsulphonephthalein excretion,²⁴ and closer investigation of the nitrogen excretion, as suggested by a moderately impaired Ambard's coefficient, revealed the fact that the maximal involvement indicated by the test meal in its low fixed specific gravity was present because this individual did not have the power to concentrate nitrogen above 0.2 per cent. The salt output was much better than this.

Such cases illustrate how each test has its own significance, which, if thoroughly appreciated, may lead to marked improvement in therapeutics.

SUMMARY

1. A scale of impairment of renal function is proposed, according to which the tests may be measured. Such a graduation calls to the attention of the clinician the relative degree of involvement as shown by different procedures. Inasmuch as each of them has

a mistake to speak of any test as measuring renal function as a whole. The aim should be to develop a proper interpretation of the old tests and easily applied new ones, in order to obtain a true guide to the treatment of diseases of the kidney.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. FOSTER, CHACE AND MYERS, AND MOSENTHAL AND LEWIS

DR. HENRY ASBURY CHRISTIAN, Boston: Dr. Foster has given us a very valuable analysis of the various types of uremia, one which I am sure will be helpful not only in a better understanding of the condition but also one that will give us a better idea of how to treat nephritic cases when confronted by the picture of uremia belonging to one of these various types. Dr. Chace has dealt chiefly with one method of testing renal function and his results are of decided value in comparison with other methods. Dr. Mosenthal has made comparisons of several methods and has drawn certain conclusions. This fact stands out in the symposium, that from the various methods we may get various results and we meet with cases in which we get individual variations from anticipated results though usually results from different methods agree very well. The important thing is that unless we apply more than one method we will miss evidences of disturbed renal function in some cases. The results of the studies we have conducted at the Peter Bent Brigham Hospital in Boston are analogous to those of Dr. Mosenthal in regard to the

23. Cases of anemia with serious functional disturbances of the kidney have been reported by Tileston, W., and Comfort, C. W., Jr. (Footnote 3).

24. Fitz, R.: A Case of Diabetes Insipidus, Arch. Int. Med., November 1914, p. 706.

relative results of the several tests. Like Dr. Mosenthal, we have come to think that Ambard's coefficient is of more value than the urea nitrogen in the blood. McLean's method of expressing the relationship between the urea in the blood and the urea in the urine is better in our opinion than the Ambard method. We have in our work come to the conclusion that in the determination of the total nonprotein nitrogen no more light is thrown on renal function than by the determination of the urea nitrogen in the blood. This latter determination is part of the data required for the McLean index or Ambard coefficient and so adds no extra work. In addition, the dietary test as outlined by Dr. Mosenthal is of value particularly in the early cases of nephritis in that it will show disturbances at a period before the phthalein, urea nitrogen or other tests will. The results obtained with the dietary test are of great value but chiefly in the early stages of nephritis. In the later stages, however, it gives little additional information to that obtained from the phthalein test, the blood urea and the Ambard or McLean index. This is due to the fact that it shows its maximum effect relatively early in the nephritis and in the late stages changes but little with progress of the lesion.

DR. L. F. BARKER, Baltimore: I should like to emphasize two points: First, the kidney behaves differently as regards different substances. If we wish to know in a broad way what the renal function is, we must test the power of the kidneys to excrete several different substances. This requires much work. For instance, the chlorids may be retained by kidneys that are able to excrete nitrogen well, and *vice versa*. Second, the kidneys begin to eliminate certain substances as soon as they appear in the blood, whereas other substances must reach a certain degree of concentration in the blood before the kidneys begin to eliminate them. Thus urea is a substance that is at once given out. On the other hand, the chlorids must reach a certain degree of concentration in the blood before the kidneys start excreting chlorids—the so-called threshold of chlorin excretion. The chlorids may fail to appear in the urine in pneumonia; the reason is that the blood-concentration in chlorids falls below the threshold of excretion. We must, I think, pay more attention to such excretion-thresholds.

What may the general practitioner use as tests of renal function? Of the several tests referred to there are two that are especially advantageous: First, the renal test diet as modified by Mosenthal is simple and easy to apply. The urine is collected every two hours. Even if we determine only the quantity and the specific gravity of each specimen thus obtained we can draw valuable inferences regarding the ability of the kidneys to excrete a concentrated urine and regarding the "fixation of the specific gravity" or a so-called hyposthenuria. Second, the phenolsulphonphthalein test is a valuable and practical test, especially for the surgeon who desires to know whether the renal function is good enough to permit him to perform an operation. If the general practitioner would apply these two tests in special cases he would reap the many benefits derivable from the studies of renal function as far as they have yet gone.

DR. ALBION WALTER HEWLETT, Ann Arbor, Mich.: The tests that have been discussed give the same sort of information concerning the function of the kidney and the question arises as to which is the most easily performed and is at the same time reliable. As between the blood urea and phthalein tests we have found the former a more accurate indication of serious renal damage. The phthalein test, however, is the more easily performed and is, as a rule, sufficiently accurate. The information given by such tests is of great value in prognosis and similar information cannot be obtained by the usual urinary examinations. Dr. Foster has pointed out that in one type of uremia the symptoms are due to a retention of urinary products in the body. In our experience this is the commoner type of uremia. In order to determine what rôle, if any, urea itself plays in producing the asthenic symptoms present in this toxemia, Gilbert, Wickett and myself took large quantities of urea by mouth and raised the urea in our bloods to 200 mg. per 100 c.c. or over. When the urea in the blood exceeded 160 mg. asthenic symptoms occurred. There was no rise of blood pressure and no loss

of appetite. From these experiments we are inclined to believe that urea itself is responsible for some of the manifestations of this type of uremia.

DR. H. J. LEHNHOFF, Lincoln, Neb.: It appears to me that the result of this experimentation depends on a certain number of variables of the majority of which we have no knowledge and of even more of which we have absolutely no control. Some of these known variables might be illustrated by chronic infections, slight temperature elevation, conditions of the blood, abnormalities of the internal secretions, etc. These variables have an influence and I do not believe we should look on these abnormalities as being absolutely results of kidney pathology alone.

DR. NELLIS B. FOSTER, New York: I did not refer to Dr. Hewlett's experiment on himself as I believed he would speak of it. If he had sought my advice regarding doing it on himself, I would have told him not to do it, although it is an experiment I have wanted to see done. According to my notion, such amounts of urea would be dangerous should the kidney function be imperfect, but I rather doubt that urea is the sole factor productive of symptoms with the asthenic type of uremia.

DR. A. F. CHACE, New York: General practitioners wish to know those tests which are of practical value and those which are of academic interest. The examination of the blood requires only from 1 to 10 c.c. of blood and is comparatively simple. The advantages of these tests are that the physician does not have to pay attention to prepared diets and to specimens of urine carefully collected. I wish to recommend as practical tests the estimation of the uric acid, creatinin, sugar and the CO₂ combining of the blood.

DR. HERMAN O. MOSENTHAL, Baltimore: A very important point is the relation of extra-renal factors to kidney function. When we speak of renal function we mean the eliminative power of the kidney. This is dependent not only on the condition of the kidney itself, but likewise on the almost innumerable other factors which may influence the activity of this organ, such as the food intake, the metabolic activities of the body, the composition of the blood, the blood pressure, the rate of blood flow, fever, etc. It is necessary to recognize the fact that renal function is frequently as dependent on the changes which occur in the heart, the gastro-intestinal tract, the blood, etc., as it is on changes in the kidney itself. It may be the appreciation of this fact that has led clinicians to apply themselves to the study of function rather than to the pathologic anatomy of kidney lesions. In taking up studies of this kind, we are working with a twofold end in view: first, to obtain a greater insight into the patient's condition, and thereby to aid therapeutics, and, second, to increase our knowledge of the physiologic and pathologic-physiologic activities of the kidney. Contributions of great value have been made by the clinician to our knowledge of the functions of the thyroid, as well as other organs, by these means, and it is hoped that the same may be accomplished for the kidneys.

Metchnikoff and Buttermilk.—The lamented death of Professor Metchnikoff recalls the furore for the lactic acid bacillus which one of his papers created. Macaulay, in a famous passage, says: "We know no spectacle so ridiculous as the British public in one of its periodical fits of morality." The same public in a fit of new-found panaceal therapy affords a spectacle only slightly less ridiculous. Metchnikoff was the innocent cause of one of these. For several months one heard of nothing but the Bulgarian bacillus. The bacillus shared with Mr. Lloyd George's budget the honor of monopolizing the conversation at the dinner tables of the great. He dominated Belgravia, frolicked in Fulham, and bestrode Birmingham and the whole of the British Isles. Whether he did any good to any one except the chemists and the purveyors of milk there is some reason to doubt. That he himself, or a colorable imitation of him, which was put on the market by the unscrupulous, did a great deal of harm is quite certain. But the harm done was mostly to the self-prescribers or to those introspective idiots who allow themselves to be treated by their lady friends. It was therefore not great.—*Medical Press and Circular*.

THE RÔLE OF THE ANTEPOSED UTERUS IN THE CAUSATION OF BACKACHE AND PELVIC SYMPTOMS *

HENRY T. HUTCHINS, M.D.

BOSTON

The assumption of the upright position by woman has proved a doubtful experiment as far as her pelvic organs are concerned. They have been unable to satisfactorily accommodate themselves to this attitude and the fight for their correction is still on. The discussion of the correct position of the womb has long ago ceased to be confined to the medical profession and has become a topic of live conversation among the female laity. Every ache and pain from eye strain to sciatica will be promptly accounted for in a woman's mind, once it is ever suggested to her that her "womb is tipped." What more distressing condition can a woman imagine than that her most precious organ is lying askew? How surely, once the suggestion is received, will the woman hurry to the physician for confirmation or denial of the condition! On the answer she receives will depend, in a large measure, the health, mental and physical, of the patient.

Recognizing the fact that woman has assumed the upright position and that in consequence the uterus, under all conditions, is but poorly supported mechanically, the significance of the various positions in which we find the organ must be studied with care, and treatment directed to the relief of only those symptoms which can be proved to be caused by the position found.

Generally speaking, one position only of the uterus is recognized as a cause of low backache and pelvic drag, and that is the retroposition of the fundus. If the fundus is found to be forward in the pelvis the cause for the backache and pelvic symptoms is sought for in the sacro-iliac joints, in back strain and in the constipated bowel. Hundreds of patients are seen in whom the fundus is in third degree retroposition and yet they have no backache whatever, and an equal number may be found in whom the fundus is forward and yet they have all the clinical symptoms of a retroposition. It was this seeming paradox which led me to undertake the studies which form the basis of this paper.

The chief supports of the uterus are those of its cervical portion, namely, the lower part of the broad ligaments and the pelvic floor. If the round ligaments and the upper parts of the broad ligaments are severed, there will result but little if any change in the position of the uterus as a whole. There may easily result rotation of the fundus with the cervical portion acting as an axis, but there will be no resulting descent. As it is the descent, and descent alone, which causes the drag which produces symptoms, the position of the fundus, whether forward or back, may be disregarded as a factor in the production of these symptoms. We must focus our attention on the amount of descent, the relative position of the uterus as a whole, if we would determine whether that organ is the cause of the drag or not.

The frequent failure of a suspension of a retroposed fundus to relieve patients of their symptoms of low backache, and the persistence of symptoms of backache and pelvic drag after strapping the back, applying corsets and belts, etc., in patients in whom the fundus

remains forward, led me to conduct a series of experiments and investigations to try to remedy these failures.

The first of these investigations were carried out in my office and clinic. In every patient examined who complains of backache and lack of support, a careful note is made as to the position of the uterus as a whole in the pelvis. First I note the relative position of the cervix to the symphysis pubis and the ischial tuberosities, paying no attention whatever to the forward or backward position of the fundus. The extent of the anteroposterior movements is noted, in other words, the amount of posterior descent of the cervix. In speaking of descent I mean only the posterior descent toward the coccyx and in no way the rotation with descent toward the outlet, a condition which forms an entirely different class of cases. The stability of the lower part of the broad ligaments, the paracervical tissues and the uterosacral ligaments are tested by grasping the uterus between the examining hands and moving it as far as possible up behind the symphysis and backward toward the coccyx. By this maneuver I can frequently reproduce temporarily the ache and drag of which the patient complains. This is always a desirable feature in any diagnostic work in which pain is a symptom.

From the examination of a large series of cases the amount of posterior descent is found to vary considerably. I then place vaginal tampons in such a position that the uterus as a whole, and not simply the fundus, is forced well forward, up back of the symphysis, in the position where a high suspension will hold it. These tampons are allowed to remain for forty-eight hours, during which time the patient is instructed to keep about her normal activities, walking, dancing, or whatever she pleases. At the end of forty-eight hours the patient reports to me the result of this experiment. If the backache and drag have been relieved, I feel sure that a suspension will give permanent relief. If the backache is not relieved, then some other cause for the same must be sought, a cause outside of the position of the uterus in the pelvis. By this means, many cases of sacro-iliac pain and back strain are clearly differentiated from low pain due to uterine descent.

As a further means of investigation, undertaken with the purpose of finding out the real cause of the pain due to uterine descent, careful exploration is made in the case of every patient operated on. As soon as the abdomen is opened, the intestines are gently pushed up out of the pelvis and a careful inspection of all pelvic structures made. Whether the fundus is turned forward or backward, the uterus as a whole will be found to be far down in the pelvis, the fundus sometimes lying below the pubic arch, although there has been no descent toward the outlet. The most striking picture, however, is that furnished by the fulness and congestion of the ovarian veins, in case the uterus descends in the manner described, the chief pull coming on the infundibulopelvic ligament, which is composed of nothing more than the two layers of sensitive parietal peritoneum enclosing the ovarian vessels. This so-called ligament stretches around the sides of the pelvic wall and originates at a point posteriorly, practically corresponding to the location of the sacro-iliac joints. Now what happens? The ovarian veins are long veins emptying into the renal vein and vena cava, high in the abdomen and contain no valves. They return the major part of the blood

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

from the pelvis and are poorly equipped to carry on this extensive circulation. On careful examination, it is found that these veins are full and congested up to the point where they cross the pelvic brim, but above that point are nearly flat and empty. With these veins then in clear sight, the descended fundus is grasped and slowly lifted out of the pelvis to a point where the suspension is to carry it. The following results are evident: The ovarian veins, from the uterus to the pelvic brim, are immediately emptied, and the stretched parietal peritoneum of the infundibulopelvic ligament is relaxed. In other words, the pull on the parietal peritoneum as it swings around the sides of the pelvis is overcome.

It has been repeatedly demonstrated that in cases in which the fundus is retroverted, but in which the cervix is well held up, no such congestion of the ovarian veins takes place and there is no pull on the parietal peritoneum. Replacing the fundus in these cases will have little or no effect on the parietal peritoneum or the ovarian circulation. It is not the retroversion of the fundus per se which causes the symptoms. That the two may be coexistent, that is, that the retroposed fundus may be accompanied by a cervical descent, often is true. It is equally true, however, that the anteposed fundus plus cervical descent is accompanied by congestion of the ovarian vessels and peritoneal drag.

It becomes necessary then for us to take into consideration in examining these cases only one factor, the posterior descent of the cervix. Whether the fundus is forward or backward plays but a minor part in the production of symptoms. If the cervical supports have given way, symptoms will be produced for which a suspension will give relief, whether we have a retroposed or anteposed fundus.

As a result of these studies I have been led to suspend many anteposed uteri in which I found descent present accompanied by the classical symptoms of a retroposition, and with excellent results.

It is far from my purpose to advise promiscuous suspension of every uterus, whether found forward or backward. On the contrary, the differentiation of cases needing suspension has become much more exact and only those cases which can be proved before operation to require suspension are operated on, and this proof must be forthcoming from the patient as well as from the surgeon. On the other hand, I no longer hesitate to suspend a uterus simply because there is no retroposition of the fundus, and I do hesitate to suspend a retroposed uterus simply because it is found on examination to be retroposed. Actual proof that the condition needs correction must first be forthcoming.

It is a marked feature of these cases of cervical descent that the patients have the same symptoms when lying on their back in bed as when standing upright. This is necessarily so, for there is the same amount of descent and consequent ovarian congestion in this position. It is found that many of these patients sleep lying flat on the abdomen, a position which in itself corrects the deformity temporarily and gives comfort.

I would like to cite a typical case:

Mrs. B., aged 41 years, having three children, complained of low sacral backache and pelvic drag. She had not been able to sleep on her back for five years on account of this backache, which was fully as severe when lying in this position as when on her feet.

Examination revealed a lacerated cervix and moderately relaxed perineum. The fundus was of normal size and anteposed, but the organ as a whole was in marked posterior descensus in the pelvis. The physician who referred the case urged that no suspension be performed, as the fundus was never retroverted. The patient had, however, every symptom of a retroversion and I urged a suspension in addition to the repairs, and this was accepted. On opening the abdomen the descent and congestion were clearly demonstrated and the emptying of the ovarian veins and relief of peritoneal drag was accomplished.

From the moment the patient came out of ether the backache was completely relieved, and she has had no return of it. Had we disregarded the descent of the anteposed uterus and performed only the plastic operation this result would not have been obtained.

In a second case, a woman, 26 years old, who had never borne children and on whom no plastic operations were required, the anteposed but descended uterus was suspended with absolute relief.

In one striking case I was led, by the urgent request of the family physician, to perform only the plastic operation because the fundus was in anteposition and the physician felt a suspension to be unnecessary. This patient was not relieved in the least of her backache and pelvic symptoms, although she had been assured by her physician that her womb was not "tipped" and that after a repair of the lacerations her backache would disappear.

This paper forms a plea for the recognition of a class of cases hitherto neglected or misunderstood, namely, the anteposed uterus in descent, causing the symptoms of retroposition; a plea also for the careful differentiation of cases which need suspension before any operation is performed. We must not hesitate to suspend an anteposed uterus once it is proved that the organ is in descent and is causing symptoms; neither is it necessary to suspend a retroverted fundus simply because it is found to be lying in this position, when actual proof is not forthcoming that the retroposed fundus is at the bottom of the trouble. A fundus may lie in third degree retroposition and the cervix be well held up without causing the slightest backache or pelvic drag.

By careful attention to this detail only selected cases will be suspended and relief will always follow.

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ABSTRACT OF DISCUSSION

DR. CHANNING W. BARRETT, Chicago: This paper introduces the subject which bears on the general supports of the uterus throughout the relation of the intra-abdominal pressure on its ligaments and the pelvic floor, etc. It deals more particularly with the subject of the anteposed uterus which still has descent. It has long been recognized that the retrodisplaced uterus has a more or less marked degree of descent, but the subject of the anteposed uterus having marked degrees of descent is not well recognized. Dr. Hutchins points out the difficulties in reference to the upright position. We would hear little of the question of malposition of the uterus if the human had retained the horizontal position and the pelvic outlet, its high point in the abdominal cavity; but, as the animal assumed the upright position, there had to be a change in that position, and that change has brought about certain necessities for support. One of the changes has been the development of a pelvic floor with little or no support. Another change is that of the position of the uterus from in line with the vagina to at less than right angles, which position has very much to do with the descent. Therefore, we would lay more stress on the question of uterine displacement than does Dr. Hutchins, because even though we may have uterine dis-

placement without displacement backward, at a given time one of the principles of support of the uterus is interfered with, that of the uterus being out of line with the vagina. As soon as the uterus is displaced backward it gets into line with the vagina and brings about descent. No matter how important it is from the standpoint of support that the animal be in the horizontal position it has become the habit of the human to be in the upright position. In the correction of the conditions we must aim to simulate Nature's provisions for support of the pelvic organs. We must have a good pelvic floor. As a rule, descent is concerned with some weakness of the pelvic floor, not necessarily weakness from childbirth, but from the tendency of the human to have a pelvic floor like that of the lower animals, from which the human has developed. We must correct that condition of the pelvic floor; we must have the uterus out of line with the vagina. I would be much more inclined to correct retrodisplacement than Dr. Hutchins indicates in the treatment of descent.

DR. ALBERT GOLDSPOHN, Chicago: The anteposed uterus is one located too far forward, too near the symphysis pubis. It may stand high or low, and its long axis may be in a normal direction. That is one thing. Another is anteversion, which is a normal status, but may exceptionally become pathologic as the result chiefly of inflammatory complications. Which of these does the essayist mean? Anteflexion is a deformity and not a displacement. The main trend of the argument I understand to be that it is descensus uteri that causes the symptoms and not version of it either forward or backward. In that I can agree only partially. The symptoms produced by any kind of uterine displacement, per se, independent of inflammatory complications, are brought about chiefly through the resulting embarrassment in the venous circulation, by traction and by torsion of these vessels. The traction the doctor would relieve but the torsion he would ignore. Is that permissible? Bernhart Schultze many years ago, by very careful and laborious observations, first among the dead and then on the living, made clear the rules suggested by the anatomy of the parts, that anteversion is the normal position of the uterus, because the broad ligaments that carry nearly all these vessels are not cords, but flat, web-like structures set at such an inclination forward from the vertical axis of the body, that the uterus between them must likewise assume such a forward inclination if the broad ligaments are to preserve their normally flat shape, that when the uterus turns over backward, half of a circle or more, the web of broad ligaments being only from about 7 to 10 cm. long and nearly as wide, is twisted into a cord and a corresponding embarrassment results to the veins that do not, like the arteries, have a force pump back of them. This anatomic fact is not taken into account in the argument of the essayist. We must relieve and correct not only the displacements of the uterus which induce traction on the veins; but also those which inflict torsion of them if we would be successful; for embarrassed veins means harassed nerves here as elsewhere in the body. I heartily agree with the doctor in the proposition to suspend the uterus innocently and efficiently (by means of the round ligaments) and in a higher plane than is assumed by those who would have it remain necessarily within the small pelvis.

DR. WALTER P. MANTON, Detroit: I agree heartily with Dr. Hutchins. For many years I have been carrying out a somewhat similar method of treatment. It takes only a very minor degree of downward displacement often to produce very severe symptoms in these cases of anteflexed or anteposed uteri, and consequent venous congestion. I do not quite agree that all of these cases need operative treatment. If this fraction of a degree of descensus can be relieved, you have obtained the necessary results, and I have found that in many cases the good old-fashioned Smith or Hodge pessary, properly adjusted, will give as good results as shortening the round or uterosacral ligaments.

DR. E. E. MONTGOMERY, Philadelphia: Too much attention is frequently paid to the displacement rather than to

the complications associated with it. In the great majority of cases, whether the displacement be anteposed or retroposed, the condition does not cause symptoms unless complicated with some inflammatory condition. This inflammatory condition may, of course, be induced as a result of protracted congestion from the displacement. As has been mentioned the veins, being thin walled, are more readily susceptible to interference with the passage of blood through them by some disarrangement of the position of the organ. Many of these cases, however, can be relieved without resort to operative procedure by having the patient assume the knee-chest posture and practicing deep breathing, thus allowing the blood to be aspirated out of the pelvis during the act of deep inspiration. Many patients are relieved by such palliative measures, by care, exercise and the lessening of intra-abdominal pressure by proper clothing, etc. These, it seems to me, are important considerations in the treatment of these forms of discomfort.

DR. J. H. CARSTENS, Detroit: Always this is a very complicated affair. If you read all the different operations advocated to relieve this condition it shows that we have a very complex affair to deal with in most of these cases. One will persistently pursue certain methods of operation; another strongly advocates some others. For instance, formerly every one insisted on the perineum being restored, that that was at the bottom of the whole trouble, and that the restoration of the perineum was the great operation. And it did relieve some cases, but others it did not. I have seen cases in which the perineum was torn into the rectum for two inches and women running around with that condition for ten years with the uterus not displaced, and no trouble with the uterus. This proves that the perineum has not as much to do with it as some would say. Again, in other cases the repair of the perineum does give much relief. I have always looked on the question much as Dr. Montgomery has said; the uterus may be displaced and give no trouble unless there is some condition of the tube, rectum, or appendix, usually adhesions; that there has been infection which is causing the trouble. If in such cases you remove the adhesions the patient may get well without any operation for the displacement. So far as operation is concerned, I must say that I operate in accordance with what I find. Sometimes we may find a diseased ovary and tube. If so, I remove them and sew the stump into the lower part of the womb, thus lifting up the womb. In many cases such women have become pregnant and have had no more trouble with their pregnancy than if such an operation had not been performed. If you examine a woman like that six months after sewing the stump in the lower angle of the womb, you will find a normal instead of a twisted position, with nothing done but removal of the ovary. In other cases I do what I advocated more than twenty years ago; when a woman is beyond the child-bearing period, and there is no chronic inflammation, I do a vaginal hysterectomy, stitching the broad ligaments together. The woman will get well and remain well without having the complicated operation which is sometimes done. Every case ought to be judged by its own peculiarity, and all these operations are more or less good.

DR. HENRY HUTCHINS, Boston: Replying to Dr. Barrett and Dr. Goldspohn, I would never refuse to correct the retroposition which we all recognize as one of the surgical 'malpositions' of the uterus in all cases where it causes symptoms. The paper was chiefly concerned with the anteposed uterus which may be simulating the symptoms of retroposition. I would never advise operation for an anteposed uterus, although causing symptoms of retroposition, until I had given other methods a sufficiently long trial, such as the use of the Smith or Hodge pessary, the knee-chest position with deep breathing, etc. By a sufficient trial I mean two or more years. There is, however, a class of patients who do not want to wear a pessary. They tire of the knee-chest position and want to be put in good shape. In these cases I would advise suspension even of the anteposed uterus when found to be in descent. There is one point on which I cannot quite agree with the statements

made that in all of these cases the great majority of symptoms are caused by adhesions and distinct pelvic disease. Of course, these cases form an entire class by themselves. There is a class where there are no pelvic adhesions, no pelvic disease, but still the anatomic displacement of the uterus is causing the symptoms. They are two entirely different classes. I do not think that there is a group of anteposed uteri which are in descent which will cause symptoms even without the presence of adhesions or pelvic disease.

COLONIC INFECTIONS

SOME RARELY OBSERVED UNCLASSIFIED TYPES**

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AND

W. LANDRAM McFARLAND, M.D.

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In our experimental work on the vertebrates we have noted certain fundamental principles which have a bearing on the surgery of the gastro-intestinal tract, and particularly on the subject under discussion.

It is demonstrable that the rate of progress of intestinal contents is directly proportionate to their toxicity. To illustrate, the course through the duodenum and oral part of the jejunum is the most rapid of any, and the toxicity of these parts is the greatest. Long ago Roger demonstrated a parallelism between the toxicity and digestive power of the intestine. We believe that it exists, and that it is an important part of the bodily protective mechanism. Moreover as regards the intestinal flora, are not these inversely proportional, both in number and in virulence, to the digestive activity? Again, as we have already stated,¹ the acid reaction which we have frequently demonstrated to be present in the terminal ileum is a further factor undoubtedly protective in character. Evidently the hydrochloric acid of the stomach has a similar function.

Inherent in every organism is its power of protection, equally well developed against attack, either from without or from within. A thorough knowledge and a sympathetic interpretation of these fundamental protective properties seems to us of paramount importance in interpreting alimentary disease.

We have further found it useful to recognize nature's division of the alimentary canal into the segments which are protected by the physiologic barriers or sphincters under control of the involuntary nervous system. To these we have applied the generic terms cephalad, central, and caudad segments. This division has been extremely helpful to us, because it conduces to a study of the entire canal as a unit, and if our observations have taught anything, they have clearly demonstrated that of all the systems in the body none has been studied and treated more disjointedly than the alimentary canal. Thus we have long since put aside all considerations of isolated parts of the canal based on the anatomic divisions, having found it much more productive to seek an interpretation of aberrant conditions in terms of physiologic rather than morphologic units. By this process of reasoning we have reached several important conclusions.

As Sweet says,² working hypotheses are necessary to surgical progress. The only hope of progress is to search along the lines indicated by physiologic hypotheses. Looking at the alimentary canal, then, in its entirety and studying its pathologic physiology from a standpoint of physiologic sphincter segmentation, one notices that digestion is a segmental process, and is confined to the central segment. The oral segment is preparatory. The aboral is excretory.

As one would expect from these facts, inflammatory lesions are most frequent in the caudad segment, in which the opportunities for trauma are greatest, owing to the character of the material; to the presence of great quantities of bacteria, and to the indisputable fact that the protective elements already noted as inversely proportional to the digestive powers are least.

Focussing our attention more directly on the area of the intestine under special consideration in this paper, we first invite your attention to the ileocolonic sphincter. There are many inherited misconceptions in medicine; not the least is that the ileum is separated from the colon by a mechanical valve. Up to a short time ago our faith in the digestive function of the stomach was implicit. Experimental and clinical proof has changed our views. Proof from the same source is now abundantly at hand as regards the ileocecal valve. Barsh, Draper and Barber proved that the ureterovesical protective mechanism was a neuromuscular contrivance, rather than a valve. These same principles apply to the ileocecal sphincter. Elliott and the authors have shown that this mechanism can be controlled by the injection of epinephrin. We have performed injections on many persons presenting ileocecal insufficiency, as demonstrated by the Roentgen rays, and have shown that 10 minims of epinephrin is sufficient to control the leak, which later reappears. This fact may be of use in establishing a differential diagnosis between leakage due to loss of internal secretory or sympathetic tone and mechanical interference with the closure of the sphincter.

Another physiologic factor which has direct bearing on the topic under consideration is the recently described inhibitory center, located, according to Keith and Cunningham, in the terminal ileum. Whether, as suggested by W. J. Mayo, this center may be of such great importance in the syndrome of constipation that its removal may be the chief cause of the improvement which not infrequently follows resection of the terminal ileum or not is a moot question. Of its basic importance, however, there can be no doubt.

With these principles in mind, we have assembled the last twenty-one cases of purulent infection of the colon which have come under our observation in the last four years and which have been treated according to the above principles. Some of those cases were so severe in type and the constitutional conditions were so deplorable that a previous diagnosis of tuberculosis had been made. The most striking example of this type occurred in one of the five cases seen by us in consultation at the Presbyterian Hospital through the courtesy of Drs. Brewer, Carter and Swift, and in one referred by Dr. Isaac Adler.

CASE 1.—L. M. was admitted Jan. 1, 1916, complaining of blood in stools, diarrhea, vomiting, abdominal cramps and loss of weight. These symptoms were of seven months' duration, having come on gradually seven months before. The

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

** From the Clinic of Rectal and Colonic Diseases, Polyclinic Medical School and Hospital, from the Laboratory of the Polyclinic Hospital, and from the Laboratory of Surgical Research, New York University.

1. Lynch and Draper: Contribution to the Surgical Physiology of the Colon, *Ann. Surg.*, 1915, lxii, 441.

2. Sweet: Intestinal Obstruction, *Ann. Surg.*, 1916, lxiii, 720.

vomiting usually followed the ingestion of food, but without relation to the character of the food. It has persisted at irregular intervals, but has never contained any blood. There was diarrhea with profuse, watery stools, from five to eight, every twenty-four hours, associated with some polyuria. Blood was not noted in the stools until three weeks before entrance. Painful swelling of the feet and ankles began six months before. The patient could not walk and was confined to the bed for a month, and treated in Mount Sinai Hospital for two weeks. He has had some pain in his hands but they have never been swollen. Dyspnea and orthopnea developed during the six months previous to entrance. Three weeks before the mother noticed some red spots over the anterior surface of the tibiae, which seemed to be tender.

On physical examination the patient was found to be poorly developed and very poorly nourished and appeared chronically ill. He did not appear to be in pain and showed no dyspnea or cyanosis. The skin was pale, smooth, hot and dry. There was no eruption on the chest, but on the anterior surfaces of both legs there were a number of small, rounded, nodular masses, slightly raised and a little tender. The skin over the nodules was reddened, and there was a little areola extending beyond. The tongue was coated somewhat, tonsils cryptic, but not enlarged. Otherwise the head was negative. The superficial lymph nodes on both sides under the angles of the jaw, some in the axillae, the epitrochlears on one side, and both inguinal groups of glands were palpable. The lungs were negative. The heart was slightly enlarged to the left, the sounds rapid, rather poor muscular quality, with a faint systolic murmur at the apex. The abdomen was slightly scaphoid, and moved slightly with respirations, which were chiefly thoracic in character. The abdominal wall was soft. There were no areas of cutaneous hyperesthesia or muscular rigidity or hypersensitiveness. In the right lower quadrant, midway between the umbilicus and anterior, superior spine was felt a compressible, tubular mass, nontender, which slipped under the finger and was thought to be a loop of intestine. The liver and spleen were not palpable, the lower pole of the right kidney palpable. A rectal examination revealed a tag just inside the sphincter, very much like a hemorrhoid.

On Jan. 7, 1916, the patient was seen by Dr. Fordyce, who regarded the skin lesions as probably tuberculous (tuberculids). A specimen taken for pathologic examination showed in frozen section chronic inflammation; the paraffin sections were unsatisfactory, and the sections for tubercle bacilli were negative. The blood cultures were sterile. The stools were negative for typhoid, parasites, blood and tuberculosis. There was much pus but no dysentery bacilli. On January 16 proctoscopic examination by Dr. Carter showed at the anus and extending up from the mucocutaneous junction several granulating ulcers. The sigmoidoscope inserted 18 cm. showed the mucous membrane granular with numerous areas of ulceration, which bled readily. A diagnosis was made of tubercular ulcerative sigmoiditis and proctitis.

A blood count showed red blood cells 5,700,000, hemoglobin 80 per cent., white blood cells 22,200, polymorphonuclears 62 per cent., lymphocytes 32 per cent. On January 5 the white blood cells had been 26,800, polymorphonuclears 88 per cent., and lymphocytes 12 per cent.

Two Widal tests were made which showed in 1 to 20, good clumping; 1 to 40, slight clumping, and in 1 to 80, no clumping. The von Pirquet was very faintly positive.

On January 20 the white blood cells were 16,000, polymorphonuclears 64 per cent., and lymphocytes 28 per cent. The urine was negative. The patient was seen by Dr. Brewer, who believed that the case was hopeless from a surgical standpoint, and not until operation was insisted on by Dr. Carter, who had seen some patients improve markedly on ileostomy, followed by irrigations of the colon, did he consent to do the following operation.

On Feb. 5, 1916, ileostomy was performed by Dr. Brewer. The cecum, ascending colon and transverse colon, as well as the descending and sigmoid colons, were found markedly thickened and the peritoneal surface somewhat roughened. The ileum was quite normal in gross appearance, as was the

rest of the small intestine. There were a few enlarged glands near the cecum, which were firm, and one in the meso-appendix was removed for examination.

Procedure: A three inch vertical incision was made over the outer third of the right rectus about the level of the anterior superior spine. Exploration was done, the terminal ileum was brought into the wound, and the mesentery opened about 1½ inches from the ileocecal junction. A glass rod was inserted into this opening, and the loop of intestine brought out of the peritoneal cavity. A few interrupted sutures were put through the peritoneum and aponeurosis. The usual appendectomy was done, the stump being inverted. There was an enlarged gland in the meso-appendix which was removed for examination. The gland proved to be a normal lymph gland. A diagnosis of chronic appendicitis was made.

Daily dressings were done, and the colon irrigated with a solution of 1 to 5,000 potassium permanganate. The patient was kept on the roof, and given a liberal diet. His color improved, the skin improved, and he gained strength, but apparently no weight. When he was able to be weighed, four weeks after operation, he weighed 57½ pounds (he had weighed 67 pounds before operation). Irrigations which at first brought away considerable blood and mucus gradually cleared up. After five weeks' feedings of buttermilk, from 4 to 8 ounces were alternated with the irrigations, two or three times daily, and patient gained 22 pounds in six weeks on this procedure. He has rapidly improved in every way, eats very heartily and is quite active. He now weighs 79¾ pounds. He has had proctoscopic examination by Drs. Carter and Lynch, who now find the mucosa of the rectum and sigmoid quite normal in appearance, and believe that he is in good condition to have the ileostomy closed.

This boy gained 22½ pounds within six weeks after the operation. He was seen by us quite recently, and we advised closing the ileostomy. The restoration of the function is perfect.

CASE 2.—A. M., aged 23 years, was first seen September, 1911. The chief complaint at that time was epigastric pain coming on from one to two hours after taking food, and heartburn. Two weeks previously there had been an attack of diarrhea lasting ten days. A gastric analysis made by Dr. Adler approximately six months previously showed a simple hyperacidity. Antacid treatment relieved all symptoms. The bowels, with the exception above noted, were regular, and the urine was normal.

Physical examination made September, 1911, revealed no abnormalities other than an occasional friction sound and an occasional inspiratory crepitant r le over the right apex posteriorly.

The onset of the condition occurred in July, 1912, when a slight amount of blood was noted at stool. About two months later bleeding began again. Examination revealed two fissures radiating forward from the rectum. Rectal examination was negative. Under protargol the fissures healed rapidly, but the bleeding continued. Proctoscopic examination in December, 1912, showed an intensely congested membrane studded with pinpoint ulcers. Mixed treatment internally, combined with silver nitrate irrigations locally, produced diarrhea and augmented the amount of blood passed. In February, 1913, the patient was given a proctoscopic examination again, by a different man, who noted the same pathologic picture, but ordered a bismuth, iodoform, oil irrigation, to be retained all night and a krameria, liquor antisepticus alkalinus irrigation for morning use. For two weeks slight improvement followed this treatment, but then the bleeding began in increased amounts.

Bacteriologic examination of the material showed streptococci of the viridans type and numbers of the *Bacillus coli* group. Dr. Barber inoculated guinea-pigs with some of the material and the pigs died after some weeks. The necropsy which I performed on them was negative.

In order to study the natural repairs in peritoneal and non-peritoneal covered end-to-end anastomosis, the pelvic colon of a dog was drawn up, cut, and anastomosed end to end as far caudad as possible at two different places separated by an interval of 5 cm. This operation was performed Feb. 3, 1914,

and on February 16 necropsy was performed. There was little difference in the lumina of the anastomotic openings. The lower or nonperitoneal-covered was the smaller. The liver, spleen and pancreas were congested. Microscopic sections of the anastomosed areas showed unions by fibrous tissue growing in from stroma, submucosa, and muscularis. There was very slightly increased vascularity of the caudad section (nonperitoneal), or no increase at all.

In order to study the causative agent in hemorrhagic colitis, on March 27, 1914, hemorrhagic material was injected into the rectums, previously curetted, of two guinea-pigs and one rabbit. On April 13, necropsy of one guinea-pig by the bacteriologist showed that the liver was congested, the mesenteric glands enlarged, and the appendix loaded with feces. Cultures made from the glands showed a colon-like organism resembling morphologically the organism regained from the original material injected and previously examined bacteriologically. Further cultural reports are forthcoming. The remaining guinea-pig and rabbit are well and normal to all appearances. On April 3, 1914, the same material was similarly injected into two guinea-pigs and one cat. On the 11th one guinea-pig died. Necropsy showed that the retroperitoneal and mesenteric glands were enlarged. No cultures were taken, but microscopic study was made of the liver, spleen and glands. No destructive changes were discoverable in either structure. There was hyperplasia of the lymph nodes.

Three Wassermann tests of the blood proved negative. A stained smear of the rectal discharge prepared by Miss A. H. M. showed a predominance of encapsulated diplococci, occasionally occurring in chains. The only other bacteria found consisted of large, thick bacilli. An examination of the passages from the bowels showed a gram-positive diplococcus, a gram-negative micrococcus, and several gram-negative bacilli, together with pus and mucus. The analysis at frequent intervals regularly gave normal findings. On March 1, 1913, the hemoglobin was 65 per cent. On March 8, 1913, the hemoglobin was 70 per cent., red blood cells 4,600,000, white blood cells 9,600, polymorphonuclears 76 per cent., lymphocytes 22 per cent., eosinophils 2 per cent.; the systolic blood pressure was 125 mm. of mercury, and the diastolic 90 mm. Moderate poikilocytosis and anisocytosis was present.

On March 22, 1913, the white blood cells were 10,000, polymorphonuclears 74 per cent., lymphocytes 26 per cent. On the 26th a vaginal smear showed occasional large, round diplococci and thick bacilli. March 3 and 7, 5 and 10 million *B. coli* C. were injected. Blood examination on June 10 to 13 by Miss H. A. M. showed hemoglobin 70 per cent., red blood cells 4,800,000, white blood cells 7,200, polymorphonuclears 76 per cent., lymphocytes 24 per cent., and no abnormal cell formation.

These histories are given in full because they are classic examples, the one of an acute type, the other of a chronic type with exacerbations.

Of these twenty-one cases, eleven were definitely acute and ten were chronic, with acute exacerbation. The average age of the patients in the acute group was 26.6 years; of those in the chronic group, 37.7 years. The average duration of the acute type of the disease was 32.3 months; of the chronic, 70 months.

Thus, there are certain types of acute purulent and hemorrhagic inflammations of the colon that cannot be attributed to any specific organism. They are characterized by sudden onset of diarrhea, blood, mucus and pus. Sometimes, as in Mummery's case, which closely resembles some of our own, the pulse was rapid; nearly imperceptible, the temperature 104, and the patient presented a picture of the third week of typhoid. Emaciation is marked and prostration extreme. The stools have a fetid odor and pus is passed in such quantities as to suggest the evacuation of an abscess. The stench of this is overpowering.

In other cases, though the diarrhea is severe and the amount of blood lost is considerable, still the digestive disturbances are slight, suggesting an increased peristalsis in the colon only.

The proctoscopic picture of the acute form is typical. The mucous membrane is edematous and dark red, granular, pebbly or bosselated in appearance. It closely resembles fish spawn, loosely strewn over the surface and the mucous membrane appears to be lifted away from its subjacent structures. There are no definite ulcers, the entire intestine being one confluent ulcer.

As the acuteness diminishes the picture changes. The mucous membrane is less edematous and covered by irregular patches of exudate, which closely resemble macerated skin. Between the patches are irregular oblong ulcers, varying in size and depth, with overhanging edges and worm-eaten bases. As the inflammation abates under treatment the mucous membrane becomes pale, and polygonal areas, separated by an arteriovenous network, give to the bowel a checker-board appearance. It still retains its granular character and bleeds easily if touched.

Finally the mucous membrane seems to become adherent to the muscular coat and loses that elasticity of motion so characteristic of a normal bowel.

After recovery, the dry, shiny, glassy appearance of atrophy appears. The histopathology is perhaps more variable than the gross pathology and is therefore more difficult to give. It is based in many cases on the examination of small bits of tissue removed with a punch, or to small pieces removed during the operation for colostomy. It is that of an acute inflammation involving a mucous membrane and its subjacent structures. In all cases there has been marked congestion accompanied by edema. Congestion and edema may be limited to the mucosa or submucosa or may involve the entire intestine wall. The mucosa may be covered with an exudate composed of pus cells, bacteria, and inflammatory elements. It may be devoid of glands in case necrosis has progressed, or the inflammatory change may be limited to edema, congestion and accompanying swelling of gland epithelium. In one case the exudate throughout was more marked in the mucous and peritoneal coats. The crypts of Lieberkuehn had entirely disappeared and were replaced by an exudate composed of round cells. The blood vessels were abundant on the free surface and engorged with blood. The submucosa and mucosa had entirely disappeared, their place being taken by the exudative layer, which rested directly on the muscular coat. Round-cell infiltration of varying degrees according to severity of process was of course observed. This may be limited to the mucosa or involve the entire intestine and its peritoneal covering. Lymphatic tissue presented no changes except those produced by adjacent inflammation. Such parts of the plexus of Auerbach and that of Meissner as it has been possible to demonstrate appeared normal. The muscular coats were at times involved in the general reaction and presented the usual appearance under such conditions. In two instances the cecal wall was of tissue-paper thinness though all structures were demonstrable. In one acute case submucous cell groups, simulating tubercles and containing giant cells, were found. The tubercles were in structure like those produced in mesenteric glands by foreign body irritation. Mucopurulent, blood-stained discharges from the lower intestine, so charac-

teristic in these cases, have been repeatedly examined for bacterial and possible infusorial content. The results of these examinations were distinctly disappointing in so far as throwing any light on the etiology of the condition. No unusual forms of bacteria or predominating forms of bacteria were found.

In 50 per cent. of the cases the appendix showed a similar pathology.

In addition to the twenty-one cases critically studied during the past four years, we have incorporated information gleaned from seventy-eight cases of our own and of the late Dr. Tuttle, besides seventy cases collected from the literature. Of the latter, however, very few conformed to the type of infection with which we are dealing, being of the specific type.

Braun,³ and Neumann and Mayer⁴ in their writings have failed to suggest any other parasite than those already named.

Kaufmann,⁵ in his study of the specific infections limited to certain segments of the intestine, includes dysentery, both the amebic and the bacillary type, cholera, tuberculosis, syphilis, actinomycosis, anthrax and gonorrheal proctitis (described by Benson,⁶ Bel,⁷ Couret, Bowman⁸ and others).

Schmidt⁹ negates Kaufmann's classification and names the inflammatory diseases of the colon according to the segment involved and to the infecting organism.

Aschoff¹⁰ speaks of specific infections under the same headings. He tends to regard the intestinal tract as a whole except when dealing with the appendix and the rectum.

Boas, according to Schmidt, was the first to study and report a well-defined case of ulcerative colitis of indefinite etiology.

Rosenheim¹¹ writes of a number of cases in which the physical signs, clinical symptoms, and the course of disease closely resembles those observed by us. He advances several etiologic theories, change in chemical reaction of content of large intestine, change in activity and pathogenicity of intestinal bacteria, etc. His patients have been as a rule under middle age, ranging from 8 to 40 years, and he has noticed that many of them were deficient in stamina. Young, nervous, and anemic individuals predominated and sex exerted no apparent influence. The pathology, as seen by Rosenheim, is that of a true infection of the mucous membrane, occasionally complicated by infiltration of the intestinal walls and peritonitis. Erosions and especially ulcers were secondary manifestations. The colon was affected in varying extent and intensity. The sigmoid flexure was most commonly involved and anatomic changes were always more marked in this segment. Multiple neuritis, endocarditis, and joint involvement were mentioned among the possible complications. (Three of the authors' cases presented very severe skin infections.) It is interesting to note that in 1908 Rosenheim said: "The severe chronic colonic inflammations here considered are not mentioned in textbooks and only occasionally noted in lit-

erature. Clinical pictures belonging to this class are here and there described as ulcerative colitis or dysentery." Zweig¹² understood by ulcerative colitis "every form of intestinal catarrh which, beginning as an acute inflammatory process of the mucous membrane of the large intestine, is eventually productive of ulceration. Ulcers are usually in the rectum and sigmoid, but can extend to the cecum, and vary from lentil size to that of a thaler. Symptoms are those of a general infection with frequent stools containing pus, blood and mucus. The amount of blood may vary from an optically imperceptible quantity, to one or two liters, which latter quantity was lost by one of Zweig's patients. The etiology was a matter of conjecture, but an unrecognized form of bacteria might be responsible. The change in virulence of *B. coli* should be considered. He observed three cases in which achylia gastrica was well marked, and perhaps the antizymotic action of hydrochloric acid produced an increase in virulence of bacteria of the intestine, acute inflammation with ulceration resulting. As predisposing causes he has found diverticula in three cases. Operative procedures mentioned by Zweig were artificial anus at various portions of the colon, intestine junctions and appendicostomy. He advocated measures that assured the intestine absolute rest by complete diversion of the fecal current.

A contribution to the surgical literature of colitis is made by Beck.¹³ Though Beck is usually quoted in articles on colitis gravis, the conditions observed by him were secondary to organic disturbance of the intestinal tract, such as carcinoma, and the specific infections, such as tuberculosis, typhoid, etc. The nervous elements were not considered by him as of primary value in colonic inflammations. Ileosigmoidostomy was the operation advocated by Beck and employed by him in six cases. Most comprehensive is the chapter devoted to colitis gravis by Schmidt. This excellent article is well worth reading. Within the last six years isolated cases of colitis gravis have been reported by Baustark,¹⁴ Lindenberg,¹⁵ Albu¹⁶ and others. Albu considers acute ulcerative colitis of doubtful origin very rare. One of his two patients died of intercurrent disease, the other progressed to chronic ulcerative colitis, which Albu thinks is very seldom cured. Lockhart Mummery described some interesting cases of what he termed acute hemorrhagic colitis. Some of these closely resembled those seen by the authors. He performed appendicostomy, but from experience with several cases in which this operation had been done, we feel certain that this operation is inadequate.

In studying the literature, of which the foregoing is an abstract, one is impressed by the multiplicity of names and the hopeless intricacy of the nomenclature: also by the fact that the specific as well as nonspecific forms are grouped under a single head. It is not to be wondered at, considering the newness of the topic and the difficulties under which one labors in isolating the specific cause of the differing dysenteries.

As Herbert Carter has said, he is satisfied that many of the fatal cases with a diagnosis of bowel tuberculosis were in reality of the nonspecific type of infection and could have been saved by ileostomy. Case 1

3. Braun, Max: Die tierischen Parasiten des Menschen, 1908.

4. Neumann, R. O., and Mayer, Martin: Wichtige tierische Parasiten und ihre Ueberträger, 1914.

5. Kaufmann, Eduard: Spezielle pathogenische Anatomie, Ed. 5.

6. Benson, W.: Ztschr. f. Infektionskr., 1908.

7. Bel, G. S., and Couret, M.: Jour. Infect. Dis., 1910, vii, No. 5.

8. Bowman, F. B.: The Pathogenesis of the Balantidium Coli, THE JOURNAL A. M. A., Dec. 2, 1911, p. 1814.

9. Schmidt, Adolf: Klinik der Darmkrankheiten.

10. Aschoff, Ludwig: Pathologische Anatomie, Ed. 3.

11. Rosenheim, T.: Deutsch. med. Wchnschr., 1908, Nos. 7 and 8; ibid., 1913, No. 21.

12. Zweig, Walter: Arch. f. Verdauungskr., 1907, No. 14.

13. Beck: Arch. f. klin. Chir., 1904, No. 74.

14. Baustark: Deutsch. med. Wchnschr., 1911, No. 16.

15. Lindenberg: Arch. f. klin. Chir., 1912, No. 99.

16. Albu, A.: Deutsch. med. Wchnschr., 1912, No. 38.

illustrates this. The diagnosis was not always cleared up by the histologic findings, for we have noticed great difference of opinion among experts as to the interpretation of the microscopic change.

One is also impressed by the improper use of non-physiologic measures. We cannot, for instance, see the indication for an ileosigmoidostomy for acute infections of the colon as practiced by one of the above authors.

There were eleven four plus acute cases. Of these, nine patients were operated on; two refused operation. Of those operated on, three were cured, three are pursuing the same clinical course and are rapidly improving, but sufficient time has not elapsed to place them under the cured cases. Two are improved. One was operated on by a colleague, but succumbed later to hemorrhage from the bowel. An appendicostomy was done. We think that cure might have resulted had an ileostomy been used in its place.

The two who refused operation are improved under treatment, but suffer from acute exacerbation when treatment is discontinued.

Of the patients operated on, two refused major operations (ileostomy), but submitted to appendicostomy. They are pursuing the same course as the two cases medically treated, namely, they have gained rapidly in weight and are apparently well, but from time to time they suffer from acute exacerbation.

We found it necessary in one case of ileostomy to perform a developmental reconstruction of the colon because a multiple segmental polyposis was grafted on the original infection. This case has suggested to us repeatedly the relationship between polyposis and continued inflammation of this type.

Of the three plus or subacute cases, there were nine. Seven were operated on, four having been cured. Three were complicated by diffuse multiple polyposis; although they have gained from 10 to 40 pounds, numerous polyps are present, and we therefore are unable to place them among those definitely cured. Thus we cannot close them, and although all traces of inflammation have subsided, still we feel certain that if we were to turn on the current again, they would undoubtedly have a recrudescence. One of these most interesting cases our colleague, Dr. Treby Lyon, has already collaborated with us in reporting in an article giving full detail of his own case.¹⁷

Of the remaining two, the first patient, an aged woman who had been bedridden and unable to recognize her family for more than a year, was mentally restored within a few days after ileostomy, and was able to return to her household duties. Although she finally died one year after the operation, necropsy showed intercurrent renal involvement. The results so far as justification of the operation went, were brilliant. The restoration of this woman's intellect was amazing. The last case, that of a baby of five years' postoperative standing, is quiescent while the ileostomy is open.

Of the remaining two, one was a patient with multiple polyposis, having from sixteen to eighteen mucourulent, serosanguineous stools daily when she entered the hospital. Under medical treatment she gained in weight, and was having three movements daily when she returned home. We advised her son, physician, that it would be necessary for her to have an operation to insure cure.

This is a very interesting group, in that many had been incapacitated for years, had had incomplete operations performed and were despondent and pessimistic as far as their chances of recovery were concerned. Four out of the six suffered from stenosis at various levels of the canal and required more than one operation before they were entirely cured. The stenosis was so extensive, in one case involving the descending colon, that end-to-side colosigmoidostomy had to be performed. This patient, who was a fireman on the New York Central Railroad, has gained 40 pounds and is now in perfect health. The fact that he requested to be transferred from an electric to the more strenuous work of coaling the Wolverine is sufficient proof of his capacity for work since his operation.

Another patient of this group has a perfect restoration of function, notwithstanding the fact that she had a very marked stenosis of the rectum and part of the sigmoid, and had to live with a colostomy for two years. After this the inflammation had entirely subsided, the stenosis had spontaneously improved through fibrolysis; lateral anastomosis was done to prevent any recurrence at the most contracted portion of the stenotic area.

Of the subgroup double plus acute, containing two cases, both were operated on. One is absolutely well; the other is very much improved, having still some stenosis which requires constant medical supervision.

What deductions can be drawn from these twenty-one cases of colonic infection? First, that acute purulent infections of the colon can be cured only by putting the entire involved bowel at rest. Local treatment is indicated in every case and should have a satisfactory trial before surgical measures are instituted. It has the advantage of putting the patient in the best possible position to withstand a surgical operation, because he always improves at least temporarily under proper local measures. The striking improvement after ileostomy is seen in the very acute cases. Especially was this so in the case we saw in consultation with Dr. Carter. The two patients operated on by ourselves and this one operated on by Dr. Brewer prove conclusively that this is the ideal operation when the entire colon is involved.

The old idea that if a stoma were made in the small intestines the patient would lose weight and rapidly decline has been proved to be a fallacy. The gain in weight in every case supports the theory that we have long held that there is an inhibitory center in the lower ileum, the activity of which is accentuated after ileostomy, and even though it sometimes takes weeks or months before this function is fully developed, still it does come eventually, and the majority of patients suffer little more inconvenience than do those who have a stoma in the colon. The dictum which we laid down in a previous paper, that a stoma, to be efficient, must always be placed oral to the infection, still holds good.

Of the twenty-one patients, six had appendicostomies, and while these improved temporarily and gained in weight, none is nearer to a cure than are those that have been treated by rectal irrigations. We lay particular stress on this because our friend, Dr. Willy Meyer, has always felt that appendicostomy would have accomplished the same result. Sufficient time has now elapsed to prove this to be erroneous.

A patient was seen by one of us (Lynch) in consultation with Dr. Isaac Adler about three years ago. This patient was of the same type as the patient

17. Lyon, Treby: Ann. Surg., lxii, 441.

in the second case cited in this article. We suggested ileostomy at the time, but he refused to consider it. Subsequently Dr. Lilienthal performed appendicostomy, and the patient gained in weight, but has acute exacerbations.

There was one other case which proved exceedingly instructive and further confirmed us in our view that appendicostomy is not the operation in these cases. This was a case (Case H.) of acute infection. We performed an appendicostomy and the patient improved slowly. After six months he developed very large, deep and elongated ulcers in the rectum. We then performed a colostomy. Almost immediately there was a marked improvement in the patient's condition. He gained 30 pounds within a month or two, and within a comparatively short period began to resume his occupation. During all the time he had appendicostomy, though improved, he was still unable to attend to his work. While this patient is not entirely cured, yet in the light of our present knowledge and experience with similar cases we feel sure that he will have a complete restoration of function. We mention this as a further argument in support of our theory that appendicostomy is not sufficient.

Patient B, of the three plus grade, had been sick for six years previous to coming under our care. The mistake had been made in his case of placing a stoma in the middle of the inflammatory area. This patient subsequently was restored to health, but required several operations, and the convalescence was considerably prolonged by the fact that the surgeon who first operated did not appreciate the principles underlying the condition.

Of the twenty-one cases, three were complicated by a multiple polyposis. In one case in which we had performed a previous ileostomy we found it necessary to perform a reconstruction on account of a polyposis limited to the cecum and ascending colon. This patient is absolutely well.

Of the two others, one has improved immensely under local treatment. This was the patient referred to by Dr. Wyeth, but who refused to have ileostomy. She returned to her home in the South, and is now being cared for by her local family physician. The other had an ileostomy and has gained 40 pounds since the operation, and is a practicing physician in a neighboring state. He suffers no inconvenience; but still having some polyps left, he does not feel that his present symptoms would justify him in risking the radical operation, which would probably mean removal of the entire colon. From observations on this patient we feel sure that there is progressive regression of the polyps since operation.

From this study we have also gleaned some facts which will have an important bearing on the future treatment of strictures, namely, that if a stoma is made oral to the infection in every case, restoration of function will result. This particularly applies to strictures with multiple fistulous openings on the outside. The most brilliant results we have obtained have been in the above-mentioned cases. No attempt should be made to split open the fistulous tracts, as these gradually disappear with the infection, so that when one comes to close the stoma, instead of having an incontinent patient, as we formerly had, there has been complete restoration of function.

In conclusion we may state that purulent infections usually begin as an acute process, and may become

subacute or chronic; that the segmental character of many infections suggests diminished tissue resistance due to a change in the vasomotor nerves as an etiologic factor; that active bacterial agents have not as yet been demonstrated, but that these perhaps belong to the normal bacterial flora of the intestinal canal; that a rapid increase in weight is compatible with a stoma in the small bowel; that purulent infections are very often overlooked because there is no definite ulceration. This mistake is caused by the extensive inflammation, for the blood and pus which covers the bowel may easily be supposed to come from some other part of the intestinal canal, and by the fact that the observer is dealing with an acute purulent infection which may be segmental in type. This should be appreciated early because we believe that particularly in the segmental type of infection the best results are obtained by making a stoma early in the disease.

ABSTRACT OF DISCUSSION

DR. J. W. DRAPER, New York: I have seen a number of these cases with Dr. Lynch and can corroborate all he has said concerning them. That the involuntary system supplies many nerves to the colon which have their cells in the stellate ganglion accounts for the esoteric stomach symptoms so often associated with colonic disease. Elliott has shown that the thirteenth thoracic ganglion is in most active relation with the ileocolic sphincter. Ileostomy, though not yet in general use, like many other newly applied procedures, is relatively old, having been first done by an Italian twenty years ago. Dr. Lynch, however, was the first to appreciate the value of this operation and to apply it with a specific object in view. Sufficient time has now elapsed to prove its value beyond doubt. Moreover, it is based on sound principles in that it affords physiologic rest to the colon, and because it conforms to the law that a stoma, to be effective, must be oral to the infection. Our statistics have shown that in 50 per cent. of cases of colonic infection the appendix has the same pathology as the colon, suggesting that the original focus was appendicular. Ileostomy has had so immediate an effect on the nervous and mental conditions that we have been inclined to believe it traceable to a direct reflex of unknown character on the glandular secretions of the duodenojejunal epithelium. This hypothesis has derived some support from Barber's proof that the duodenum will dilate and contract in response to certain fixed operative procedures on the caudad ileum.

DR. JEROME MORLEY LYNCH, New York: I merely wanted to mention the medical treatment because in all these cases, except in the acute, and even in the acute at times, the method is well worth trying. A solution of potassium permanganate 1:5,000 is very helpful. In fact, some of the subacute cases we have been able to cure by using these irrigations of potassium permanganate or a teaspoonful of hydrogen peroxid to 1 quart of water. Medical treatment is worth trial in all cases, but physicians should be careful not to prolong it beyond the point where serious damage to the intestine may result. If it fails, there should be immediate recourse to surgery.

Proprietary and "Patent Medicines."—America has been called "The Paradise of Patents." For the immense fortunes that have been accumulated by the proprietary and patent medicine combinations, the promoters owe a debt of gratitude to the members of the profession that will never be revealed until the victims file their complaints at the opening of the books of "the recording angel." The course pursued is not so much a reproach on the integrity of the doctors as a reflection on their common sense and business acumen. While enriching the manufacturers, the dispensers have gained little and the patients have been made "poor indeed." The "proprietary prescribing habit" has been as fatal to the best interest of the doctors as the "dope habit" has been destructive to the health and happiness of its unfortunate victims.—Crenshaw, *Kentucky Med. Jour.*, September, 1915.

THE PARALYSIS OF POLIOMYELITIS

ITS TREATMENT IN THE EARLY STAGES

H. B. THOMAS, M.D.

CHICAGO

Every one appreciates the great importance attached to the earnest research being done to enrich the epidemiology of infantile paralysis, and sincerely hopes that, before another year, means of prevention and control will be at our disposal. But while the management of paralysis continues to confront us, much permanent damage can be prevented by proper treatment. It is not amiss, therefore, to review at this time the management of the paralysis.

Especial attention should be called to the advantages of less vigorous and more closely supervised treatment in the case of weak muscles. As Lovett and others have pointed out, the greatest danger to the convalescing infantile case is fatigue of the weak or paralyzed muscles. Fatigue should be prevented. This is not easily accomplished, because we are dealing with the child in all his vigor, except for the muscular defects. The chance to experiment with his arms and legs, which have been unable to serve him for awhile, but whose strength is now returning, encourages him to make them pull him about, thus using them until they are exhausted.

If I were allowed only two words of caution or advice to physicians, and through them to the parents of the many beautiful children stricken during the present epidemic of infantile paralysis, they would be: Prevent fatigue. By this I mean fatigue not only from the active movements of the child, but from passive motions and also from massage or electricity.

I believe that 25 per cent. permanent gain in muscular strength will be the reward when the weak or partially paralyzed muscle groups are properly protected and guided so there is a minimum of fatigue.

During the treatment of deformities in long-standing infantile cases, I have frequently been surprised at the return of muscular power following total or partial rest of the paralyzed or weak member.

During the present epidemic in Chicago, I have had an opportunity to study the paralysis in its acute stage while the patients were yet in the contagious ward for the five weeks' isolation. Some of these patients have been followed up after their dismissal from the hospital, and their early progress with and without treatment noted. The results suggested the following outline.

As these suggestions are intended for the physicians into whose hands the patient may fall after leaving the hospital, it is not necessary here to detail the management during hospitalization.

THE MILD TYPE OF PARALYSIS OR WEAKNESS

When the patient leaves the hospital, all tenderness and spasticity have usually disappeared in those cases which showed such symptoms, and the paralysis in the mild, near abortive type may, by this time, be apparently gone. When such is the case, the parent may accuse us of a mistake in diagnosis and isolation. We are particularly anxious that in this type of case there should be a card of written directions and that a physician should be called in. Otherwise, the fatigue following the childish exertion may permanently weaken groups of muscles which otherwise would become normal. Observation of this mild type will give the suggestion for management.

We should look for:

1. Weakness of back muscles when the child is sitting. Tendency toward curvature may be observed, and the proper care of these weak muscles may prevent a fixed scoliosis in later life.

2. Drop foot, eversion, inversion, etc., when lying or sitting.

3. Bending of the knee backward when standing.

4. Outward rotation of the thigh, abduction, adduction, etc., when lying down.

5. Weakness or dragging of the leg after play or after a long walk.

Frequently an apparently normal child, one which shows no signs of muscle weakness during the physician's examination, will be found to tire in groups of muscles by the end of the day. Permanent lameness may be prevented if fatigue is never allowed. In this near abortive type of paralysis, there is usually no tendency toward deformity on weight bearing, and no supporting apparatus is needed. Limited active and passive motions are permissible; also massage; but too much should be avoided, and an effort should be made to prevent fatigue. If the family is allowed to treat the child, the greatest gain will follow instructions to rest, and to give massage and passive motions guardedly.

THE SEVERE TYPE OF PARALYSIS

Among the children who leave the hospital are those who cannot stand or sit or use an arm. Their muscles appear normal, otherwise, but it is well to watch them for weak back muscles, etc., as in the near abortive cases. Attention is too often fixed on the paralyzed muscles, and the weak groups are unnoticed and neglected.

This severe type with deformity needs such support as the position suggests. Drop foot should have permanent support by removable apparatus, preventing position contractions and deformity, allowing no stretching and fatigue of the weak muscles by the pull of the opposing normal ones. Later, massage and passive and active motions should be used when indicated, and the effect on the muscles watched as a guide for continued treatment. It is much safer to underdo than overdo. When, on testing the muscles on the day following treatment, the power is found diminished, this is a plain indication for more rest and support and for less vigorous activity. The operative and muscle-educational treatment of the deformities which often follow infantile paralysis need not be considered here. It is generally admitted, I think, that electrical treatments should be used only in exceptional cases. There is normal sensation in this paralysis. Enough current to reach the affected muscles is too much for the surface, and the effects on the paralysis do not justify its use.

CONCLUSIONS

1. Recently much that is new has been learned regarding the care of the weakness and paralysis of poliomyelitis.

2. These weak and paralyzed muscles are sick muscles, with deranged nerve and blood supply, and should be treated as such.

3. Sick muscles tire easily, not only by active use, but also by passive use and by massage, and when they tire they are less able to functionate the following day. Their ultimate usefulness is also harmed.

4. Study the result following the treatment. Undertreat rather than overtreat. Avoid fatigue.

30 North Michigan Avenue.

A CHILD WEIGHING TWENTY-FIVE POUNDS
AT BIRTH

D. P. BELCHER, M.D., SALE CITY, GA.

MRS. R. W. C., aged 35, height 5 feet 7 inches, weight 220 pounds; circumference at hips 50 inches, multipara, delivered Feb. 22, 1916, has had eight normal children, including a twin birth. These children have averaged from 7 to 9 pounds in weight. She had three miscarriages. April 15, 1915, she aborted after about a six weeks' gestation. Soon after she became pregnant again. Early nausea and vomiting were more marked than in the previous pregnancies. Labor began Feb. 11, 1916. Vaginal examination at 8 p. m. during the first stage showed left occipito-anterior presentation. The os was patulous, and permitted the introduction of three fingers. The labor pains were of normal frequency but short. After an hour, the os admitted four fingers, and the pains were still short. The patient was given 5 minims of pituitary extract; the pains became more severe, but had little effect on the passage of the head. In two hours the 5 minims of pituitary extract were repeated; the pains now became strong. The os was normally dilating, but there was still slight progress of the head. At 2 a. m., after a consultation with Dr. A. S. Hargrove, the patient received a third dose of pituitary extract of 15 minims. At 3:30 a. m., the head was born. The posterior shoulder was delivered with great difficulty. Much greater difficulty, however, was experienced in delivering the anterior shoulder; but with the added assistance of Dr. A. T. Stevens, this was finally rotated posteriorly, and accomplished. It required the combined efforts of the three physicians to deliver the remainder of the body. The child was a girl, weighing 25 pounds; it measured 12 inches across the shoulders, 28 inches in length and was perfectly formed. It was born dead. On examination of the mother, the perineum was found slightly lacerated. This was completely repaired by three sutures. Chloroform anesthesia was used. She made an uneventful recovery.

[COMMENT.—This case is remarkable as it was a girl child and the maternal measurements, as given, taken after delivery, were not abnormal save for circumference at the hips, which is rather large. The author states that the baby was perfectly formed; therefore, we may assume its head was relatively large, yet it was born without mechanical assistance and caused but slight perineal laceration.

W. T. Lusk ("Science and Art of Midwifery") gives the average weight as 7 pounds, and quotes Bailly as giving the average weight for boys as $7\frac{7}{10}$ pounds, and for girls, $7\frac{1}{10}$ pounds.

Lusk also states that the largest baby born in Bellevue Hospital, New York, weighed 11 pounds, but that he personally delivered, with forceps, one weighing 15 pounds. He also cites a case of Waller's in which the child weighed 15 pounds, 15 ounces. Lusk quotes Dr. Gleavis of Virginia, who reported that he had delivered a woman of a child weighing 18 pounds. Kormann claims to have delivered a woman of a baby weighing 9.8 kg., that is, $21\frac{5}{100}$ pounds.

Playfair, in the seventh American edition of his "Midwifery," mentions that a Nova Scotia giantess gave birth to a child weighing $23\frac{3}{4}$ pounds at term. She was 7 feet, 9 inches high. Her husband was also giantic, 7 feet, 7 inches. The child was born in Ohio. It was their second. It was lost in birth, as no forceps could be procured of sufficient size to grasp the head. The fetus weighed $23\frac{3}{4}$ pounds, and was 30 inches in length. Their first infant weighed 19 pounds.

Birnbaum ("Malformations of the Fetus") mentioned a child weighing 11,300 gm. ($24\frac{8}{10}$ pounds) at birth. Gould and Pyle ("Anomalies and Curiosities of Medicine") quote a number of instances of births of abnormally large children—one case in which the fetus weighed 24 pounds.

An apparently carefully reported case is that of F. Ortega (Fétus gigantesque mort-né, pesant nu 11,300 grammes, long de 70 centimètres et large, d'un acromion à l'autre, de 19 centimètres, *Nouv. arch. d'obst. et de gynec.*, 1891, p. 481). The mother, a very tall Italian blonde, a primipara, was forty hours in labor. The child was born dead. Forceps were unsuccessfully applied. The child weighed $24\frac{8}{10}$ pounds (105 kg.). The maternal pelvis is described as very wide and roomy, and there was no tear. The child was weighed with a balance scale. It was 70 cm. long (over 27 inches), and was 19 cm. ($7\frac{1}{2}$ inches) across the shoulders. The umbilical cord was as thick as the operator's thumb. The

birth of the shoulders was the most difficult part of the delivery. The woman was up on the ninth day.

On comparing the measurements given in Dr. Belcher's report, and those recorded in Ortega's case, we find that they tally fairly well, as the following will show:

	Case Reported	Ortega
Weight	25 pounds	$24\frac{8}{10}$ pounds
Measurements across shoulders..	12 inches	$7\frac{1}{2}$ inches
Length	28 inches	Over 27 inches

Ortega describes also great difficulty in birth of the shoulders.

A study of the reports concerning the birth of abnormally large children is likely to show that the weight and measurements are not always carefully taken. There is invariably a tendency to exaggerate the unusual. In all the cases cited, the infant's weight is less than the case reported above.—Ed.]

THE CAUTERY IN TREATMENT OF
JACKSONIAN EPILEPSY

FREDERICK A. RHODES, M.D., PITTSBURGH

History.—Mr. F. S., aged 18, referred to me by Dr. Sell, March 22, 1915, had been well until the age of 3, when he fell while crossing a railroad track, and was caught by a freight car on a passing train and dragged nineteen ties. He was unconscious for some days. He recovered from the accident fairly well, except that the left side of the body, arm and leg, was paralyzed for three months. He had to be taught to walk again. At 8 years of age he was hit on the side of the head with a brick, sustaining a depressed fracture on the parieto-occipital region. Convulsive attacks began when he was 10 years of age. They were at first of the grand mal type and very frequent. They gradually diminished in frequency until he was 16 years of age, when they were very few.

During the last six months the attacks have assumed the form of typical jacksonian epilepsy, occurring two or three times a week. The patient is not always unconscious in these attacks, but must lie down. The aura is quite constant, and consists of a numbness and pricking in the left hand rapidly passing up the arm; when it reaches the elbow "he is gone." He learned well at school until 10 years of age, after which he was unable to attend much but studied at home. He is quite an intelligent looking young man, well developed physically. Examination of the eyes shows the retina normal with no evidence of intracranial pressure. On account of the severity and the frequency of the attacks, it has been thought unwise for him to go far from his home without a companion. Examination of the head shows a slight depression in the right parietal region.

Operation and Result.—The patient was operated on, March 25, 1915, under ether anesthesia. The skull was trephined over the right motor area. There were dense adhesions of the skull and the dura. The cerebral cortex was somewhat necrotic. The arm area was removed with the galvano-cautery and the wound closed. There was complete paralysis of the left arm, forearm and hand by the second day. This rapidly disappeared. The patient made an excellent recovery from the operation, and was shown at the Allegheny County Medical Society, May, 1915, at which time he stated that he was entirely free from attacks and was learning a trade, working every day. As he is still entirely well and working, I feel that sufficient time has elapsed to report the case.

COMMENT

The interesting part of his history is that he was twice injured in the right motor area. The important point in the treatment is the removal of the motor area by the cautery, which is much more satisfactory than by the knife; it is followed by less bleeding and there is less possibility of as many adhesions. I have since used this method in other cases with good results. These will be reported later. There seems to be little doubt that the motor area of the opposite side takes on the functions of the destroyed area. The operation should produce a paralysis of the affected part by which we know that we were successful in cauterizing the right area. This paralysis is generally quite marked by the second day and disappears rapidly after the first week.

Therapeutics

CARDIOVASCULAR-RENAL DISEASE

With the strenuousness of this era, this disease or condition, which may be regarded as one of the accompaniments of normal old age, has become of grave importance, and nowadays frequently develops in early middle life. If it is diagnosed in its incipency, and the patient follows the advice given him, the progress of the disease will generally be inhibited, and a premature old age postponed.

In the beginning the symptoms and signs of this disease are generally those of hypertension, and the treatment and management is that advised in hypertension. If the kidneys show irritation, as manifested by the presence of albumin and casts in the urine, or if they show insufficiency in the twenty-four-hour excretion of one or more salts or other excretory product, the diet and life must be more carefully regulated than advised in hypertension, and the treatment becomes practically that of chronic interstitial nephritis.

Sooner or later, in most instances of this disease, whether hypertension, chronic endarteritis or interstitial nephritis or any combination of these conditions is most in evidence, the heart will hypertrophy. As long as the circulation in the heart itself is good and not impaired by coronary sclerosis, and as long as this slowly developing chronic myocarditis has not advanced far, cardiac symptoms will not be in evidence; but if these conditions occur, or if the blood pressure is so greatly increased as to damage the aortic valve or strain and dilate the left ventricle, symptoms rapidly appear, and the heart must be carefully watched. Subsequently, as the disease advances, if the patient does not die of angina pectoris, apoplexy or uremia, the symptoms of cardiac decompensation will develop. As the heart begins to fail, a dilatation of the right ventricle causes passive congestion of the kidneys, and the chronic interstitial nephritis may progress more rapidly. It is often difficult to decide which is more in evidence, heart insufficiency or kidney insufficiency. The more the heart fails, the more albumin will generally appear in the urine, and the lower the blood pressure, especially the diastolic. The more insufficient the kidneys, the higher the blood pressure, especially the diastolic. The location of the edema will aid in deciding which condition is most in evidence. If the edema is pendent in feet, legs and perhaps genitals when the patient is up, with its disappearance at night, and more or less backache and pitting of the back in the morning, it is the heart that is most rapidly failing. If there is more general edema, the hands and face puffing, and there are considerable nausea and vomiting, headache and drowsiness, and perhaps muscular twitchings, with neuralgic pains, the most serious trouble at that particular time lies in the kidney insufficiency.

Kisch¹ sums up the prodromal symptoms and signs of cerebral hemorrhage. The heart is generally enlarged and hypertrophied. The patient is likely to be overweight or adding weight, and to suffer from intestinal indigestions. Signs of sclerosis of the blood vessels of the brain are evidenced by transient dizziness; headaches; impaired sleep; loss of memory, specially for names and words; slight disturbances of speech, momentary perhaps, and more or less temporary localized numbness of the hands or feet, or

arms or legs, with perhaps flushing of some part of the body, or little localized spasms of vessels of other parts of the body, causing chilliness.

There is also a marked hereditary tendency to apoplexy.

Cadwalader,² after considerable investigation, has come to the conclusion that large hemorrhages into the brain are the rule in apoplexy, and that small hemorrhages are rare, and he is inclined to think that even small, as well as large hemorrhages, are more frequently fatal than supposed. In other words, he thinks that many of the nonfatal hemiplegias are caused by vascular obstruction and softening and not by hemorrhage. He finds that sudden death, or death within a few minutes, does not occur from hemorrhage, even if the hemorrhage is large, though a rapidly developing and persistent coma usually indicates a hemorrhage. If the coma is not profound and is slow in its onset, with symptoms noticed by the patient, and cerebral disturbance, he believes it to be caused generally by softening of the cerebral center, due to some obstruction of the blood flow, and not to hemorrhage. While occasionally a slowly increasing loss of consciousness may be due to hemorrhage, he thinks it is doubtful if real hemorrhage ever occurs without loss of consciousness, while softening of some part of the cerebrum may occur without unconsciousness. He thinks that the size of the hemorrhage is of more importance than its situation in causing the profoundness of the symptoms, but he repeats that nonfatal cases of hemiplegia are generally caused by vascular occlusion and subsequent softening, and not by hemorrhage.

TREATMENT

While it is urged, in preventing the actual development of this disease, and in slowing its progress, that it is advisable to lower a high blood pressure, we must remember that this blood pressure may be compensatory, and many times should not be much lowered without due consideration of the symptoms and the patient's condition. It is better not to use drugs of any kind in this incipient condition. The hypertension should be regulated by the diet; the purin bases and meat should be reduced to a minimum; tea, coffee and alcohol should be prohibited, and tobacco should be either entirely stopped or reduced to a minimum. Regulated exercise is always advisable, the amount of such exercise depending on the condition of the circulation. Ordinary walking and graduated walking or graduated hill climbing and golfing are good exercise for these patients. Mental and physical strenuousness must be stopped, if the disease is to be slowed. Sleeplessness must be combated, and perhaps actually treated medicinally, and for a time sufficient doses of chloral are perhaps the best treatment. The administration of chloral must always be carefully guarded to avoid the acquirement of dependence on the drug. Mouth and other infections should be sought and removed. Warm baths, Turkish baths, electric light baths or body baking may be advisable, and certainly obesity must always be combated by a regulation of the diet. In obesity, stimulants to the appetite, such as spices, condiments, and even sometimes salt, must be prohibited. Butter, cream, sugar and starches must be reduced to a minimum. A small amount of bread and a small amount of potatoes should be allowed. Liquids with

¹ Kisch: *Med. Klin.*, Feb. 27, 1916.

² Cadwalader, W. B.: A Comparison of the Onset and Character of the Apoplexy Caused by Cerebral Hemorrhage and by Vascular Occlusion, *THE JOURNAL A. M. A.*, May 2, 1914, p. 1385.

meals should be reduced. Fruits should be given freely. Intestinal indigestion should be corrected, and free daily movements of the bowels should be caused. If the patient is obese, and especially if the blood pressure is high, the administration of thyroid extract is very beneficial. This is particularly true in women suffering from this disease; but the patient should be carefully observed during its administration. It may be advisable to administer small doses of iodid instead of the thyroid treatment, or coincidentally with it. Nitrites had better be postponed, if possible, for cardiac emergencies.

White,³ after studying 200 cases of heart disease, finds that men are more subject to auricular fibrillation, auricular flutter, heart block and alternation of the pulse than are women. The greater frequency of syphilis in men than in women should be considered in this difference in frequency.

White finds that hyperthyroidism of long standing is often attended with auricular fibrillation. He does not find that alcohol, tea and coffee play much part in causing these serious disturbances of the heart. His conclusions on this subject are certainly a surprise, and do not coincide with the experience of many others. It would seem that one of the causes of the greater frequency of these disturbances in men would be the amount of alcohol and tobacco used by men.

When the heart begins to fail from a gradually progressing myocarditis, the pulse rate generally increases, especially on the least exertion, and on fast walking may be as high as 120 or 130 a minute, or even higher. It may be found near 100 on the least exertion, even after some minutes of rest. These patients must have more or less absolute bed rest. When this condition occurs in old age, however, prolonged bed rest is inadvisable, for if the heart once loses its energy, in such cases, it is practically impossible to cause a return of normal function. However, in all acute cardiac insufficiency in this disease, due to some heart strain or exertion that was unusual, a bed rest of from one to two weeks and then gradually getting up and returning to normal activity is the proper treatment, and will generally be successful in restoring more or less compensation. These patients may well recline in bed with several pillows or with a back rest. During any cardiac anxiety in this kind of insufficiency the patient breathes better when he is sitting up or reclining with the head and shoulders high. The reason for this is probably because his heart has more space in this position—the same reason that he breathes better when his stomach is empty. Very indicative of the coming cardiac insufficiency is the inability to lie at night on the left side. The pressure of the body, especially if the person is stout, interferes with the heart action and causes dyspnea and distress. Some short, fat patients with cardiac distress caused by this disease must even stand up to relieve the condition, the erect position giving still more space for the action of the heart.

Before these patients get up, after a period of bed rest, slight exercises should be done, perhaps resistant exercises, to see what the effect is on the heart, and also gradually to cause increase in cardiac strength, much as any other training exercise. Whatever exercise increases the heart rate more than twenty-five beats is too strenuous at that particular period. The exercise should then be still more carefully graduated. If the systolic blood pressure is altogether too low for the age of the person or for the previous his-

tory, it should be allowed to become higher, if possible, before much exercise is begun.

The diet should be nutritious, but, of course, modified by the condition of the stomach, intestines and kidneys, and whether or not the patient is obese. The bulk of the meal should be small, and nutriment should be given at three or four hour intervals during the daytime.

The Karell milk diet or so-called "cure" was first presented in 1865 by Phillippe Karell, physician to the Czar of Russia. This treatment was more or less forgotten until lately, when it has been more frequently used in kidney, liver and heart insufficiency. Its main object in kidney and heart disease is to remove dropsies. In cardiac dropsy it is advised to give 200 c.c. of milk for four doses at four hour intervals, beginning at 8 o'clock in the morning. Whether the milk is taken hot or cold depends on the desire of the patient. This treatment is supposed to be kept up for six days, and during this time no other fluid is given and no solid food allowed. During the next two days an egg is added to this treatment, given about 10 o'clock in the morning, and a slice of dry toast, or zwieback, at 6 p. m. Then up to the twelfth day the food is gradually increased, first to two eggs a day, then more bread, then a little chopped meat, then rice or some cereal, and by the end of two weeks the patient is about back to his ordinary diet. During this period the bowels are moved by enema or by some vegetable cathartic, or even castor oil. If thirst is excessive, the patient must have a little water, and if the desire for solid food is excessive, even Karell allowed a little white bread and at times a little salt. He sometimes even prolonged the period of treatment to five or six weeks.

Various modifications of this treatment have been suggested, such as skimmed milk, and more in quantity, or a cereal is added more or less from the beginning, and perhaps cream. The diuretic action of this treatment is not always successful. Also, sometimes the treatment is even dangerous, the heart and circulation becoming weaker than before such treatment was begun. Certainly the treatment should be used in cardiac insufficiency with a great deal of care, although it is often very valuable treatment. It should be emphasized that most patients with cardiac dropsy receiving the Karell treatment or a modification of it should also receive digitalis in full doses, and should have daily free movement of the bowels. It should be urged, however, that too free catharsis in cardiac weakness is to be avoided, and the prolonged use of salines, and sometimes even one administration is contraindicated. Before cardiac failure has occurred in this disease, once a week a dose of calomel or a brisk saline purge is advisable, and is good treatment; but when cardiac weakness has developed, free catharsis is rarely indicated, although the bowels should be daily moved, and vegetable laxatives are the best treatment. The upper intestine and the liver and kidneys may be relieved by a more or less abrupt modification of the diet, or even a starvation period, and the bowels will generally become cleaned; but frequent profuse purging with salines or some drastic cathartic puts the final touch on a cardiac failure.

Recently Goodman⁴ presented a report of his studies of the Karell treatment in cardiac, renal and hepatic dropsies. He finds that patients with uremia ordinarily

3. White: *Boston Med. and Surg. Jour.*, Dec. 2, 1915.

4. Goodman, E. H.: The Use of the "Karell Cure" in the Treatment of Cardiac, Renal and Hepatic Dropsies, *Arch. Int. Med.*, June, 1916, p. 809.

should not be subjected to the Karell cure, such patients needing more fluid.

As long as the patient remains in bed, and as long as his ability to exercise is at a minimum, gentle massage is advisable.

In these cases of cardiac weakness, with or without dropsy, unless the diastolic pressure is very high, digitalis is valuable. If there is no cardiac dropsy, but other symptoms of heart tire are manifest and the blood pressure is high, the nitrites are valuable. The amount should be sufficient to lower the blood pressure. Sometimes the diastolic pressure is high and the systolic low and the pressure pulse small because of heart insufficiency; such a condition is often improved by digitalis. In other words, with a failing heart digitalis may not make a blood pressure higher, and often does not; it may even lower a diastolic pressure, and the moment that the pressure pulse becomes sufficient, the patient improves. Under this treatment of digitalis, rest and regulated diet, a dilated left ventricle with a systolic mitral blow often becomes contracted and this regurgitation disappears.

The amount of digitalis that is advisable has been frequently discussed. It should be given in the best preparation obtainable, and should be pushed gradually (not suddenly) to the point of full physiologic activity. While it may be given at first three times a day in smaller doses, it later should be given but twice a day, and still later once a day, in a dose sufficient to cause the results. As soon as the full activity has been reached it may be intermitted for a short time; or it may be given a longer time in smaller dosage. In renal insufficiency associated with cardiac insufficiency, its action is subject to careful watching. If there is marked advanced interstitial nephritis, digitalis may not work satisfactorily and must be used with caution. If, on the other hand, a large part of the kidney trouble is due to the passive congestion caused by circulatory weakness, digitalis will be valuable.

In sudden cardiac insufficiency, provided digitalis has not been given in large doses a short time before, strophanthin may be given intravenously once or at most twice at twenty-four-hour intervals.

If, in this more or less serious condition of the heart weakness, there is great sleeplessness, a hypnotic must sometimes be given, and the safest hypnotic is perhaps $\frac{1}{10}$ grain of morphin. One of the synthetic hypnotics, where the dose required is small, may be used a few times, and even a small dose of chloral should not be feared when sleep is a necessity and large doses of synthetics are inadvisable on account of the condition of the kidneys.

The value of the Nauheim baths with sodium chlorid and carbonic acid gas still depends on the individual and the way that they are applied. If the blood pressure is low and the circulation at the periphery is poor, they bring the blood to the surface, dilating the peripheral vessels, and relieving the congestion of the inner organs and abdominal vessels, and they often will slow the pulse and the patient feels improved. If they are used warm, a high blood pressure may not be raised; if the baths are cool, the blood pressure will ordinarily be raised. Provided the patient is not greatly disturbed or exhausted by getting into and out of the bath, even a patient with cardiac dilatation may get some benefit from such a bath, as there is no question, in such a condition, that anything which brings the blood to the muscles and skin relieves the passive internal congestion. Sometimes these baths increase the kidney

excretion. At other times these, or any tub baths, are contraindicated by the exertion and exhaustion they cause the patient; and cool Nauheim baths, or any other kind of baths, are inadvisable with high blood pressure.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

MERCURIAL OIL.—Grey Oil.—A mixture containing from 40 to 50 per cent. metallic mercury in an oily base containing the mercury in a finely divided state and of a consistence which permits its intramuscular injection by means of a proper syringe at room temperature.

Action and Uses.—Mercurial oil is used by intramuscular injection as a means of obtaining the systemic effects of mercury. It is believed by some that the rate of absorption is influenced by the size of the mercury globules; hence the degree of subdivision should be indicated for each brand of this product.

Dosage.—Depending on the effects desired, the mercurial oil is administered once or twice a week, 0.06 Cc. (1 minim being the initial dose and 0.12 Cc. (2 minims) the maximum. The "course" should not be continued beyond five or six weeks, without an intermission of equal duration. It is reported that cumulative effects are prone to develop from the use of mercurial oil. Idiosyncrasy should be considered and salivation must be carefully watched for. Tenderness of the gums (the earliest sign of salivation) is an indication for stopping the use of the drug for a period.

In mercurial oil the globules of mercury tend to coalesce and form larger globules, and when this process is once started it progresses very rapidly. Mercurial oil should be kept at a relatively constant temperature and must not be warmed prior to use.

Mercurial Oil-National Pathological Laboratory.—A mixture of equal weights of mercury and lanolin obtained by triturating the constituents until mercury globules are no longer macroscopically visible. It is marketed in graduated syringes ready for use and containing 2 Cc. Syringes containing visible mercury globules should be discarded.

LIQUID PETROLATUM-Squibb, Heavy (Californian).—A non-proprietary brand complying with the standards for liquid petrolatum, U. S. P., made from Californian petroleum and claimed to be composed essentially of hydrocarbons of the naphthene series. For description see the Pharmacopeia or Useful Drugs.

Liquid petrolatum-Squibb, Heavy (Californian) is colorless, non-fluorescent, practically odorless and tasteless. Specific gravity 0.886 to 0.892 at 15 C., or 0.881 to 0.887 at 25 C. It complies with the tests of the U. S. Pharmacopeia and in addition to the following test:

If 5 Cc. of sulphuric acid, U. S. P., are mixed with 5 Cc. of nitric acid, U. S. P., in a 25 Cc. glass-stoppered cylinder, and after the mixture has cooled, 5 Cc. of liquid petrolatum-Squibb be added and the mixture shaken for thirty seconds, neither the test reagent nor the liquid petrolatum should assume a color deeper than canary yellow, nor should any matter separate at the junction of the liquids.

E. R. Squibb and Sons, New York.

THROMBOPLASTIN-SQUIBB.—A solution of brain extract complying with the standards for solution brain extract, N. N. R. (THE JOURNAL A. M. A., Aug. 5, 1916, p. 437). It is claimed that no loss of potency could be detected in a specimen of thromboplastin-Squibb over eighteen months old. Marketed in 20 Cc. vials.

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THE INNERVATION OF THE THYROID GLAND

Despite the universally admitted importance of the so-called ductless or endocrine glands, in the normal and abnormal performances of the organism, it must be frankly admitted that the methods of ascertaining their precise function have been anything but satisfactory. The necessity of a structure like the suprarenal gland for the very existence of the individual is attested by the abundant evidence derived from extirpation experiments. The indispensability of the parathyroid structures is similarly attested; and the profound physiologic upset obviously associated with some malfunctions of the thyroid tissue likewise bears witness of a dominant rôle played by the endocrine organs. Such knowledge, however, is far from furnishing the key to the more precise ways in which they act and enabling one to interpret the mechanism represented in the customary activities of indispensable tissues. We may now make correct statements regarding epinephrin and its discharge from the suprarenals, and we may discuss the varying content of iodine in thyroid glands under differing environmental or individual conditions; but these are not explanations of what happens in the intact organism when the structures here referred to perform in their characteristic way. When the salivary glands or the kidneys function, their work can be ascertained by an examination of a direct external secretion. The inability to do the same for the endocrine glands has retarded progress in their study, but has at the same time stimulated a lively interest in the problems which they offer.

Long ago it was demonstrated that just as alterations in electrical potential can be observed in muscles and nerves, as an accompaniment of physiologic action, so there are electrical changes discoverable during the secretion by the salivary glands. It has remained for Cannon and Cattell,¹ of the Laboratory of Physiology in the Harvard Medical School, to test the validity of the electrical response as an index of glandular action, and to apply this method of study to the glands of

internal secretion where the recognition of the product of their secretory activity in the blood or lymph is uncertain or impossible. Because an electrical change accompanies the secretion of saliva, even though the blood supply is shut off from the gland or the flow through the duct is stopped, and because the change is absent when secretion is absent, although each of the conditions attendant on secretion (such as contraction and relaxation of blood vessels and faster or slower flow of blood) may severally be induced, the Harvard investigators have concluded that the electrical change is a manifestation solely of the process of secretion. It is well known that both the chorda tympani nerve and the sympathetic system operate on the salivary glands. In accord with this is the fact that when the "action current" indicates a maximal activity of the submaxillary gland excited by stimulating the sympathetic nerve in the neck, the electrical response can be augmented by stimulating the chorda tympani, and vice versa.

Obviously, as Cannon and Cattell clearly admit, an electrical change cannot yield information as to the nature of the materials elaborated in the several structures involved; it cannot determine the course which the products of secretion actually take in passing from their region of origin. Indeed, it might leave somewhat uncertain whether secretion or preparation for secretion were the process occurring in a gland at any given period of disturbed potential. Nevertheless, the method, by revealing the differences between relative quiet and activity, indicates conditions which affect the functioning of glands and thus suggest more definite studies; it may show the quickness, the extent and, roughly, the degree of the response; and it may disclose significant new facts regarding relations which exist among the glands and which are mediated by the circulation.

The best warrant for the further employment of such an indirect method in the study of the ductless glands is afforded by what Cannon and Cattell² have already accomplished with it. If the thyroid gland and neighboring indifferent tissue are connected through a galvanometer, stimulation of the sympathetic strand high in the thorax evokes an action current after a latent period varying usually between five and seven seconds. This effect persists after the superior and the recurrent laryngeal nerves are severed. Evidence is presented that the impulses pass to outlying neurons whose cell bodies are located close below the superior cervical ganglion and also in the inferior cervical region. Stimulation of the main trunk of the vagus nerve or injection of pilocarpin has no effect in producing an action current in the thyroid gland. The influences of sympathetic impulses are not indirect

1. Cannon, W. B., and Cattell, McKeen: Studies on the Conditions of Activity in Endocrine Glands, I, The Electrical Response as an Index of Glandular Action, *Am. Jour. Physiol.*, 1916, xli, 39.

2. Cannon, W. B., and Cattell, McKeen: Studies on the Conditions of Activity in Endocrine Glands, II, The Secretory Innervation of the Thyroid Gland, *Am. Jour. Physiol.*, 1916, xli, 58; III, The Influence of the Adrenal Secretion on the Thyroid, *ibid.*, 1916, xli, 74.

through local anemia of the gland; for when the blood supply is wholly stopped by clamping the blood vessels for a period equal to that of the sympathetic stimulation no noteworthy electrical change is produced. The conclusion is accordingly drawn that the nonmedullated nerves distributed to the thyroid cells belong to the sympathetic and not to the vagus supply, and that their effects are not indirect through alterations of the blood flow; they are, indeed, true secretory nerves.

The foregoing studies conform with what is indicated by other types of evidence regarding innervation of the thyroid gland. From analogy with other glands one would expect the thyroid likewise to be provided with suitable nervous structures adapted to call its functions into activity. Histologic evidence actually indicates the entrance of nerve fibers into the cells of this gland, and anatomists have reported that the fibers arise in the cervical sympathetic ganglia. It is known that severance of its cervical sympathetic nerves causes atrophy of the thyroid and stimulation of these nerves causes a diminished iodine content of the gland. Severance of the vagus nerve supply has no such effect. The consensus of evidence, new and old, thus points toward a definite influence of sympathetic impulses over thyroid activity. For many reasons, both theoretical and practical, this is an important acquisition to our knowledge of the innervation of the endocrine gland.

MUNICIPAL CONTROL OF FOOD MATERIALS

Civic problems of health come up for solution one after another as cities grow in size and knowledge of sanitary science increases. Interferences with personal liberty for health reasons, which would have seemed quite preposterous a generation or two ago, especially in our Anglo-Saxon civilization, are now accepted as a matter of course, and undoubtedly similar developments will continue. A century ago, municipalities began to realize the public duty as to the disposal of sewage and waste materials. Then came the recognition of the necessity for affording an abundant and pure water supply. More recently the necessity for milk inspection and for the care of the food, which means so much for that portion of the community most liable to disease, the very young, came up for consideration. Naturally, after that the questions relating to the control of the food supply of adults, to such an extent at least as to prevent disease, were taken up. This represents, doubtless, the most important question now occupying the minds of sanitarians, the practical application of which to municipal affairs will do a great deal to prevent the occurrence of many of the intestinal affections at least, but probably of most others also which still flourish in large cities.

Proper municipal food control and inspection will involve many invasions of what have been considered

precious privileges of personal liberty, but it will not be long before it will be recognized that these, like other developments of municipal health service, are amply justified by the favorable results in health and the prevention of disease which they assure. In its twelfth report, the Henry Phipps Institute of Philadelphia calls particular attention to the abuses which exist in that city and to the necessity of definite amelioration of conditions in the sale, storage and handling of food, if the spread of disease is to be prevented. What is true of Philadelphia is exemplified also in the provision of food for many other American cities, in some of which, undoubtedly, conditions are even worse than in the Quaker City. In a number of large cities recently the investigation of restaurants showed that there were many details in the handling of food which were insanitary and would surely have occasioned vigorous protest on the part of patrons had they been aware of the facts. Indeed, it is extremely easy for most people to slip into serious abuses in the handling of food, whenever it is not to be prepared for themselves or those in whom they are particularly interested.

The Phipps Institute report calls attention particularly to the exposure of food products to dust and dirt as well as to contamination from the unclean hands of sellers and customers, from contact with the clothing of passers-by, and occasionally even soiling by passing animals. Curiously enough, municipal markets in Philadelphia were found to be the worst in this regard, and "vegetables were often piled directly upon the ground, and dressed fowl hung along the edges of the market, directly over filthy gutters and so low that people entering the market constantly brush against them. . . . Dogs and cats have easy access, in fact there is no way to keep them out and much to attract them." In one stall where the proprietor said that he had government, state and municipal inspection, there was "a huge piece of beef, soft to the point of sponginess, terribly discolored, part of it slimy and part entirely dried up." The man assured the investigator that "this would not be sold to his customers, but was shortly to be called for by a Bologna sausage maker." This, certainly, would not encourage any one to buy Bologna sausage anywhere in the neighborhood of that market. The bureau of health in Philadelphia refused to license these stalls, yet they continue in business.

Above all, sellers of vegetables and meat food seem to have no hesitation in handling food materials to any extent. Some handling is necessary, but a great deal of the mussing with foods is quite unnecessary. Many of the moist food materials, meats, butter and cheese, as well as milk, readily become infected with anything that is on the hands of sellers, and yet few precautions are taken to avoid what may be serious consequences from this. The Phipps report points out particularly the need of assurance that food handlers

are not typhoid carriers and are not at the time suffering from any of the intestinal diseases or tuberculosis. The determination of such questions seems, to many, an almost unwarranted invasion of personal rights, and yet it represents the next development in public sanitation if there is to be definite assurance against the spread of these infectious diseases.

Manifestly a campaign of education of the general public and above all of legislatures is needed in order to secure such developments of sanitary legislation as will bring all food handlers properly under the control of health authorities. There is no doubt that cooks, kitchen workers and waiters, particularly in hotels and large restaurants, who are brought intimately in contact with food materials ought to have certificates that they are not carriers of typhoid or paratyphoid diseases and that they are not liable to be sources of infection because of the presence of other affections, intestinal or respiratory, in an active stage.

THE LIPOIDS ("FATS") OF HUMAN BLOOD

The center of analytic interest in both normal and pathologic metabolism, as *THE JOURNAL* has frequently stated, is shifting from the urine to the blood. A decade ago the withdrawal of a few cubic centimeters of blood from the vein of a human patient for purely diagnostic purposes was a somewhat formidable and certainly a decidedly uncommon procedure; today the collection of blood samples in man is a routine practice. Pathology, bacteriology and physiologic chemistry all have benefited by the accumulating data derived from such technical analyses of the blood. Information has been obtained of unquestioned importance in the domains of therapy and prognosis as well as diagnosis. It is no longer bewildering to an up-to-date physician to discuss the content of sugar, or uric acid, or nonprotein nitrogen in the blood, any more than it was either to consider comparable statistics about the urine a few years ago or to take guidance from a blood count or hemoglobin estimation.

Regarding the blood cells or formed elements, the oxygen-carrying blood pigment, certain immunologic components such as exemplify themselves in the Wassermann and other blood tests, and the sugar and nitrogenous constituents of the circulating blood, it can justly be said that quite satisfactory methods of clinical estimation as well as illuminating statistics are now available. One already hears of prognoses made in nephritis on the basis of the finds of a chemical examination of the blood.¹ At length the fatty components of the blood are also destined to receive a share of the attention of the clinical chemist.

It is a sign of more orderly knowledge in any field when questions of nomenclature begin to arise. The word "blood fat" no longer suffices to define the heter-

ogeneous group of substances that have been included traditionally in that designation. Those substances, present in blood, which were originally grouped together because of their similar solubility in fat solvents, include the true fats — glycerids of the fatty acids; the phosphatids — lecithin, cephalin, etc.—ordinarily termed "lecithin"; and the higher alcohol cholesterol with its fatty acid esters. Bloor² has pointed out a possible natural propriety in the conventional grouping of the substances referred to under a common designation, in that they are quite probably all concerned in fat metabolism. For this reason he proposes to use the expression "lipoid" as a general term for all those substances connected with the metabolism of the fatty acids, including the fatty acids, their naturally occurring compounds, and such substances as cholesterol, which occur naturally in combination with fatty acids and are therefore presumably connected with their metabolism. The term "lipin," introduced by Gies to cover such groups, has found a limited acceptance.

Bloor² has applied the methods of lipid estimation, which he has materially helped to perfect, to the complete analysis of the blood of a large number of both healthy and diseased persons. He furnishes some normal statistics on the basis of which deductions can be made in the future in evaluating analytic data that may be obtained from patients. According to his investigations at the Harvard Medical School, in normal blood the "lecithin" lipid fraction of the corpuscles is found to be approximately double that of the plasma, while the cholesterol and "total fatty acid" values are always lower in the corpuscles than in the plasma. The value for "lecithin" in the corpuscles is generally about twice that of cholesterol, while in the plasma their values are nearly equal. The ratio between these constituents — "lecithin" and cholesterol — is quite constant in normal blood, especially in plasma, and remains so in most pathologic samples. This suggests to Bloor a definite relationship between these constituents, making it probable that cholesterol, perhaps as its esters, plays a part in fat metabolism. Conclusions of this sort apply, of course, only to analyses made on blood taken at a time (before breakfast) when the lipid content in the circulation is not altered by products of absorption. Under such conditions the amount of true fats, that is, glycerids of fatty acids, in normal plasma is small; and in the corpuscles it may be absent entirely.

The importance of the complete lipid analysis of the blood in investigating abnormal conditions is emphasized by Bloor's announcement that whereas what is ordinarily termed "fat" (total ether-soluble substance) is within normal limits in most patients, the blood lipoids far more frequently exhibit an apparent deviation from their usual concentration. Quoting Bloor's

1. The Value of Estimations of Creatinin in the Blood, Current Comment, *THE JOURNAL A. M. A.*, Feb. 5, 1916, p. 433.

2. Bloor, W. R.: The Distribution of the Lipoids ("Fat") in Human Blood, *Jour. Biol. Chem.*, 1916, xxv, 577.

interpretation, the most characteristic feature of pathologic conditions in human beings is the increase of "total fatty acids" and true "fats" in both plasma and corpuscles, and the decrease of "lecithin" in the plasma. Inasmuch as the "fat" is probably to be regarded as the inactive form of the body lipoids, the form in which they are stored—the raw material of fat metabolism—and the "lecithin" as the first step in its utilization,³ an undue accumulation of "fat" or a decreased value of "lecithin" probably indicates a diminished activity of the fat metabolism. The ratio of lecithin to cholesterol is almost always a constant one.

In severe diabetes (for which lipemia has often been described) the blood lipoids are greatly increased, but the ratios between these constituents are practically normal. The low values for cholesterol found by Bloor in the plasma in anemia are suggestive in view of the antihemolytic effects attributed to cholesterol. Likewise of interest are low values for the phosphatids in the plasma of hemophilia; for Howell has pointed out that the phosphatid cephalin is associated with blood coagulation, and the injection of cephalin into the circulation or its application to bleeding surfaces is known to give evidence of a clot-promoting potency.⁴ These examples suffice to indicate the promise of helpfulness given by the latest applications of lipid analysis to the blood.

ADVERTISING THAT MAKES FOR ILL-HEALTH

One phase of the problem of "patent medicine" advertising is frequently lost sight of. The modern advertiser, in any line, is not so much concerned with letting the public know that he can supply what it legitimately demands, as he is in creating an artificial demand which he hopes to supply. As an advertising concern in Chicago says, in a circular letter sent to prospective clients:

"It would be a liberal estimate to say that only 25 per cent. of the business transacted in this country each day is done as the result of a 'natural demand.' The other 75 per cent. is done as a result of salesmanship in one form or another—and it's on the 75 per cent. that we make our living and you make yours."

This, we believe, is no exaggeration. It means, in other words, that three fourths of the things purchased are bought not because the public normally wants them, but because, through skilful advertising, the public has been hypnotized into believing it wants them. It may be that in many lines of business this is legitimate. At any rate, it is conceivable that some reasonably convincing arguments might be made in favor of it. But in the matter of selling drugs for the self-treatment of ailments, such artificially created demands

are not legitimate. They are directly against public interest because they are a menace to the public health.

The real object of "patent medicine" advertising—as all "patent medicine" advertisers know, although few will admit it—is not the simple one of telling the public what goods there are for sale. It has a much more subtle motive. Its real intent is to convince those who read the advertisement that they are suffering from certain ailments which can be cured by the preparation advertised. One "patent medicine" maker who was urging druggists to stock his "cure" for appendicitis, and presumably thought that he could be frank about it, said that unless his product was put on the shelf the druggist would have nothing to sell "to the man who has appendicitis nor to the vast multitude who THINK they have or are going to have this dread disease." Elaborating, the manufacturer reminded the druggist further, that "fully seventy-five per cent. of all cough and kidney remedies are bought by people who THINK they have consumption or some serious kidney ailment . . . and not by people who actually have them." That's it exactly! And it is the business of the "patent medicine" advertisement to play on the fears of those who are temporarily indisposed and make them think that they have this, that or the other disease which can surely be cured by Dr. Quack's Panacea.

What, then, is the remedy? That no medicine should be sold for the self-treatment of ailments? By no means. Were we living under ideal economic conditions, it might be as feasible as it may be theoretically desirable, that expert advice and opinion should be sought whenever anything went wrong with the human machine. Under present economic conditions, however, such a conception is Utopian. It is unthinkable that the average man is going to seek a physician's aid every time he becomes constipated. Instead, he is going to purchase a laxative medicine of some sort. It may be admitted, then, that there is today a legitimate place on the market for home remedies for the self-treatment of simple ailments. All that has been asked in the interest of public health and safety is that these remedies be sold under no misleading claims; that they contain no dangerous or habit-forming drugs, and that the names and amount of the active ingredients therein be declared on the label.

The public has a further right in the premises, although it has not awakened to this fact. It is justified in demanding that such remedies shall not be so advertised as to make for ill-health. "Patent medicine" advertising has for years been a stench in the nostrils of thinking men, lay and medical. It has been the black beast of the advertising world. Every effort made by decent advertisers in other lines of endeavor toward purifying the advertising field has had first to be directed against the "patent medicine" business. Yet, from the point of view of the public health, the advertising of home remedies, instead of being the

3. Bloor, W. R.: *Jour. Biol. Chem.*, 1916, xxiv, 447. Pure Lecithin, editorial, *THE JOURNAL A. M. A.*, April 1, 1916, p. 1029.

4. Howell, W. H.: *Am. Jour. Physiol.*, 1912-1913, xxxi, 1. Hurwitz, S. H., and Lucas, W. P.: *A Study of the Blood in Hemophilia*, *Arch. Int. Med.*, April, 1916, p. 543.

most exaggerated, the most suggestive and the most fraudulent, should, on the contrary, be even more conservative and respectable than the advertising of the ordinary products of commerce. It may or may not be a bad thing for the community, economically speaking, if the public is led, through skilful advertising, to buy more hats, more pianos or more automobiles than it can really afford or has any legitimate use for. But it requires no argument to prove that advertising which makes a well man think he is sick and a sick man think he is *very sick*, with the object in view of making these men drug themselves unnecessarily, is a crime against the public health.

AN ASSAULT ON THE HARRISON NARCOTIC LAW

That he may have a physician's prescription calling for one-quarter grain of morphin sulphate in a two ounce mixture refilled as many times as may be found necessary for medicinal purposes, and not be compelled to obtain a new prescription each time he desires a new supply, one Ashley of Washington, D. C., has filed a petition in the Supreme Court of the District of Columbia to compel the secretary of the treasury and the commissioner of internal revenue to abrogate certain treasury decisions under the Harrison Narcotic Law that run counter to his wishes. The petitioner sets forth that he is a poor man, suffering from a serious and stubborn cough, which has been troubling him for some time, and that he cannot afford to pay for having the prescription rewritten and has had to stop taking the medicine. Strangely there is nothing in the petition to gratify a natural curiosity as to the relative cost of having the prescription rewritten—provided there would be any additional cost, which is doubtful—as compared with the cost of contesting the issue with the secretary of the treasury and the commissioner of internal revenue; nor does the petition disclose what the petitioner is going to do for his serious and stubborn cough while waiting for the case to be settled.

The poor man's leading counsel is Eugene C. Brokmeyer, who, we understand, has been and probably still is attorney for the Coca-Cola Company. Mr. Brokmeyer is also the attorney for the National Association of Retail Druggists and is Washington correspondent for the official organ of the organization—the *N. A. R. D. Journal*. Section 6 of the Harrison Narcotic Law is a "joker" which exempts from the operation of the act "patent medicines" containing narcotics within certain amounts. Tacked on to Section 6 is a further "joker" which exempts from the provisions of the act "decocainized coca leaves or preparations made therefrom" and "other preparations of coca leaves which do not contain cocain." This last joker is said to have been fathered by Attorney Brokmeyer and its apparent object is to permit the use of what the

Coca-Cola concern calls its "Merchandise No. 5" in preparing its "soft drink."

Section 6 of the Harrison Narcotic Law permits "patent medicine" makers and others to sell narcotics indiscriminately provided these narcotics are in preparations or remedies containing not more than one fourth of a grain of morphin to the fluidounce or containing other of the forbidden drugs in certain tolerated degrees of dilution.

The commissioner of internal revenue, with the approval of the secretary of the treasury, ruled that narcotic drugs dispensed under and in pursuance of a written prescription, no matter how diluted or attenuated they may be, do not come within the exemptions laid down in Section 6 of the law, and that such prescriptions cannot be refilled. An exception is made, however, with respect to such prescriptions as call merely for preparations and remedies that are themselves clearly within the scope of the exempting section, and in such cases, as the preparation or remedy might have been sold without a prescription even in the first instance, refilling of the prescription is allowed.

The petitioner in the present case tells the court that under the commissioner's ruling a person must consult his physician and obtain a new prescription every time he desires to have a prescribed narcotic mixture renewed, unless it be merely a ready-made compound with the exemptions established by Section 6. The petitioner is of the opinion that the decision discriminates in favor of the physician and against the poor man, who, he alleges, is compelled to pay the physician every time he desires a new supply of any prescribed narcotic mixture.

THE JOURNAL believes that the commissioner's ruling putting certain restrictions on the prescribing of narcotics by physicians, no matter in what degree of attenuation, is a sound one and in the interest of public health and safety. But THE JOURNAL also believes that Section 6 is wholly and indefensibly pernicious. It is true that the commissioner's ruling seems illogical when viewed in the light of the exemptions granted by Section 6. But that is the fault of the viciousness of the Section and is not due to any lack of foresight or wisdom on the part of the commissioner. It remains to be seen if, in the present suit, the court will uphold a ruling which is patently in the interest of public health and safety in spite of the fact that it is at cross purposes with a "joker" put in the same act by Congress, probably without realizing that it was in behalf of the "patent medicine" interests.

Priority in Scientific Work.—The international zoologic congresses have adopted as their regulation on this subject that scientific priority does not date from the day when an oral communication is made to some society, or a MS or drawings presented, but dates from the day when the printed work has been effectively published, that is, its distribution started, so that those interested can take cognizance of it.

Current Comment

THE PHOSPHORUS COMPOUNDS IN BLOOD SERUM

Along with the increasing knowledge of the detailed composition of the blood, and the possible significance of quantitative variations of the normal constituents,¹ has come a desire to make our information in this field as complete as possible. For this reason we refer here to a recent investigation by Greenwald² at the Harri-man Research Laboratory, New York, on the nature of the phosphorus compounds of the serum. As an illustration of the significance which such a factor may assume, one recalls the recent work of Howland and his associates at the Johns Hopkins University, indicating that certain types of acidosis, particularly in children, depend very considerably on the failure of the kidneys to eliminate the phosphoric acid formed in metabolism, and its consequent accumulation in the blood. Phosphorus may likewise be present in blood in the guise of the phosphatids lecithin and cephalin, compounds which belong to the class of lipoids. Lecithin has been associated with all manner of reactions and processes, and is particularly conspicuous in nervous matter, while cephalin has been shown of late to play a facilitating part in blood coagulation as a thromboplastic substance. Greenwald² has found that the phosphorus compounds of serum consist almost exclusively of the phosphorus-containing lipoids—the phospholipins, as he terms them, following the nomenclature suggested by Gies—and inorganic phosphate. Traces of other forms of phosphorus compounds may be present; but the essential content of phosphorus is found in substances of the types mentioned. For all of them satisfactory analytic methods of estimation are now available.³

HYPERGLYCEMIA AND KIDNEY PERMEABILITY AFTER SURGICAL ANESTHESIA

The maintenance of surgical anesthesia seems to be attended with an increase in the sugar content of the blood. The percentage of sugar in the circulating fluid of the body may be more than doubled in the course of a comparatively brief surgical procedure, and the conditions which thereby arise in the blood are such as would lead one to expect an attendant excretion of sugar through the kidneys. A content of more than 0.2 per cent. of blood sugar is not an infrequent observation in the surgical clinics at the end of an operation.¹ This is a condition not unlike that which attends the genesis of glycosuria in the diabetic; yet sugar occurs only occasionally in the urine after operation, about one in fifty cases showing traces.¹ If the observed hyperglycemia represents an

actual increase in the amount of sugar in the blood, why does glycosuria fail to develop after surgical anesthesia although it makes its appearance at many other times? An explanation of this seeming contradiction has been furnished by the observations of Epstein, Reiss and Branower² at the pathologic department of Mount Sinai Hospital, New York. Selecting cases representing simple surgical conditions in which no evidence of renal disease could be found, they compared the functional capacity of the kidneys before and after operations. One of the effects of the surgical procedures common to all the cases studied was a marked diminution in the amount of urine secreted. This is believed to be due undoubtedly in part to the withholding of food from the patient prior to the operation, and to the loss of fluid from the body by sweating during the operation. Postoperative vomiting may also contribute to the loss of fluid. In any event, however, there was a uniform delay in the time of the appearance of phenolsulphonephthalein—the dye used in testing renal function—and a decrease in the amount excreted. In some cases the reduction was very striking. The quantitative decrease after operation ranges from 12 to 73 per cent., the average being about 25 per cent. The New York investigators thus correlate operative procedures under anesthesia not only with an increase in blood sugar content (a hyperglycemia), but also with a reduction or impairment of renal function. From this it is concluded that diminished permeability of the kidneys is responsible for the infrequent elimination of sugar after operations under circulatory conditions in which glycosuria might be expected.

THE SOLUBILITY OF URIC ACID IN URINE

The marked variations in the apparent solvent power of different normal human urines for uric acid has for many years furnished a puzzle to those interested in the biochemistry of the subject. Obviously the total output of uric acid in a given period—a factor dependent in turn on the character of the diet in respect to the abundance or paucity of purin-yielding foods—plays some part in the ability of a given volume of urine to dissolve this compound. Quite aside from this quantitative aspect, however, it has long been apparent that the tendency for urates or uric acid itself to separate as a sediment out of secreted urine is dependent on something further than the total quantities of this purin derivative to be dissolved. It has become more evident in recent years that the reaction of the urine takes a dominant place in the establishment of conditions favoring or opposing solubility, as the case may be. The researches of Hindhede¹ and of Blatherwick² in particular have indicated how variations in the intake of acid or base producing components of the diet may lead to corresponding changes in the reaction of the urine and its consequent solvent power for uric acid. It would be helpful as well as

1. Compare The Lipoids ("Fats") of Human Blood, editorial, this issue, p. 956.

2. Greenwald, I.: The Nature of the Acid-Soluble Phosphorus of Serum, *Jour. Biol. Chem.*, 1916, xxv, 431.

3. Greenwald, I.: *Jour. Biol. Chem.*, 1913, xiv, 369; *ibid.*, 1915, xxi, 29; *Am. Jour. Med. Sc.*, 1914, cxviii, 225; *Jour. Biol. Chem.*, 1916, xxv, 431. Howland, J.; Haessler, F. H., and Marriott, W. McKim.: *Jour. Biol. Chem.*, 1916, xxiv, 18. Bloor, W.: *Jour. Biol. Chem.*, 1915, xxii, 133; *ibid.*, 1916, xxiv, 447; *ibid.*, xxv, 577.

1. Epstein, A. A., and Aschner, P. W.: *Jour. Biol. Chem.*, 1916, xxv, 151.

2. Epstein, A. A.; Reiss, Joseph, and Branower, Jacob: The Effect of Surgical Procedures on Blood Sugar and Renal Permeability, *Jour. Biol. Chem.*, 1916, xxvi, 25.

1. Hindhede, M.: *Skand. Arch. f. Physiol.*, 1912, xxvi, 384.

2. Blatherwick, N. R.: The Specific Role of Foods in Relation to the Composition of the Urine, *Arch. Int. Med.*, September, 1914, p. 402.

interesting to discover all of the main factors on which the uric acid dissolving power of the urine depends, so as to be able on the basis of certain data to foretell approximately how much uric acid would be dissolved by a particular urine. Studies by Haskins³ have furnished at least a partial solution. According to him, and in confirmation of other observers, some urines that are slightly acid and all those that are neutral or alkaline dissolve extra uric acid. On the other hand, Haskins has found that the solvent power of urines of ordinary concentration is distinctly increased by dilution. For instance, the total uric acid dissolved by 100 c.c. of urine after being diluted with 300 c.c. of distilled water may be even twice as much as that dissolved by 10 c.c. of the undiluted urine. Otherwise expressed, dilute urines, when considered in proportion to their concentration, show much greater solvent power than less dilute urines. Sometimes urines show signs of apparent supersaturation with uric acid. They dissolve so much of the substance that they come to contain more than is present in a saturated solution of monosodium urate. Urines passed after sodium bicarbonate or citrate has been taken may behave in this way. Haskins inclines to the belief, already intimated by others, that in all probability, in these cases at least, part of the uric acid is in colloidal solution in a form "stabilized," it may be, by colloids in the urine.

EVEN THE EGGS MAY BE INFECTED

According to a Census Bureau estimate the egg industry furnishes an average of 210 eggs per year or 4 eggs per week for each person in the United States. Their annual value at the point of production is over \$300,000,000. These statistics explain the widespread interest in all facts pertaining to eggs either with respect to their production, marketing, or dietary uses. Why a product so carefully packed away in a well lined shell should become infected and undergo deterioration so easily has been a puzzle to many persons. It is not generally understood that a certain amount of bacterial infection may be found even in freshly laid eggs. Of more than 2,500 fresh eggs examined at the Rhode Island Experiment Station over 8 per cent. showed bacterial infection in the yolk.¹ None of the whites examined showed infection. The percentage of infection obtained for individual hens per year varied between 2.8 and 15, the average being 9. No hen laid all sterile eggs during any full year. The percentage of infection for infertile and for fertilized eggs was essentially the same. The invading organisms occurring included 40 bacterial types, among which were 11 cocci, 28 rods, and 1 spirillum. The most probable source of primary egg infection is the ovaries of the fowl, which become infected by bacteria escaping through the intestinal wall into the portal circulation. The nature of the bacterial species occurring in the primary infection makes clear the fact that primary

infection plays no rôle in bringing about the decomposition of eggs. For the factors determining this result we must look mainly to the secondary infections. The nature and extent of the normal primary infection stands in no causal relation to embryo mortality in incubating eggs, and losses in "dead-in-shell" eggs can not be explained on these grounds.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

COLORADO

Sanatorium Opened.—The new hospital building of the Modern Woodmen of America, Woodmen, was formally opened, September 16. A reception to physicians was held at 4 o'clock. There was a clinic inspection an hour later, and at 7 o'clock the culinary department of the institution was inspected. Dr. James A. Rutledge is medical director and superintendent of the institution.

New State Society Officers.—At the forty-sixth annual meeting of the Colorado State Medical Society, held in Glenwood Springs, the following officers were elected: president, Dr. Alexander C. Magruder, Colorado Springs; vice president, Dr. William W. Frank, Glenwood Springs, and secretary, Dr. Crum Epler, Pueblo (reelected). It was decided to hold the 1917 meeting in Colorado Springs.

Personal.—Dr. John G. Locke, Denver, was elected surgeon-general of the Conference of Foreign Wars of the United States at its annual meeting held in Chicago, August 17.—Dr. Leslie H. Wade, formerly of Battle Creek, has been appointed a member of the Boulder Colorado Sanitarium.—Dr. Frank R. Coffman, deputy city health commissioner of Denver, has resigned.—Dr. Crum Epler, Pueblo, secretary of the Colorado State Medical Society, is ill with diphtheria and under treatment at St. Mary's Hospital.

DISTRICT OF COLUMBIA

Poliomyelitis in the District.—During the week ending September 16, no case of poliomyelitis was reported.

Emergency Hospital Changes.—Dr. Harry S. Lewis, superintendent of the Central Dispensary and Emergency Hospital for the past six years, has resigned, to take effect October 1. Dr. Lewis will enter private practice.—Dr. A. Magruder MacDonald of the house staff has been appointed medical director, to succeed Dr. Lewis in the discharge of his medical duties. It is planned to appoint an administrative officer to take over the business affairs of the institution.

IDAHO

Change in Medical Board.—Dr. W. F. Pike, Twin Falls, has been appointed a member of the Idaho Board of Medical Examiners for a term of six years, succeeding Dr. Clifford M. Cline, Idaho Falls, resigned.

ILLINOIS

Eugenic Law.—State Senator Glackin is framing a bill providing for physical and mental tests of those who desire to marry. The president of the Cook County board and Dr. Adam Szwajkart, county physician, have promised their cooperation.

Sanatorium Well Under Way.—Progress on the Rock Island Municipal Sanatorium has been rapid; six tents have already been erected and four more will soon be ready. The main building is being remodeled, a 12-foot veranda is being built entirely around the building, and a 30-foot section of the veranda is to be enclosed in glass, and the entire veranda screened.—An open air school to accommodate forty pupils is being established by the Rockford Tuberculosis Sanatorium.

Personal.—Dr. S. Claude Andrus, Rockford, has been appointed local surgeon for the Burlington System, succeeding Dr. William R. Franklin, deceased.—Dr. John J.

3. Haskins, H. D.: The Uric Acid Solvent Power of Normal Urine, Jour. Biol. Chem., 1916, xxvi, 205.

1. Hadley, P. B., and Caldwell, Dorothy W.: The Bacterial Infection of Fresh Eggs, Rhode Island Experiment Station Bull., 1916, No. 164, p. 3.

Rendleman, Cairo, was elected president of the Rendleman Family Reunion at the annual meeting of the family, at Alto Pass, September 10.—Dr. Austin J. Brown, Vienna, who was shot in the head by Thomas Hester, September 1, is still under treatment at St. Mary's Infirmary, Cairo, and is not materially improved. The bullet penetrated the skull, and was removed from behind the right ear.—Dr. William G. Hawkey, Belvidere, is a candidate for nomination as coroner of Boone County.—Dr. George M. Manning, Garden Prairie, has sold his practice and will move to Kansas.

Typhoid in Elgin.—The inspector for the state board of health, after careful investigation of the typhoid situation in Elgin, states that since the last week in June, when the first case was reported, there have been eleven deaths from the disease and that at present there are 175 cases in the city; that the epidemic was due to pollution of the water supply, whose source is artesian springs, by infected water from the Fox River. The Elgin Watch Company, as soon as it received information regarding the matter, took steps to correct the defect and also did everything possible for its employees, who were the principal sufferers. It is said that the delay in taking measures to prevent the spread of the disease was due to the fact that the health officer, who is not a physician, failed to appreciate that the reports of cases which were sent to him were anything more than matters of routine. Not until August did the condition receive attention, when Dr. Alban L. Mann, who is in charge of the city laboratory, discovered typhoid bacilli in a specimen sent to him for examination. He immediately took steps to ascertain the cause and to limit the spread of the disease.

Chicago

Hospital Fund Campaign.—The Norwegian Lutheran Deaconess Home and Hospital announces that it will launch next month a twelve-day campaign to raise about \$150,000 for the erection of a new five-story wing, and for a fifth story addition to the wing built in 1912.

Tuberculosis Society Meeting.—The twenty-first meeting of the Robert Koch Society for the Study of Tuberculosis will be held at 12:15 p. m., September 28, in Parlor B, Hotel Morrison. Dr. Robert H. Babcock will speak on "Some Points in Diagnosis and Management," and the president, Dr. John Ritter, will discuss "The Future of the Robert Koch Society."

Pupils as Health Officers.—Health Commissioner Robertson has suggested to the president of the school board that a student be elected by and for each of the public schools, to act as a health commissioner and to cooperate with the principals, teachers and the department of health in maintaining a neat, orderly and sanitary condition about the school and to supervise the distribution of health literature.

Memorial for John B. Murphy.—The John B. Murphy Memorial Association was incorporated in Springfield, September 19, by Drs. William A. Evans, James E. Keefe, Allan B. Kanavel, Frank H. Martin and Frank Crozier. The first step to be taken by the association is to raise half a million dollars, which it has been decided to expend on the memorial. The two requisites of the memorial are said to be that it be permanent and that it be a "living power making for the advancement of surgery on both the scientific and moral sides."

KENTUCKY

Personal.—Dr. Thomas R. Welch, Nicholasville, has been elected secretary of the state tuberculosis commission, succeeding Dr. Col. L. Mervin Maus, M. C., U. S. Army, retired.

Hospital Notes.—The new Carroll County Infirmary, erected at a cost of \$10,000 on the Carrollton-Owenton turnpike near Guerrant, is completed and ready for equipment.—The sanatorium of Dr. Milton Board and the Louisville Neuropathic Sanatorium have consolidated, and will be under the charge of Dr. William E. Gardner. Dr. Board, who retires from the sanatorium, was recently appointed medical examiner of the workman's compensation commission.

MAINE

Personal.—Dr. James F. Faulkner, Gardiner, has returned after several months' service with the Second Harvard Surgical unit at the war front.

Opposition to Medical Examiners' Bill.—The state association of county commissioners, at its recent meeting at Augusta, opposed the medical examiners' bill, and suggested that if the law were appealed a statute should be substituted giving authority to sheriffs and local physicians to

handle the cases which under the present law are in the care of the medical examiners.

MARYLAND

Paper Cup. Order Enforced.—The order from the state board of health requiring soda water and other soft drinks to be sold in paper cups or sterilized glasses, also prohibiting the use of spoons that have not been sterilized, is in effect. The penalty is a fine not exceeding \$500. Inspectors are making a rigid investigation to see that the law is enforced.

Personal.—Dr. William H. Welch, head of the new Hygiene Institute at the Johns Hopkins Hospital, will leave England for home, September 20. Dr. Welch left for England five weeks ago to obtain data in connection with the organization of the Hygiene Institute, which was made possible through a gift from the Rockefeller Foundation.—Dr. Alfred W. Brown, medical superintendent of the Public Athletic League, Baltimore, for three years, has resigned and will practice in British Columbia.

Public Health Service Aids in Infantile Paralysis Campaign.—To prevent the spread of infantile paralysis, the United States Public Health Service has sent to Baltimore, at the request of the state and city health departments, Passed Asst. Surg. James R. Hurley, Asst. Surg. C. H. Waring and seven scientific assistants. Dr. Hurley is in charge and has his headquarters at the health department. It was stated at the public health service that the federal health experts do not regard the situation in Baltimore and Maryland as being critical, but they think it best to grant the request of the state and city authorities for a detail of federal experts to help them fight the malady before it gets a firm foothold. There has been a decided increase in the number of patients reported this week and for this reason Health Commissioner John D. Blake is undecided as to whether he will permit schools to open on September 25, as was decided on three weeks ago. Dr. Hurley has taken charge of the interstate travel phase of the situation, and has announced that no children under 16 years of age will be permitted to leave the city for points outside the state without the United States Public Health Service certificate. In addition to issuing travel certificates, Dr. Hurley has assistants at the railroad depots and steamboat wharves to look after through passenger traffic, and a careful watch is being made for persons evading quarantine restrictions by the use of automobiles. There has also been a decided increase in the number of cases reported from the various counties throughout the state. Sixty-seven positive cases have been reported in the city this year, practically all since July 1, and there have been twenty-seven deaths. Thirty-eight patients are now under treatment, the majority being at the Children's Hospital School.

MICHIGAN

Physician Wins Malpractice Suit.—A suit against Dr. A. M. Wilkinson of Charlevoix to recover for alleged improper treatment of a severe burn of the hands of a 17 months old child, was tried in the circuit court last week and after three days, the jury brought in a verdict "no cause of action." This is the second time suit has been brought against Dr. Wilkinson in this case. The first suit was entered in the name of the father, but the plaintiff's expert refused to testify; the second was instituted in the name of the child with the father as the next friend.

MISSOURI

Medical College Closed.—It is reported that the Southwest School of Medicine and Hospital, organized last year following the closing of the Kansas City Hahnemann Medical College, has disposed of its equipment and will not be reopened.

Personal.—Dr. Frederick B. Kyger, chief of the inspection corps of the Kansas City public schools, resigned, September 5.—Dr. Edward F. Higdon, Richmond, has been appointed assistant physician at State Hospital, No. 2, St. Joseph.—Dr. Daniel R. Hill, physician for the Jasper County public health board, has resigned the care of the clinic and free sanatorium in Webb City.—Dr. Floyd H. Spencer, St. Joseph, has been appointed acting coroner of Buchanan County.—Dr. William S. Culpepper, Willow Springs, has been appointed division surgeon for the Frisco Railroad at Willow Springs, succeeding Dr. Hilliard J. Rowe.

St. Louis

Waste Paper Sold for Tuberculosis Benefit.—The St. Louis Tuberculosis Society has collected and sold nearly 1,000,000 pounds of waste paper during the last six months.

Personal.—Dr. Leon F. Shackell of Washington University has been appointed an instructor in physiology at the University of Utah Medical School, Salt Lake City.—Dr. Fred B. Abbott has returned after six months' experience on the war front in France as a member of the Harvard Surgical Unit.—Dr. James R. Clemens has been elected dean of the John A. Creighton Medical College, Omaha.—Dr. Cleveland H. Shutt has been reappointed health commissioner of St. Louis.—Dr. Scott Heuer sailed from New York, July 30, on the *Lafayette* to join the American Ambulance staff in Paris.—Dr. Charles L. Wilson announces his retirement from the practice of medicine.

NEBRASKA

State Secretaries Organized.—At a meeting of the board of health secretaries, held at Lincoln recently, reorganization was effected, with the following officers: president, Dr. Charles T. Burchard, Falls City (reelected); vice president, Dr. Herschell B. Cummins, Seward; secretary, Dr. E. Arthur Carr, Lincoln, and treasurer, Dr. Lucien Stark, Hartington.

St. Joseph's Hospital Day.—The Commercial Club of Alliance and the Box Butte County Medical Society united in securing a special attraction for the meeting of the society held in Alliance, September 15. The program was especially in honor of St. Joseph's Hospital, Alliance, and included a luncheon given by the medical society and the Commercial Club, at which Dr. Herbert A. Copsey presided as toastmaster. A public meeting was held in the afternoon at which John W. Guthrie delivered an address on St. Joseph's Hospital, and Dr. Palmer Findley, Omaha, spoke on "The Popular Heroes of Medicine." A banquet was given by the hospital committee of the Alliance Commercial Club to the medical society and visiting physicians at which the oration in medicine was delivered by Dr. Arthur D. Dunn, Omaha, on "Syphilis in Relation to Internal Medicine," and the oration in surgery was given by Dr. Palmer Findley on "The Cancer Problem, with Special Reference to Cancer of the Uterus."

NEW YORK

Personal.—Dr. Hermann M. Biggs, state commissioner of health, was successfully operated on at Rochester, Minn., for chronic appendicitis and gallstones, September 14.—Dr. Charles W. Pilgrim, superintendent of the Hudson River State Hospital, has been appointed president of the state lunacy commission.

Paratyphoid at Camp Whitman.—There are 4,500 men in quarantine at Camp Whitman. There is one positive case of paratyphoid fever in the hospital of the Third Infantry, two others are thought to have the disease and there are seventeen suspects from the Fourteenth Infantry. In order to make provision for the examination of the militiamen a laboratory unit of the state department of health has been established at the camp in cooperation with the army medical officers. Dr. Augustus B. Downing, director of the laboratories of the department, is in charge. General vaccination of the troops has been begun by a staff of twenty-two physicians.

Physical Training Program Adopted.—The state board of regents, while in session at Syracuse, gave its unanimous approval of the physical training program for the schools of the state, as recommended by the state military training commission. This program calls for all the minimum time to be devoted to physical training in the schools which is prescribed by law, that is, an average of twenty minutes a day, or 100 minutes a week. The general plan is the most comprehensive health education and physical training program ever adopted by a state. A statement issued by the regents shows that every feature is already in successful operation in some of the most progressive schools of the state.

New York City

Personal.—Dr. Arthur Ginnever has returned home after a two months' tour of inspection of the military hospitals in France in the interests of the British War Relief Association in this country.—It is reported that Dr. Joseph A. Blake, formerly of this city, who is now head of the American Ambulance at Neuilly, is ill in the hospital.—Dr. Roy S. McElwer has returned from Germany.

Dental Schools Consolidate.—A plan has been adopted whereby the New York School of Dental Hygiene has become allied with the Columbia School of Dentistry, recently established and affiliated with the College of Physicians and Surgeons. The school will open, September 27, in the Vanderbilt Dental Clinic. The Rockefeller General Education Board

has given the school of dentistry \$2,500. The administrative boards of the two schools are practically identical.

Infantile Paralysis.—The reports of the health department for the week ending September 16 do not show the reduction in the number of cases of infantile paralysis that had been expected. There were forty-one new cases reported on Friday and Saturday of this week, whereas earlier in the week the new cases averaged about thirty-one daily. The total number of cases thus far since the outbreak of the epidemic is 8,731, with 2,172 deaths. This increase in the number of cases has influenced the United States Public Health Service to continue its work of inspection of travel as long as present conditions continue.—It is stated that public health officials are inclined to consider October 2 a safer date for opening schools than September 25.—Fifty of the 100 monkeys brought from the Orient for research work in connection with the study of poliomyelitis are on their way from San Francisco to the Rockefeller Institute. The remainder of the monkeys have died from lung trouble since arriving in this country.

Sanitary Survey of Office Conditions.—The August *Bulletin* of the department of health gives the results of a series of investigations of an office block in the downtown district of the city which was undertaken with the purpose of establishing certain facts regarding the conditions under which office employees are obliged to work in certain sections of this city. All the details with reference to the construction and character of the buildings were recorded, the methods of ventilating, lighting, heating, cooling, cleaning, character of plumbing, kind of business carried on, number of employees, etc., were investigated, and account was taken of welfare, relief work and all conditions surrounding the workers which could be considered as giving data from which general conclusions could be drawn. Among the most interesting points brought out were those regarding the character and quality of light and the amount of ventilation found. The percentage of those using artificial light was found to be 85.33, while only 14.67 were using natural light. It was found that much attention was bestowed on the esthetic effects in lighting and very little to the physiologic effects. There was evidently no standard as to the quality or quantity of light furnished to employees. The two greatest deficiencies were insufficient light and too much artificial light. As to ventilation it was shown that there was quite a sufficient quantity of floor space available for ventilating, but that it was not in use. About 18.6 per cent. of the individuals in this block did not have a sufficient quantity of floor space allotted them. The average temperature of the offices was found to be from 2 to 3 degrees too high, while the humidity showed an enormous reduction in comparison with that of the outside atmosphere. The report states that there is no doubt that the rapid change from the conditions indoors to the outside is largely responsible for the prevalence of catarrhal conditions of the mucous membrane of the nasopharynx.

NORTH DAKOTA

Bristol Resigns.—Dr. Leverett D. Bristol, in charge of the state public health laboratory, Grand Forks, has resigned to accept a teaching position in the department of public health and preventive medicine at Harvard University. He will also be a member of the staff of the Boston Dispensary.

Hospital Notes.—The Dunn County Hospital Association has been incorporated with the view of locating a hospital at Dunn Center to cost \$50,000. It is proposed to immediately erect a temporary frame structure for present use and to proceed with the erection of the new hospital early in the spring.—Plans for the new addition to the St. Luke's Hospital, Fargo, are completed and the work of construction will begin shortly. The new building is to be constructed in the rear of the present building, and will double the capacity of the institution.

OHIO

Personal.—Dr. Robert G. Paterson, Columbus, has resigned as director of the department for the study and prevention of tuberculosis for his old position as secretary of the Ohio State Society for the Cure and Prevention of Tuberculosis.—Dr. Diego Delfino, Alliance, has been ordered to report for service as surgeon in the Italian army.—Dr. Charles H. Merz, has been elected president of the Erie County Automobile Club.—Dr. Erl A. Baber has been appointed superintendent of the Dayton State Hospital.—Dr. Thomas A. Dickey has been appointed president of the board of trustees of the Middleton Hospital.

PENNSYLVANIA

New Hospital Opens.—A new emergency hospital for the treatment of infantile paralysis has been opened in Rosemont. It is to be conducted as an emergency ward of the Bryn Mawr Hospital and will be utilized for the treatment of infantile paralysis originating along the "Main Line." Dr. Reynolds of the Bryn Mawr resident staff is in charge of the new institution.

Personal.—Dr. Archibald W. Dunn, Willow Grove, has been appointed professor of physiology and biology in the American College, Peking, China.—Dr. Samuel A. Leinbach has been appointed president of the Quakertown Board of Health.—Dr. Charles E. Roderick has resigned from the staff of the Hazleton State Hospital, to take charge of the new laboratories of the Florida State Board of Health at Tampa.—Dr. William B. Beaumont has been appointed local surgeon for the Lehigh Valley Railroad at Laceyville.

Philadelphia

Personal.—Dr. Alexander Johnson, for thirteen years secretary of the National Conference of Charities and Correction, has been selected as the expert for the Colorado State Survey Commission to investigate and make recommendations concerning the care of mental defectives and insane in the state, and the charities and corrections departments of the state.—Dr. Julius E. Foerenbach has been appointed assistant medical inspector.

Campaign for Clean Streets.—A campaign for cleaner streets is being urged by various medical societies, civic associations and business men's organizations throughout the city. The Walnut Street Business Men's Association has recently joined in this general protest. At a special meeting of this association, September 14, the association urged the prosecution and fining of owners of unoccupied properties, particularly in the district bounded by Race and South streets and the Delaware and Schuylkill rivers.

Food Vendors Fined.—In the general health crusade for cleaner and better food which is being waged by the bureau of health and sanitation, vendors of fruit, cakes, meats and vegetables who display their wares uncovered, an action violating the present laws, have been forced to display their goods either in glass cases or covered by netting. Inspections are made by representatives of the health department daily throughout the city and a great many dealers who have not heeded the law have been fined. Several were held under bail ranging from \$400 to \$600.

Infantile Paralysis Decreasing.—The epidemic of infantile paralysis which has been sweeping this section of the country shows an abatement in Philadelphia and Pennsylvania, and also in the neighboring cities. Ten new cases with one death were reported in Philadelphia, September 16. The new cases in the state outside of Philadelphia totaled nine, and the new cases recorded throughout the adjoining state of New Jersey, on September 16, aggregated thirty-three. The total number of cases reported to the state health department on September 14 from July 1 was 1,231; 535 of these occurred outside of Philadelphia and during the period mentioned 305 deaths have occurred. An additional appropriation of \$70,000 to carry on the campaign against the disease will be asked for from councils by Director Krusen, September 21. The director also makes an appeal for blood from persons who have had the disease. A committee has taken in charge the work of raising funds to administer after-treatment to the victims of this malady. One hundred patients are now being cared for by the Episcopal Hospital and the Wynnefield branch of the Children's Hospital. The Jefferson Hospital has offered fifteen free beds, the Mary Drexel Home, six, the University of Pennsylvania Hospital, 14, and the Frankford Hospital, six. Thirty-six convalescents are now ready to leave the Municipal Hospital and receive this important after-care.

CANADA

Personal.—Dr. George D. Porter, Toronto, was reelected secretary and Senator John W. Daniel, M.D., St. John, N. B., was reelected president of the Canadian Public Health Association at the annual meeting held in Quebec City, September 13 and 14.—Maj. George T. McKeough, M.D., Chatham, Ont., has returned from England, where he was a member of the medical boards at Folkestone and Bramshott.—Capt. J. Harry McPhedran, Toronto, who has been appointed to the pension board under Lieut.-Col. P. Walter McKeown, Toronto, is returning to Toronto on two months' leave of absence.

Tuberculosis Among Canadian Troops.—The Dominion Hospitals Commission has arranged for a conference of experts on tuberculosis in Ottawa to deal with the question of tuberculosis among the Canadian troops. Dr. Alfred Thompson, M. P., Yukon, the chief medical officer of the commission, is to be presiding officer, and those who have been called to the conference are: Dr. Edward R. Baldwin, Saranac Lake, N. Y.; Dr. Charles D. Parfitt, Calydon Sanatorium, Gravenhurst, Ont.; Dr. Jabcz H. Elliott, Toronto, and Dr. John R. Byers, Ste. Agathe-des-Monts, Que. These experts will be asked to advise the commission regarding the location of sanatoriums, the most recent methods of treatment, diet and exercise, the maximum and minimum capacities of sanatoriums, as well as other questions pertaining to the disease. There are already 370 tuberculous soldiers in the sanatoriums of the various provinces, and of these 175 have been overseas. Of those who go overseas about thirty Canadians return to Canada every month affected with the disease.

The Returned Soldiers and Tuberculosis.—The Canadian Hospitals Commission has presented reports bearing on the question of tuberculosis and other disease conditions in returned soldiers. A deputation from the Muskoka institutions has waited on the commission and discussed with them the question of increased accommodation to take care of soldiers in those institutions. The matter was left in the hands of the medical superintendent and to committees for Ontario and Quebec, which will call to their assistance certain experts in order that the commission may outline a definite policy which will deal permanently with the situation. The present number of men, tuberculous patients, in the various sanatoriums in Canada is 370, of whom 175 have been returned from overseas. With regard to the other institutions, the various convalescent homes, there are at present 368 overseas patients, 269 nonoverseas, and from 700 to 900 outpatients who are receiving treatment. According to the latest returns from the director of the medical service for Canada and England, there were, August 4, 12,900 Canadian inmates in Canadian and other hospitals, sixty-three being in special sanatoriums. The percentage from loss or wastage has been reduced from about 80 per cent. to about 17 per cent. This is said to have been brought about by a system of physical drill which has been established, and a similar system is now being established in the convalescent homes and hospitals in Canada, three being at present operating in Montreal, Kingston and London. Negotiations are in progress whereby the new hospital for the insane at Whitby, Ont., may be handed over, by the Ontario government, for returned soldiers.

University News.—At a recent meeting of the governors of the University of Toronto, warm reference was made to the late Dr. Thomas G. Brodie, professor of physiology, as "one of the leading experimental physiologists in the English speaking world." Deep regret was also expressed at the great loss the university has sustained.—The reduction in fees, owing to about one half of the students having volunteered for overseas service, will result in the governors having to face for the past fiscal year a deficit of \$130,000. The total annual budget of the university is about \$900,000, and the greatest economy will be practiced in the ensuing year in order that the financial condition of the institution may be bettered.—Great advances have been made in the facilities for students to follow postgraduate work, and definite new groups and classes will be hereafter followed as in undergraduate work. New fellowships have been added. The value of each is \$500 for one year with free tuition, and these may be renewed for a year. There are also special departmental fellowships in political science, anatomy, and medicine and also the American Alumni Research Fellowship.—Patriotism has greatly affected the attendance in the past two years. All the faculties, however, will continue work as usual during the session of 1916-1917, although the attendance at the university will be very much lower than heretofore. In medicine, the registrar's office reports many inquiries from prospective entrants. The senior years in medicine have not been drawn on nearly so much as in other departments because a graduate is more to be desired than an undergraduate in war work.—A new gymnasium has been completed during the past year, and a woman's residence and union have been acquired.

GENERAL

Aid for Belgian Physicians.—The report of the treasurer of the committee of American physicians for the aid of the

Belgian profession lists no contributions for the month of August.

Previously reported receipts.....\$7,946.86

Previously reported disbursements:

1,625 standard boxes of food at \$2.20.....	\$3,575.00
1,274 standard boxes of food at 2.30.....	2,930.20
353 standard boxes of food at 2.28.....	804.84

Total disbursements 7,310.04

Balance\$ 636.82

F. F. SIMPSON, M.D., Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh.

Bequests and Donations.—The following bequests and donations have recently been announced:

Home for Orphans and Friendless Children, Neffsville, Pa., \$2,000, and Philadelphia Home for Incurables, \$1,000, by the will of Mrs. Mary S. Geiger, Philadelphia.

Brownsville (Pa.) General Hospital, between \$1,500 and \$2,000, as the result of a tag-day campaign, September 4.

St. Christopher's Hospital, Philadelphia, \$2,500; Presbyterian Hospital, and Rush Home for Consumptives, each \$5,000, by the will of Eugene I. Sauter.

St. Christopher's Hospital, Philadelphia, for the endowment of a free bed, \$5,000, and Philadelphia Day Nursery, \$1,000, by the will of Theresa Scott.

Prize Awarded Four Times to Lloyd.—At the annual meeting of the American Pharmaceutical Association at Atlantic City during the week of September 4, the Ebert prize was awarded to Prof. John Uri Lloyd for his discoveries in the colloidal precipitation of alkaloids by fuller's earth. This prize is awarded by the association to the member who presented the most meritorious paper at the previous annual meeting. Professor Lloyd has received this prize four times.

Florida and Alabama Physicians to Meet.—Physicians of West Florida and Southern Alabama will meet at the invitation of the Escambia County Medical Society at the state laboratory at Pensacola, October 25 and 26. On each day there will be a scientific session from 9 to 11 o'clock. Clinics will be held from 11 to 1, and in the afternoon entertainments of various kinds will be provided by the hosts.

Railroad Service Men's Meeting.—The fourteenth annual meeting of the Pacific Railway Surgeons Association was held at the Palace Hotel, San Francisco, August 25 and 26, under the presidency of Dr. Hiram W. Fenner, Tucson, Ariz. The following officers were elected: president, Dr. William T. Cummins, San Francisco; vice presidents, Dr. James A. Ketcherside, Yuma, Ariz., and Alvin Powell, Oakland, Calif.; secretary, Louis P. Howe, San Francisco, and treasurer, Ernest M. Keys, Alameda, Calif.

Medical Association of the Southwest.—The eleventh annual convention of this organization will be held in Fort Smith, Ark., on October 2, 3 and 4, under the presidency of Joseph D. Breton, Greenville, Texas. Dr. John Ridlon, Chicago, will conduct a clinic on congenital dislocation of the hip, and Fenton B. Turck, New York, will demonstrate his work on diseases of the stomach. The three divisions will be devoted to papers, discussions and clinics.

WAR NOTES

Third Red Cross Unit Sails.—Dr. Daniel Fiske Jones, Boston, sailed for Liverpool, August 17, on the *Lapland* in charge of the third Harvard Red Cross Unit, twenty-two in number, who go to work in the British hospitals on the west front to replace the first and second army units.

Work of Murphy Unit Completed.—The hauling down of the American Flag, which marked the location of the field hospital established by the late Dr. John B. Murphy on the western front, is due, it is explained, to the fact that the work for which the hospital was established has been completed and that the surgeons and nurses have returned to America. It has therefore been turned over to a staff of English surgeons and nurses.

FOREIGN

Leprosy in Sardinia.—A ward in the public hospital at Cagliari has been set apart for lepers with open lesions and when strict and certain isolation cannot be counted on at home. The prefect ordered notification of every case of leprosy at whatever stage it may be, and the university clinic for skin diseases will then take necessary steps to isolate the patient if needed, with disinfection of the dwelling, periodical surveillance of the family and removal of the children from the close environment of the leper.

Prize for Milk Container.—According to the *Annali d'Igiene* of Palermo the local authorities at Bologna have offered a prize of 250 lire (\$50) for a small glass container for milk to be delivered at the home and for a large metal container for milk in bulk. The method of closing the containers must

be economical, practical and hygienic, and offer the best guarantees against fraud.

Deaths in the Profession Abroad.—V. Gilbert, a leading physician and sanitarian of Geneva, Switzerland. For some years he had been chief of the medical staff connected with the federal railway system, president of the Société médicale de Genève, and author of numerous articles on auto-serotherapy in pleurisy, on tuberculosis, etc. He has had charge of the transportation and distribution of most of the disabled, sick and wounded soldiers sent to be interned in Switzerland. —A. Charpentier, professor of medical physics at the University of Nancy, aged 64. His research and publications have been devoted almost exclusively to the physical and physiologic attributes of light. Some of his works, notably, "Vision from the Standpoint of General Medicine," and instruments devised to facilitate his research were awarded prizes by French societies.—Dr. Tedeschi, physician in chief of the colonial forces in the French army.

Russian Chemicals and Drugs.—Professor Maecel Lauwick of Ghent University, Hon. Secretary of the Société d'Etudes Belgo-Russes, reports that many commercial organizations were founded in Russia last year for the manufacture of chemicals and drugs. They were twenty in number, against sixteen in 1914, with a capital of \$12,000,000, against \$4,500,000 in 1914. Previous to the war the home production of benzol was only about 50,000 pounds (500 tons); imports came exclusively from Germany. Russia has constructed many new coke ovens. Odessa is now a center of chemical industry, particularly for sodium salts, iodine, iodoform, copper sulphate, bichlorid of mercury, chloroform, chloral hydrate, etc. Among other products being made in Russia are formaldehyd, hexamethylenamin, lanolin, tannin, morphin, caffeine, atropin, etc. Before the war the Russian market was entirely dependent on Germany for instruments. In 1913 Russia imported from Germany \$250,000 worth of surgical instruments and over \$2,000,000 worth of scientific and chemical apparatus. A factory for surgical instruments was constructed during the first weeks of the war at Pavlovo, near Moscow. The value of the production last year was about \$500,000, the prices being 30 per cent. cheaper than those of goods imported from abroad.

PARIS LETTER

PARIS, July 13, 1916.

The War

TREATMENT OF WAR WOUNDS

At the Réunion médico-chirurgicale de la V-e Armée, Dr. Lemaitre gave an account of the various stages of his surgical experience since the commencement of the war. At the commencement he was in the habit of resting on the expectative, and intervening only when phenomena of infection manifested themselves. The results were deplorable. During the second phase, having come to the conclusion that all war wounds should be treated as infected, he used to operate immediately, making free openings. The results were better, but suppuration invariably appeared in a few days or weeks with a considerable loss of tissue from sloughing. In the third phase, in order to avoid the sloughing and suppuration, he resected all the necrosed parts and explored systematically the wound for projectiles. He used as his guide in this search the blackening of the track of the bullet. This new procedure was again marked by improvement, but the wound tended to remain grayish in color and wanting in tone. Usually there was a good deal of discharge for at least a week. In the fourth phase he acted on the supposition that in the course of his systematic exploration of the wound he was inoculating one part from another by means of his instruments. Therefore, in the fourth stage he practiced complete drying of the wound, followed by treatment with tincture of iodine in order to destroy the micro-organisms which he had involuntarily sown on the surface. The results were now very much better; there was no suppuration or fever, and the wound granulated rapidly and was of a healthy appearance. He tried Carrel's method, but obtained results distinctly inferior to those he was already having. Since July, 1915, he has returned to the method of his fourth phase, supplemented by early tentative incomplete suture. The results have been so encouraging that he has increased the number of the sutures and applied the method to a larger proportion of his cases. This method is still in use and may easily be described as follows: (1) free exposure of the track of the projectiles; (2) removal of all foreign bodies and all necrosed or detached tissues; (3) drying of the wound and treatment of its surface by tincture of iodine; (4) bringing together of the edges by provisional

sutures with drainage from the most dependent part either by the wound or by a counteropening.

Dr. Rocher is of the opinion that in wounds of the soft parts, especially in those due to shell fragments, it is not enough to remove the foreign bodies from the track or from the tissues which surround it. Nor should one trust entirely even to the most meticulous cleaning up with the usual antiseptics. It is, above all, necessary to excise all necrosed tissues, notably muscular masses which appear flaccid, pale or purplish, for it is in these that usually lie the germs of putrid suppuration and gaseous gangrene. This sacrifice of muscular tissue will often have to be considerable, but should always be carried out with discretion. In particular, one should be on one's guard against a future vicious position of the limb. In these circumstances surprising results are obtained as to the rapidity of the granulation and cicatrization of the wounds, and subsequently it is found that the function of the limb is scarcely, if at all, affected. Flat dressings, free drainage, exposure of the wound during cicatrization and secondary suture give greater security, which compensates for the time which might have been gained by an attempted primitive suture. Indeed, the latter operation would seem somewhat impracticable in a busy surgical formation at the front.

Dr. Proust, also, who is a member of the Faculté de médecine de Paris and a hospital surgeon, has laid before the Société de chirurgie de Paris an interesting note based on eighteen months of work in ambulances at the front. He first takes up the question of projectiles themselves. In the earliest part of the war most of the wounds were bullet wounds with only slight infection of the track. After these came shrapnel and shell fragment wounds. Later the trench warfare produced bullet wounds inflicted at close range and showing explosive effects. Still later there occurred more serious anatomic destruction caused by the frequent use of torpedoes, of hand grenades and high explosives. With regard to the infection of wounds, Proust remarks that the gravity of the wounds in the early part of the war was more particularly due to the defects in the organization of the service. Later it was attributable to the nature of the projectiles, to the multiplicity of wounds in one patient and to winter conditions in the trenches. From May 5, 1915, to Feb. 5, 1916, ten months, the surgical automobile ambulance No. 1, which was under Proust's direction, cared for 1,800 wounded. All the wounds were serious, since these formations are especially intended for the treatment of grave injuries. Of the 1,800 wounded, 419 died, which gives a mortality of 23 per cent. This high mortality is explained by the fact that the wounds are always infected. The infection may come from the projectiles or from fragments of clothes. The latter, being impregnated with filthy mud, are particularly dangerous. The tissues are torn and contused. The muscles which are injured are particularly liable to gangrene, and this may, in part, be explained by the depreciations which have been produced in them by fatigue and exhaustion. To these conditions should be added vascular lesions which are very often venous, probably due to the explosive action of projectiles. These are the principal reasons for the gravity of the wounds, and it is from them that one may draw indications for treatment. We must transform an irregular bullet track into a clean operation wound with free exploration. Proust drew special attention to certain points. In view of the frequency of tears of the venous trunks, he recommends ligature of the vessel outside the primitive lesion above and below and the removal of the injured section. The same is true of arterial lesions. The most serious factor is the injury of bone. Free fragments must be removed, but others must be treated prudently. As to joint wounds, this is Proust's formula: Every articulation that has been penetrated by a projectile other than a bullet must be freely opened. Drainage must be assured even if for that it is necessary to perform a resection, such as that of the patella or of the astragalus. In nerve injuries, operative indications are exceptional. Immediate sutures have been twice practiced in Proust's ambulance. For dressings Proust has recently employed almost exclusively Dakin's solution, salt water and magnesium chlorid. For fresh superficial wounds or for such wounds as result from circular amputation, hypertonic solution, 14 per cent., is, in Proust's opinion, the ideal topical application. It opposes putrefaction of the wounds, but its use must not be too much prolonged and it must be replaced soon by solutions of magnesium chlorid, which seem to have a maximum stimulating effect on the regenerating of the tissues and give admirable wounds. In the presence of lacerated wounds, whose infection is refractory in spite of

free opening, Proust had the best results from Carrel's method, that is to say, discontinuous irrigation with fresh Dakin's solution. If the infection is characterized by a reddish color of the tissues and bronzed infiltration, Proust substitutes ether for Dakin's solution. Thanks to this careful selection of topical applications, local accidents, such as diphtheria of the wounds, abundant suppuration, etc., have become a thing of the past. Unfortunately there exists a class of infections against which one is helpless. These are the massive primitive infections. Thus in some wounded soldiers one observes, a few hours after the injury, a high temperature, a pulse scarcely perceptible, and hippocratic facies, contrasting strongly with a sense of general well-being or even of excitement. Left to themselves such patients die in from twenty-four to thirty-six hours. The wounds have often a gangrenous smell; the freest opening is useless. Amputation alone can save life, and then only if it is rapidly performed so as to avoid shock. When obliged to amputate, Proust has always adopted the circular operation. He remarks that even if one passes well above the lesion and operates in parts which apparently are healthy, one must always cut through a vascular sheath or bone marrow already infected in some degree, and the slightest attempt to bring together the soft parts in such cases results in serious complications, and may even cause osteomyelitis of the stump.

COMPLETE DIVISION OF THE FEMORAL ARTERY AND VEIN WITHOUT HEMORRHAGE BY A FRAGMENT OF SHELL

Dr. Jumon reported to the Réunion médicale de la I-ère Armée the case of a soldier who had the femoral vein and artery cut at the point of Scarpa's triangle by a fragment of shell but who, for several days, had no hemorrhage, although no tourniquet or ligature had been applied. The retracted ends of the vessels were distant from one another 5 cm. (2 inches). Clots assured the hemostasis in spite of an intense suppuration of the wound. The suppuration was due to the presence of a fragment of shell in the muscles, and it was accompanied by septicemic phenomena and considerable phlebitic reaction of the femoral vein. The artery and vein were ligatured and the fragment of shell removed. The progress of the case was uninterrupted.

Marriages

GEORGE JOHN MARQUETTE, M.D., to Miss Mona Beaumont, both of Deer Lodge, Mont., at Rock Creek Lake, Mont., September 6.

UDO JULIUS WILE, M.D., Ann Arbor, Mich., to Miss Katherine Eleanor Work of Elkhart, Ind., at Colorado Springs, August 31.

LEON GRANT SMITH, M.D., Montevideo, Minn., to Miss Edith Jeannette Lumley of Ellsworth, Wis., August 30.

JOHN JOSEPH WHORISKEY, M.D., to Miss Katherine E. McDonald, both of Cambridge, Mass., September 4.

HARRY LEROY GOFF, M.D., Cheyenne, Wyo., to Miss Lola May Buckingham of Chicago, about September 11.

JAMES EDWIN WALSWORTH, M.D., to Miss Margaret Mai Hutchinson, both of Nashville, Tenn., August 24.

ELLIS BENJAMIN FREILICH, M.D., to Miss Mildred Kammann, both of Chicago, about September 6.

JAMES BIRNEY GUTHRIE, M.D., to Haidee Weeks Lathen, D.D.S., both of New Orleans, September 5.

JOSEPH STONE LYON, M.D., Hartranft, Tenn., to Miss Ethel B. Lindsay of Allisonia, Va., September 2.

HARRY ALBERT GILTNER, M.D., Omaha, to Miss Henrietta Till Kuenster of Kansas City, August 28.

CHARLES ALBERT ROBB, M.D., Rock Island, Ill., to Miss Marie Metz of Chicago, September 11.

JOHN REUBEN GREEN, M.D., to Miss Laura Belle Kelley, both of Independence, Mo., August 16.

IRVING CLEVELAND MILLER, M.D., Berlin, Pa., to Miss Violet K. Clark of Meyersdale, Pa., July 12.

SIDNEY L. OLSHO, M.D., to Miss Katinka M. Dannenberg, both of Philadelphia, September 11.

EVAN ELLIS OWEN, M.D., to Miss Marie Katherine Reh, both of Louisville, Ky., September 6.

GILBERT J. WHITE, M.D., to Mrs. Ada Arends, both of Chicago, August 22.

Deaths

Edward Louis Duer, M.D., Odessa, Del.; University of Pennsylvania, Philadelphia, 1860; aged 80; a Fellow of the American Medical Association; surgeon of volunteers during the Civil War and later an obstetrician and gynecologist of Philadelphia; for many years obstetrician to the Philadelphia Hospital; consulting obstetrician to Preston Retreat and Maternity Hospital; gynecologist to the Presbyterian Hospital; consulting gynecologist to the Home for Incurables; one of the founders of, and gynecologist to the Polyclinic Hospital; twice president of the Philadelphia Obstetrical Society; a fellow and once vice president of the American Gynecological Society; died at his home, September 5. Dr. Duer enjoyed a large practice, was loyal and devoted to his patients, thoughtful and considerate of his brother practitioners and a loyal and steadfast friend.

Bernard Charles Gudden, M.D., Oshkosh, Wis.; Rush Medical College, 1879; aged 59; a Fellow of the American Medical Association and one of the most prominent gynecologists of Wisconsin; local surgeon of the Chicago and Northwestern Railway and attending surgeon to St. Mary's Hospital, Oshkosh; in whose honor the Oshkosh Medical Club gave a dinner, April 14, 1911, on the occasion of the thirtieth anniversary of his entrance into the practice of medicine in Oshkosh; is reported to have committed suicide by strangulation, September 14, while of unsound mind by reason of a nervous breakdown.

Capt. Eugene Potter Stone, Medical Director, U. S. Navy (retired), North Sutton, N. H.; Harvard Medical School, 1884; aged 55; a Fellow of the American Medical Association; who entered the navy, Aug. 5, 1886; for a time in charge of the Naval Hospital at Manila, and who was retired, June 24, 1914, with the rank of next higher grade to that held on active list on account of incapacity resulting from an incident of service, after a sea service of eleven years and eleven months, and thirteen years and eight months of shore or other duty at North Sutton; died September 8.

John William Foss, M.D., Phoenix, Ariz.; Harvard Medical School, 1899; aged 54; a Fellow of the American Medical Association, and a member of the House of Delegates in 1905; a member of the Association of Military Surgeons of the United States; formerly secretary of the Arizona Medical Association and Arizona Academy of Medicine; a specialist on diseases of the nose, throat and chest; commissioned captain and assistant surgeon, Arizona National Guard, in 1904; died at his home, July 20, from chronic nephritis.

Joseph C. Carson, M.D., Valparaiso, Ind.; Medical College of Indiana, Indianapolis, 1880; Northwestern University Medical School, Chicago, 1888; aged 66; formerly a Fellow of the American Medical Association; a member of the Indiana State Medical Association; for twelve years coroner of Porter County and a lecturer in the medical department of Valparaiso University; died in Valparaiso, September 6, after an operation for appendicitis.

David Strock, M.D., Waukon, Iowa; University of Missouri, Columbia, 1875; aged 75; formerly a member of the Iowa State Medical Society and president of the Allamakee County Medical Society; a veteran of the Civil War; for thirty-five years a practitioner of Waukon; county physician of Allamakee County; health officer of Waukon, and state oil inspector for the district; died in Dyersville, Iowa, September 2, from arteriosclerosis.

James Edward Oldham, M.D., Wichita, Kan.; Medical College of Ohio, Cincinnati, 1877; aged 68; a Fellow of the American Medical Association, and once president of the Kansas Medical Society; president of the staff of the Wichita Hospital for several years; local surgeon to the Rock Island System and for a time consulting surgeon to the Missouri Pacific Railway; died at his home, September 3, from nephritis.

Thomas Emmett Stratton, M.D., Richmond, Va.; Medical College of Virginia, Richmond, 1863; aged 76; a member of the Medical Society of Virginia; from 1868 to 1870 president of the Board of Health of Richmond and for many years an officer of the United States Public Health Service; who served in the Medical Department of the Confederate Army throughout the Civil War; died at his home, September 6.

Llewellyn Arch Bishop, M.D., Fond du Lac, Wis.; Hahnemann Medical College, Chicago, 1870; aged 70; formerly a Fellow of the American Medical Association; a member of the State Medical Society of Wisconsin; local surgeon to the Chicago and Northwestern, and Minneapolis, St. Paul and Sault Ste. Marie systems; twice mayor of Fond du Lac; died at his home, September 2, from cerebral hemorrhage.

James Rutherford Cannon, M.D., Walker, Minn.; College of Physicians and Surgeons in the City of New York, 1903; aged 34; formerly a practitioner of Irvington-on-Hudson, N. Y., and visiting physician to the Tarrytown Hospital; for the last two years assistant superintendent of the Minnesota State Sanatorium for Tuberculosis, Walker, Minn.; died in that institution, September 5.

George Whiting Ross, M.D., Carrollton, Ill.; College of Physicians and Surgeons in the City of New York, 1879; aged 59; a Fellow of the American Medical Association and formerly president of the Western Illinois Medical and Surgical Society and Greene County Medical Society, and trustee of the Central Illinois State Hospital for the Insane; died August 31, from nephritis.

William Ewing Hallock, M.D., Pittsburgh; University of Pennsylvania, Philadelphia, 1878; aged 67; a Fellow of the American Medical Association and one of the best known practitioners of Pittsburgh; for several years a member of the staff of the Children's Hospital and West Penn Hospital; died suddenly on a Pennsylvania train in the Pittsburgh station, December 4.

Andrew Woods Smyth, M.D., Londonderry, Ireland; Tulane University, New Orleans, 1859; aged 83; from 1862 to 1887 a member of the Louisiana State Board of Health; for many years house surgeon of the Charity Hospital, New Orleans, and later director of the United States Mint; who returned to his birthplace in Ireland in 1894; died near Londonderry, September 4.

Reuben Willis, M.D., Somerville, Mass.; Harvard Medical School, 1867; aged 73; a member of the Massachusetts Medical Society; a veteran of the Civil War; for forty-five years a practitioner of Somerville and a member of the staff of the Somerville Hospital; died in the Robert Bent Brigham Hospital, Boston, September 6, from cerebral hemorrhage.

Stephen Wendell Abbott, Lawrence, Mass. (license, Massachusetts, act of 1894); a practitioner since 1879; formerly a Fellow of the American Medical Association; a member of the Massachusetts Medical Society, and a member of the consulting staff of the Lawrence General Hospital; died in a private hospital in Lawrence, September 1.

George P. True, M.D., Kansas City, Mo.; Kansas City (Mo.) Medical College, 1882; aged 66; sanitary inspector of the Board of Health of Kansas City, and prior to that time assistant superintendent of the Kansas State Hospital, Ossawatimie, and later of State Hospital No. 3, Nevada, Mo.; died at his home, September 1.

Elbert Augustus Ainsworth, M.D., West Union, Iowa; Syracuse (N. Y.) University, 1874; aged 67; city health officer of West Union; local surgeon for the Chicago, Milwaukee and St. Paul Railway; physician of Fayette County and a member of the local board of education; died at his home, August 31.

Percival Goodwin Wardwell, M.D., Beverly, Mass.; Hahnemann Medical College, Philadelphia, 1869; aged 81; for more than forty years a practitioner of Beverly, and at one time city physician; died at the home of his daughter in Maplewood, N. J., September 8, from the result of injuries received in a fall.

Benjamin F. Taylor, M.D., Columbia, Ky.; University of Louisville, Ky., 1879; aged 68; a member of the Kentucky State Medical Association; who was injured when the automobile in which he was riding plunged off a bridge near Columbia, August 22, died from his injuries the next day.

William S. Pickard, M.D., Mikana, Wis.; Northwestern University Medical School, Chicago, 1886; aged 57; a Fellow of the American Medical Association; for many years a practitioner of Maywood, Ill.; died in Mikana, September 10.

Albert Leffingwell, M.D., Aurora, N. Y.; Long Island College Hospital, Brooklyn, 1874; aged 71; president of the American Humane Association in 1904-1905; died at his home, September 1.

Irwin Coleman Sutton, M.D., Los Angeles; St. Louis College of Physicians and Surgeons, 1895; aged 50; formerly of Bancroft, Neb., and Portland, Ore.; a Fellow of the American Medical Association; died in a hospital in Glendale, Calif., August 29, from arteriosclerosis.

George Carleton Parker, M.D., Winthrop, Me.; Dartmouth Medical School, Hanover, N. H., 1881; aged 65; a member of the Maine Medical Association and once president of the Somerset and Kennebec Medical societies; died at his home, September 7, from cerebral hemorrhage.

James G. Turk, M.D., Clinton, Mo.; University of Louisville, Ky., 1857; aged 83; assistant surgeon of the Third Kentucky Volunteer Infantry during the Civil War; for the last twenty-five years engaged in mercantile business in Clinton; died at his home, August 21.

Solomon Baruch, M.D., New York; New York Homeopathic Medical College, New York, 1876; aged 60; formerly captain and assistant surgeon of the Twelfth Infantry, N. G. S., N. Y.; died at his home, September 6, from arteriosclerosis.

James F. Pearce, M.D., Claussen, S. C.; Jefferson Medical College, 1857; aged 81; formerly a member of the South Carolina Medical Association; a Confederate surgeon; for many years a practitioner of Florence County; died at his home, August 29.

John Levant Ramsdell, M.D., Albion, Mich.; University of Michigan, Ann Arbor, 1881; aged 64; a Fellow of the American Medical Association; died at St. Mary's Hospital, Rochester, Minn., September 2, three days after a surgical operation.

William P. Stuckle, M.D., Conception, Mo.; Central Medical College, St. Joseph, Mo., 1896; aged 44; a Fellow of the American Medical Association; died in a hospital in St. Joseph, Mo., August 31, following an operation for appendicitis.

Henri Iskowitz, M.D., New York; College of Physicians and Surgeons in the City of New York, 1905; aged 31; a specialist on diseases of the ear, nose and throat; died September 8, three weeks after a surgical operation.

Baxter Smith, M.D., Bay City, Texas; Tulane University, New Orleans, 1874; aged 70; formerly a member of the State Medical Association of Texas; a Confederate veteran; died at his home, August 25, from malignant disease.

Arthur Marsden, M.D., Rio, Wis.; St. Louis College of Physicians and Surgeons, 1895; aged 47; a member of the State Medical Society of Wisconsin; was found dead in his office, September 1, from heart disease.

Aristide W. Giampietro, M.D., Tampa, Fla.; University of Maryland, Baltimore, 1907; aged 34; a member of the American Chemical Society; died in the Gordon Keller Hospital, Tampa, August 30, from pneumonia.

K. P. Thom, M.D., Gallion, La.; Memphis (Tenn.) Hospital Medical College, 1904; aged 45; was shot and almost instantly killed by Dr. B. McKoin of Mer Rouge, La., in an altercation at Gallion, August 25.

Samuel Moore Reynolds, M.D., New York; Berkshire Medical College, Pittsfield, Mass., 1866; aged 75; for thirty years a practitioner of New York; died in St. Luke's Hospital, September 7, from diabetes.

John H. Nicol, M.D., Kansas City, Mo.; College of Physicians and Surgeons, Keokuk, Iowa, 1878; aged 67; died in Clio, Iowa, July 1, after an operation for the removal of gallstones.

Edward A. Schmitz, M.D., Wauwatosa, Wis.; College of Physicians and Surgeons, Chicago, 1884; aged 55; health commissioner of Wauwatosa; died at his home, August 30.

Michael Lewinski, M.D., New York; Imperial University of Warsaw, Poland, 1885; aged 54; died at his home, September 1, from cerebral hemorrhage.

John S. Crow, M.D., Chicago; Rush Medical College, 1901; aged 53; died at his home, September 11, from carcinoma of the pancreas.

Martha A. Canfield, M.D., Cleveland; Homeopathic Hospital College, Cleveland, 1875; died at her home, about September 4.

George K. Herman, M.D., Chicago; Rush Medical College, 1891; aged 62; died, September 12, from heart disease.

Prudent Bedard, Norway, Me. (license, Maine, act of 1895); aged 63; died at his home, August 29.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

MARK WHITE GOITER SERUM AND MARK WHITE IODINIZED OIL

Report of the Council on Pharmacy and Chemistry

The "Mark White Goiter Serum Laboratories" of Chicago asked the Council to consider its products "Mark White Goiter Serum" and "Mark White Iodinized Oil." The "serum" was claimed to be an "antibody blood serum from a goat with thyroidosis" while the "Iodinized Oil" was said to contain "about 4 grains of iodine" to "each c.c." The therapeutic indications for the treatment were given as:

"Simple or Exophthalmic Goiter, Hyperthyroidism-dosis, Thyrosis, Thyroidosis, Thyrotoxicosis, Dementia."

An ampule (2 c.c.) of the "serum" is to be injected into the thyroid to be followed one week later by an ampule (2 c.c.) of the "Iodinized Oil." Repetition of this "treatment" once or twice a month is advised.

The Council asked for more specific information as to the composition of the remedies, particularly as to the preparation and nature of the serum; it also asked for evidence of the therapeutic value of the preparations. In reply, Mark White wrote:

"All that I can say regarding the serum is that it is made from the blood of goats with thyroid affection, and it has been found that the serum from these goats has antibodies which control, or has curative effect upon thyroid affections when injected into thyroid glands of either humans or animals. As to the iodinated oil, it is only an adjunct or side treatment which is not always used or indicated, and will only be furnished to the physician for use in case in his judgment his patient needs it. We shall also advise the use of quinin . . . when indicated. . . ."

The Council was referred for further information to a paper by Rachel Watkins, M.D., published in the *Illinois Medical Journal*. It is to be noted, incidentally, that the letter-heads used by White in this correspondence bore in one corner the notation "Rachel Watkins, M.D., Practice Limited to Goiter and Other Disorders of the Thyroid Glands," and in the other, "Mark White, Goiter Research."

The information regarding the composition of this goiter treatment, as furnished in Dr. Watkins' paper, was to this effect:

"The medical treatment consists of the administration of a blood serum derived from a thyroidized goat. Formula: Iodine 0.16 grams [according to a correction by Mark White, this should read 0.26 gm.], oil 0.25 c.c., serum q. s. 1 c.c."

This description of the treatment differs from that furnished to the Council by Mark White in that here the iodine and oil appear to be combined with the serum. Dr. Watkins' "formula" implies that the iodine is a routine medication, thus contradicting White's statement, which, in turn, is at variance with the statements made in submitting the treatment.

The Council does not accept any biologic product until its sale in interstate commerce has been authorized by the secretary of the treasury in accordance with the federal law regulating the sale of viruses, serums, toxins and analogous products. The sale of the Mark White Goiter Serum has not been so authorized; consequently even if the preparation complied with other rules of the Council it could not be accepted.

In addition, however, this treatment conflicts with other Council rules. The statements regarding its composition are indefinite and contradictory (Rule 1); the evidence presented to support the therapeutic claims is insufficient in itself and does not appear to have been checked by any disinterested authority (Rule 6). Moreover, the recognized variation in the morphology and pathology of the types of goiter render it impracticable to treat cases of goiter by any routine procedure.

The foregoing report was submitted to the Mark White Goiter Serum Laboratory. In reply, a letter signed "Mark White, V.M.D.," was received, which read, in part:

"... we hope at some future time to be able to give you more detailed information, but as you possibly appreciate that we have experienced for some time a demand on the part of many physicians that we furnish to them our therapy, which necessitates us furnishing it before all the detail work has yet been accomplished, and I trust

cases of the \$50 fee with the additional \$5 for each \$50 increase." It closed with some casuistic arguments, presumably for the purpose of overcoming the physician's scruples, summing up the matter with the statement:

"No right thinking man will allow a narrow and self-seeking system of ethics to stand between him and his duty to the sick and suffering."

About 1912 the name of the concern seems to have been changed, for we have in our files a letter addressed to a layman on the stationery of the "Mark White Goitre Treatment Company." According to this letterhead the product this concern had for sale was "Goitreine" discovered by Mark White, "President and General Manager." Mr. White's letter to the sufferer from goiter assured him that if he would take "Goitreine" he might "be practically sure of an immediate and permanent cure." "Goitreine," according to White, "has absolutely and permanently cured 90 per cent." of all cases of goiter in which it has been used—"and the other ten showed remarkable improvement." It was efficacious for all forms of goiter and "cannot possibly harm."

The person who received this assurance might have had his confidence in it shaken had he seen a copy of the *Denver News* for May 23, 1911, in which was reported a case of collapse and death in a woman following an injection given in White's office. The paper stated that the death certificate was signed by one W. A. Gray and gave "fatty degeneration of the heart and goiter" as the cause of death. Gray, it seems, was the licensed physician employed by Mark White to administer "Goitreine"—if that is what White happened to be calling his product at that time. For here it may be stated, parenthetically, that Mark White is not a physician; he is a veterinarian.

In February, 1913, Mark White sent a circular letter to a number of medical publications with the request that it be printed in full in the next issue, "to cover one full page of space." The letter White wanted printed was addressed to doctors offering to "enter into a copartnership agreement" with such physicians who would be willing to treat "patients with goiter affections on a 50 per cent. commission basis."

"You would be expected to make a cash charge to the patient for the treatment, remitting on the same day our 50 per cent. to us, when ordering the treatment, giving the treatment in no cases for less than \$50.00."

About the same time that Mark White made this "fifty-fifty" offer, he sent in an advertisement to be published in the classified column of *THE JOURNAL*. At that time he was

Photographic reproductions (greatly reduced) of some of the letter-heads used by the Mark White concern during the past five years.

that you will be so kind as to bear patiently with us until we are better in a position to make a complete scientific application and report to you."

White wrote further:

"The serum and iodized oil may be mixed for immediate use, but could not be put up only separate for the use of the profession and the therapy furnished Dr. Watkins she mixed as used."

This statement throws no light on the discrepancies in the statements with regard to the place of the iodized oil in the treatment, namely: (a) the original statement that the oil was to be given a week after the serum; (b) White's statement (quoted earlier in this report) that the oil "is only an adjunct or side treatment" and "is not always used or indicated"; (c) the statement in Dr. Watkins' paper that the oil and the serum are given in combination.

The Council declared the Mark White Goiter Serum and Mark White Iodized Oil ineligible for New and Nonofficial Remedies and authorized publication of this report.

Editorial Note on the Mark White "Serum"

As some of our readers will remember, on April 26, 1913, *THE JOURNAL* called attention to the Mark White preparation which at that time was being exploited from Denver. The Propaganda Department has in its files a number of letters sent out from the Mark White concern at various times. One mailed in May, 1911, on the embossed stationery of "The Mark White Goiter Institute," Exchange Building, Denver, was evidently a general letter sent to physicians, calling their attention to "the most important medical discovery of the age." "Dr. Mark White, a graduate of the University of Pennsylvania," said the letter, had discovered "a simple and harmless remedy" that would cure goiter. "Because of the desire to preserve the secrecy of this remedy it is given only at the office here." It was then suggested that the doctor might send those of his patients who were suffering from thyroidism to the "Mark White Goitre Institute." If he would do so he would be "given a commission of \$10, in

ENTS A WEEK—SUNDAY MORNING, SEPT

DR. MARK WHITE'S NEW GOITRE TREATMENT

is acknowledged today by those who are permanent, but miraculous. The first doubted its permanency, to be one treatment is given by a licensed physician. Write or call for particulars. the age. The results obtained not only Office 203 Exchange Bldg., Denver.

When exploited from Denver the Mark White "goiter cure" was advertised in the daily papers. Here is a photographic reproduction (reduced) of an advertisement that appeared in the *Denver Post*, Sept. 1, 1912.

told his advertisement was not acceptable; we now reprint it, however, free of charge. Here it is:

"WANTED—ONE OR MORE PHYSICIANS in each vicinity to administer and represent our new medical treatment for GOITER. Good margin of profit. Write for copy of contract. The Mark White Goitre Treatment Co., Denver, Colo."

In 1914, White moved to Chicago. At least the card which we reproduce so indicates. At that time, as will be seen, "Dr. Mark White" was "personally associated" with Peter S. Clark, M.D. According to the same card Dr. F. D. Paul of Rock Island, Ill., seems to have been his "associate" for that particular locality. In this connection, it is worth noting that a Rock Island paper, in one of its issues during July, 1913, devoted a good deal of space to "Dr. Mark White" who

was at that time in Rock Island "directing Dr. Frank D. Paul in the administering of the treatment." There was nothing to indicate that this notice was an advertisement or that the editorial appearing in the same issue puffing White's "important cure," was paid for.

Dr. W. A. Gray, who has already been mentioned as White's associate in Denver, seems to have been doing business in Illinois some time in 1913 and a Princeton (Ill.) paper had some uncomplimentary things to say about him. Finally in July, 1913, this item appeared in a Princeton paper.

"Dr. W. A. Gray, the goiter specialist who operated last winter at Princeton and Walnut until he became embroiled with Dr. Mark White, a Denver veterinary and originator of the cure, over a division of the spoils, has opened a goiter institute in Chicago under his own name. Advertisements of the Dr. Gray Goiter Institute appeared Sunday morning in the Chicago *Examiner* and other morning papers. Dr. Gray and Mark White broke off their relations after their disagreement at Walnut, and Dr. Gray slightly changed the ingredients of the goiter cure and started off on his own hook."

One of Gray's advertisements in Chicago newspapers made the claim that "Dr. Gray's New Medical Treatment removes the cause of goiter in seven days."

The Tulsa (Okla.) associate of "Dr." White seems to have been Dr. J. H. Morgan and the Tulsa papers of June, 1914, tell of "Dr." White's visit to that city "for the purpose of instructing Dr. J. H. Morgan in the technique of his new medical treatment for nervous disorders and goiter." Some

Section on Pharmacology and Therapeutics at the Detroit meeting of the American Medical Association last June. The request was refused. Dr. Watkins is apparently no longer connected with White and in fact has protested against the use of her name by White in connection with his "goiter cure."

[After the above was in type and ready for the pages of *THE JOURNAL*, attention was called to the *Official Bulletin of the Chicago Medical Society* of Sept. 16, 1916. This *Bulletin* contained a full page advertisement of the Mark White "goiter cure." The advertiser referred to the preparation as having been "announced to the Chicago Medical Society" and declared it to be "an ethical therapeutic agent." Mark White was described as "a medical research student" but no hint was given that he is a veterinarian. After again emphasizing that "this therapy is ethically proven" physicians were invited to "visit our goats when convenient" and the advertisement closed with the modest claim that "this thyroid therapy has equal curative therapeutic value in these cases as quinin in malaria." And this sort of pseudo-scientific claptrap is presented to a presumably learned profession through its own official *Bulletin*—but what's the use of commenting!]

Correspondence

Malignant Pustule: A Missionary's Observation

To the Editor:—I have often thought of offering the following incident for publication, but not being a medical man, I hesitated to do so.

China missionaries often come in contact with a fatal form of anthrax. It comes sporadically as a malignant pustule on or about the lip, and requires usually less than a week to cause death. Heretofore our American physicians in China have said there was nothing to do for it but cut it all out in the initial stages. As it is difficult to get this accomplished, few, if any, are saved. In a case in which I saw the patient die with it, after the third or fourth day, not only the face and head but also the whole body was swollen, and death occurred shortly afterward.

In 1915 there occurred in the city and district of Haichow, China, an epidemic of rinderpest. The medical missionary, Dr. L. S. Morgan, was called in by the officials to fight it. He discovered from some source that when the rinderpest attacked people, it could be treated with powdered ipecac as a poultice. He tried and found it eminently successful. On hearing him relate his experience, I asked if he thought the ipecac would cure this other form of anthrax. He thought so. I therefore made a practice of carrying the ipecac in my first aid package. Some weeks afterward, being in a distant town, a man came to me with this fatal anthrax, appealing for help. I poulticed him two days successively. The pustule immediately stopped growing, and became soft. On leaving I gave him an extra dose of the ipecac in case of need. The man himself was entirely cured, and, as I afterward learned, the extra dose cured another man. So far as I know this is the first time that fatal anthrax has been treated with ipecac, and it is the only cure I have ever heard of.

(REV.) HUGH W. WHITE, Bedford, Va.

(Yencheng: Kiangsu, China).

Magnesium Sulphate in Burns

To the Editor:—In his article on the use of magnesium sulphate (abstracted in *THE JOURNAL*, Aug. 5, 1916, p. 466), Dr. Meltzer mentions the good results which he has obtained by the use of magnesium sulphate in burns. While government physician in the Pribiloff Islands in the Bering Sea, I had many cases of burns and scalds among the natives. In one case a native had severely scalded both feet by knocking over a bucket of boiling water. The man had to walk 11 miles to the hospital. He had removed his socks and had on a pair of rubber boots. On arrival at the hospital his feet

MARK WHITE'S ORIGINAL TREATMENT FOR
SIMPLE-EXOPHTHALMIC
GOITRE AND HYPERTHYROIDISM,

DR. MARK WHITE

HOME OFFICE AND
PERSONALLY ASSOCIATED WITH
PETER S. CLARK, M. D.,
925 MONROE BUILDING
104 SOUTH MICHIGAN AVENUE
MONROE AND MICHIGAN
HOURS BY APPOINTMENT
3 TO 4 P. M.
PHONE RANDOLPH 1138
CHICAGO, ILL.

ASSOCIATED, BY APPOINTMENT ONLY, WITH
F. D. PAUL, M. D., ROCK ISLAND, ILL.,
W. B. LEE, M. D., NASHVILLE, TENN.,
C. O. RICE, M. D., DENVER, COLO.
J. H. MORGAN, M. D., TULSA, OKLA.,
AND OTHERS

Photographic reproduction (reduced) of the "professional" card used by "Dr. Mark White" after he came to Chicago.

months later—in December, 1915—the following little item appeared in a Tulsa paper:

"Dr. Mark White was found guilty in the county court yesterday of practicing medicine without a license and was fined \$50. Doctor White is a goiter specialist."

In September, 1915, Mr. Thomas S. Hogan, the efficient counsel for the Illinois State Board of Health, instituted action against Mark White for practicing medicine without a license. The case was tried Oct. 15, 1915, and the jury, after being out four hours, returned a verdict of "not guilty." Attorney Hogan attributes the failure to obtain a conviction to the testimony of Dr. Rachel Watkins who said she had a partnership arrangement with White in carrying on the medical business. It was about this time that Mark White seems to have issued some new letterheads. These bore in their upper left hand corner the device "Rachel Watkins, M.D., Practice limited to Goiter and Other Disorders of the Thyroid Glands," while the upper right hand corner read "Mark White, Goiter Research."

On Dec. 9, 1915, Rachel Watkins, M.D., of Chicago read a paper entitled "A Serum Treatment for Physiologically Defective Thyroids, With Clinical Reports" before the Stock Yards Branch of the Chicago Medical Society. The "serum treatment" discussed was Mark White's "Goitreine" which, in the course of its checkered career, had lost its original name by the wayside. This paper appeared in the December, 1915, issue of the *Illinois Medical Journal*.

Probably emboldened by the ease with which a component part of the American Medical Association "fell for" a paper exploiting a "goiter cure," Dr. Watkins requested that she be permitted to read a paper on the same subject before the

were in a sad condition. The right foot was by far the worst, and resulted in the sloughing of the tissues up to the ankle. The foot was dressed three times daily with wet dressing of saturated solution of magnesium sulphate, and between the dressing periods the foot was soaked in this solution. At the end of eighteen days the man was able to return to his work. Also I used magnesium sulphate dressings entirely in the cases of erysipelas, of which there were a great many.

H. ESMOND, F.R.C.S., Union League Club, San Francisco.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

OZONE IN BRONCHITIS

To the Editor:—Can you give me any information with reference to the value of the violet ray high frequency generator with special ozone generator attachment for the treatment of bronchitis? The apparatus is an electrical instrument and is handled in this part of the country by the Charles A. Branstoy Company of Toronto. They also sell a book with the machine, written by Noble M. Eberhart, M.D., Ph.D., D.C.L., professor and head of the department of physiologic therapeutics, medical department, Loyola University, Chicago, professor of high frequency, Illinois School of Electro Therapeutics, author of "Practical X-Ray Therapy," "Vibratory Technique," etc. The apparatus may be all that they claim it to be and I only hope that such is the case. I feel, though, as if I would like to receive some reliable "outside" information regarding same before expending from \$30 to \$40 on it.

D. C. WIGG, M.D., Oshawa, Ont.

ANSWER.—Some years ago the treatment of bronchitis by ozone was thoroughly tried by many physicians and was discarded as being of no value whatever. In fact, ozone may cause more harm than good. It makes very little difference whether ozone is generated by the violet ray high frequency generator, by chemical means, or by a static machine.

TOXIC SUBSTANCE OF POISON IVY

To the Editor:—In your answer to Dr. Leland's communication regarding poison ivy (THE JOURNAL, Sept. 2, 1916, p. 763), you say that the toxic substance is an emulsion which is thick and sticky and which readily adheres to the hands and clothing. Would you object to making this interesting information more clear by stating explicitly what this emulsion is, etc.? Is it sap or a special production of the plant? Is it found in every part or only in some part or parts of the plant? Can it be dried and disseminated by the wind? You say that it is not volatile and yet people seem to contract ivy poisoning who have not been closer to a plant than a number of feet. I have always thought that the poison must pass through the air and be inhaled by persons found afterward to be poisoned. Are the extremely severe cases in which the entire body is covered by the dermatitis due entirely to actual contact with this emulsion by the hands or clothes? These points are extremely important in country practice.

RICHARD COLE NEWTON, M.D., Montclair, N. J.

ANSWER.—The emulsion is the sap of the plant and is found in most of the living parts. The heart wood, trichomes, pollen and ripe fruits do not contain it. It may be collected by making an angular incision into the bark and scraping out the exuded juice with the handle of a teaspoon. As exuded the juice is a viscid, cream-colored emulsion of the consistency of thick cream. On exposure to the air it darkens, becoming brown and eventually black. The sap is composed approximately of resin 80 per cent., gum 5 per cent. and water 15 per cent. The resinous portion is a nonvolatile, amber colored, sticky fluid which is a mixture of two liquid resins only one of which is toxic. The toxic portion is extremely poisonous, 1:1,000 mg. being sufficient to produce symptoms when rubbed on sensitive areas of the skin. The gum is similar to gum acacia and is not poisonous. It contains a powerful enzyme called laccase which, in the presence of air, causes the resin to take up oxygen, resulting in the production of a beautiful, lustrous, durable black varnish. In the Orient the sap of the eastern poison sumac, *Rhus vernicifera*, has been collected for varnishing purposes for more than 2,000 years under the name of Japanese lacquer and in Japan the art of employing the varnish has been brought to a very high state of perfection. The juice cannot be dried to a powder so that it may be disseminated by the wind. When dried it forms the nigrescent, adhesive varnish mentioned

above. The popular belief that the poison may be carried through the air is, with rare exceptions, erroneous. Persons can be poisoned either by touching the toxic plants or by touching articles (such as tools or clothing) that have been in contact with the plants. The exceptions are the instances in which poisoning has resulted from exposure to the smoke from burning stems. It has been shown experimentally that this is physically possible by the carriage of the poisonous resin on particles of soot in the smoke. Other than this there are no authentic cases of poisoning without contact either with the plant or with contaminated objects. The non-volatile nature of the poison, its extreme toxicity, its insolubility in water, and its absence in the cork cells, hairs and pollen have each been demonstrated by elaborate chemical and physical tests. The extremely severe cases of dermatitis covering the entire body have usually been contracted when the patient was perspiring. On drying the body the poison has been spread by the towel. After exposure the exposed area should be swabbed with cotton moistened with alcohol or gasoline, taking care that the solvent is thoroughly removed, otherwise the toxic agent will be spread over a larger area. For further information readers are referred to the recent studies reported by McNair, *Jour. Infect. Dis.*, September, 1916.

VODKA

To the Editor:—1. Can you furnish me with any literature or references on the sale, etc., of vodka as regards Russia? 2. What are the facts regarding the effects of vodka as compared to whisky, percentage of alcohol, manufacture, etc.?

R. W. VAN DEVENTER, M.D., Hardin, Mo.

ANSWER.—1. The following is a list of references to recent articles on the subject:

- Simpson, J. T.: Vodka Prohibition and Russian Peasant Life, *Contemporary Review*, December, 1915, cviii, 729.
- Some Russian Doctors on Prohibition, *Survey*, Feb. 12, 1916.
- Russia's Initial Victory, *Living Age*, Feb. 5, 1916, p. 367.
- Beckterew, V. M.: Abolition of Drunkenness Among Russians: the Moral and Physical Uplift, *Russk. Vrach*, 1915, No. 15, abstr., THE JOURNAL, Sept. 18, 1915, p. 1067.
- Skerwell, A. J.: Russian Vodka Monopoly, *Contemporary Review*, May, 1915, cvii, 572.
- Fight Against Vodka, *Independent*, April 6, 1914, p. 16.
- Russia's Vodkaless Army, *Literary Digest*, Nov. 14, 1914, p. 965.
- Iordanski, V. I.: Burn of Stomach by Strong Vodka, *Izvest. Obsh. Astrakhan Vrach*, 1911, iv, 5.

2. Vodka, or vodki, is a fiery tasting liquor, properly distilled from fermented rye mash but sometimes from barley corn, or potatoes. Before the Russian prohibition act of 1914, vodka was the principal alcoholic liquor consumed in Russia. As it was a government monopoly, the Russian government made every effort to insure a product of high purity, that is, as free from furfural, amylic alcohol, etc., as was commercially possible. In consequence, vodka essentially was an aqueous solution of pure alcohol without color or added flavor. As prepared, vodka contains about 96 per cent. of absolute alcohol, but before being sold at retail it is diluted to contain from 40 to 60 per cent. Its physiologic effects are those of alcohol.

DYEING THE HAIR

To the Editor:—I should like to ascertain a suitable hair dye for changing a spot of white hair dark brown or black. I have a patient who has spots of white skin and one of these spots is on the head. The hair at this place is devoid of pigment. The papers and books on skin diseases recommend walnut stain. My recollection is that following the use of walnut stain there may be marked dermatitis.

K. W. SMITH, M.D., Madison, Wis.

ANSWER.—The dyeing of the hair satisfactorily is a difficult matter except for those experienced in such measures. Nearly all barbers undertake such work; most of them use a paraphenylene diamin solution and iron sulphate to secure a brown color. There is some risk from dermatitis following the use of this solution but, with due caution, it is not great.

TREATMENT OF ALOPECIA AREATA

To the Editor:—Please suggest the latest treatment for alopecia areata. I have been treating a case for more than three years, and still the condition persists.

COLBERT S. DAVIS, M.D., Rock Island, Ill.

ANSWER.—The treatment of alopecia areata is, of course, described in all textbooks on diseases of the skin. The latest treatment advised is vigorous exposure to ultraviolet light from a quartz lamp. Like all other treatments, it is uncertain of results; in fact, there is no method of treating alopecia areata that is sure to make the hair grow.

Medical Education and State Boards of
Registration

COMING EXAMINATIONS

CALIFORNIA: Los Angeles, Oct. 3. Sec., Dr. Charles B. Pinkham, Room 527 Forum Bldg., Sacramento.
COLORADO: Denver, Oct. 3. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.
GEORGIA: Atlanta, Oct. 10-12. Sec., Dr. C. T. Nolan, Marietta.
IDAHO: Wallace, Oct. 3. Sec., Dr. Charles A. Dettman, Burke.
ILLINOIS: Chicago, Oct. 10-12. Sec., Dr. C. St. Clair Drake, Springfield.
IOWA: Des Moines, Oct. 17-19. Sec., Dr. Guilford H. Sumner, State House, Des Moines.
KANSAS: Topeka, Oct. 10-12. Sec., Dr. H. A. Dykes, Lebanon.
MICHIGAN: Lansing, Oct. 10-12. Sec., Dr. B. D. Harison, 504 Wash- ington Arcade, Detroit.
MINNESOTA: Minneapolis, Oct. 3-6. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.
MISSISSIPPI: Jackson, Oct. 24-25. Sec., Dr. J. D. Gilleylen, Jackson.
MONTANA: Helena, Oct. 3. Sec., Dr. William C. Riddell, Helena.
PORTO RICO: San Juan, Oct. 3. Sec., Dr. Quevedo Baez, San Juan.

Medical Council of Canada, 1915 Report

The Fourth Annual Report of the Medical Council of Canada reports that 88 candidates were examined during 1915, of whom 49, or 55.7 per cent. passed, 23 failed and 16 were refused in one or two subjects. The results for graduates of the Canadian Medical Schools represented at the examinations are shown as follows:

Medical School	Total Examined	Passed	Failed	Refused	Percentage Passed
McGill University	25	20	4	1	80.0
Queen's University	31	11	13	7	35.5
University of Toronto..	11	7	2	2	63.6
Western University ...	9	5	2	2	55.6
University of Manitoba	8	5	..	3	62.6
Laval University	4	1	2	1	25.0
Totals	88	49	23	16	55.7

The highest percentage of graduates who passed was obtained by McGill with 80 per cent. The two universities having the lowest percentage of successes were Laval University with 25 and Queen's University with 35.5.

Georgia June Report

Dr. C. T. Nolan, secretary of the State Board of Medical Examiners of Georgia, reports the written examination held at Atlanta, June 1-2, 1916. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 80. The total number of candidates examined was 129, of whom 126 passed and 3 failed. Eleven candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Birmingham Medical College.....	(1915)		82.7
Medical College of Alabama.....	(1890)		82.4
Atlanta Medical College.....	(1915) 88.4; (1916) 80, 81.1, 82.9, 82.9, 83, 83, 83.2, 83.3, 84, 84.1, 84.2, 84.3, 84.4, 84.5, 84.7, 84.7, 84.9, 85, 85.1, 85.2, 85.2, 85.4, 86.1, 86.2, 86.2, 86.3, 86.4, 86.4, 86.5, 86.5, 86.6, 86.7, 86.8, 86.9, 86.9, 86.9, 86.9, 87, 87, 87.1, 87.1, 87.3, 87.4, 87.5, 87.6, 87.7, 87.8, 88.1, 88.2, 88.2, 88.3, 88.3, 88.4, 88.4, 88.5, 88.6, 88.7, 88.8, 89, 89, 89.1, 89.2, 89.2, 89.3, 89.5, 89.6, 89.7, 89.7, 89.9, 90.2, 90.3, 90.4, 90.4, 90.5, 90.5, 90.6, 90.7, 91.3, 91.4, 91.4, 91.4, 91.5, 91.6, 91.6, 91.9, 91.9, 92.1, 92.5, 92.5, 92.7, 92.9, 93.3, 94, 94.8		
Atlanta School of Medicine.....	(1909)		81
University of Georgia.....	(1916) 80, 86.7, 86.9, 87.5, 87.7 88.4, 89.2, 90.3, 91.4, 91.5, 91.5		
Bennett Medical College.....	(1915)		80
University of Louisville.....	(1911)		80
Johns Hopkins University.....	(1912)		89.2
University of Maryland.....	(1915)		90.6
Columbia University, College of Phys. and Surgs.....	(1916)		94.8
New York Homeo. Med. Coll. and Flower Hosp.....	(1914)		86.6
Meharry Medical Coll... (1912) 84.4; (1915) 82.2; (1916) 80.3, 83, 83.1			
University of West Tennessee.....	(1914)		84.7
Vanderbilt University.....	(1914) 81.9, 89.6; (1915) 81.6, 90		
FAILED			
Atlanta College of Physicians and Surgeons.....	(1907)		68.1
Meharry Medical College.....	(1916)		70
Knoxville Medical College.....	(1908)		73.6
LICENSED THROUGH RECIPROCITY			
College	Year Grad.	Reciprocity with	
University of Maryland.....	(1914, 2)	Maryland	
American Medical College, St. Louis.....	(1911)	Missouri	

University Medical College, Kansas City.....	(1904)	Missouri
Columbia University, College of Phys. and Surgs....	(1915)	N. Carolina
Leonard Medical School.....	(1907)	Pennsylvania; (1910) N. Carolina
Meharry Medical College.....	(1912)	Tennessee
University of Tennessee.....	(1904)	Tennessee
Vanderbilt University	(1914)	Tennessee
University of Virginia.....	(1903)	Tennessee

Book Notices

DISEASES OF THE SKIN. By Richard L. Sutton, M.D., Professor of Diseases of the Skin, University of Kansas School of Medicine. Cloth. Price, \$6.50. Pp. 916, with 701 illustrations. St. Louis: C. V. Mosby Company, 1916.

Dr. Sutton is one of the most indefatigable of American dermatologists; a treatise on dermatology naturally comes as a sequence of his labors. He has been an independent investigator, but his work has been constructive and not iconoclastic. As would be expected, therefore, his treatise, while showing his independence of view, is along conservative lines, and is free from the unpardonable sin in a textbook of being controversial. The arrangement is an adaptation from the old classification of Hebra, which is still the most logical one for grouping cutaneous diseases. He gives an admirable preliminary consideration of the principle of dermatology, devoting nearly a hundred pages to this. This work is well done, and it is highly recommended for study to the practitioner who would obtain a grasp of the subject of dermatology as a whole, as distinguished from a smattering knowledge of a few dermatoses.

The remaining pages of the book are devoted to a consideration of the various dermatoses. In this, practically all diseases of the skin are more or less fully described. The commoner diseases are described in detail, the rarer ones briefly, but as fully as could be expected in a work of this size. The descriptions for the most part are concise but clear, and are written from a first hand knowledge of the subject. The author has illuminated many of his topics by his own comments, but he has curbed any inclination to elaborate individual views which may not have general acceptance. Occasionally one wishes that he would loosen this curb a little, and allow more rein to his convictions. For example: If he were asked in conversation to say what eczema is, he would probably say that it is dermatitis; but when he comes to define eczema he gives the habitual old definition of an inflammatory disease of the skin, and writes out every lesion that can be produced by inflammation of the skin as characterizing it. He winds up, with the desperation of all authors who try to square this definition with their conscience, by exclaiming, "The fact remains that eczema is only a sort of dermatological scrap-heap." He then proceeds to give an excellent systematic description of the various forms of this scrap-heap. Which reminds one a good deal of the old woman who began her "patent medicine" testimonial by saying, "No words can describe the symptoms from which I suffered," and then proceeded to give a very full and complete description of them.

The illustrations are numerous and instructive. Most of the original pictures are good, and the reproductions have been well made. The book represents the best modern views of dermatology, and is a credit to the author and to American dermatology.

THE EXPECTANT MOTHER. By Samuel Wyllis Bandler, M.D., Professor of Gynecology in the New York Post-Graduate Medical School and Hospital. Cloth. Price, \$1.25 net. Pp. 213, with 14 illustrations. Philadelphia: W. B. Saunders Company, 1916.

The author of the well known "Medical Gynecology" has prepared this book for physicians, nurses and the intelligent laity with the hope of explaining, in simple language, the physiologic process which the pregnant woman undergoes. Several of the chapters dealing with puberty and adolescence have been abstracted from the above mentioned book. The present book is more technical than most similar works on the subject; it is questionable whether anything is gained by informing the expectant mother, in a technical discussion, of the mechanism of fecundation and impregnation, or of the steps in the growth of the placenta. The author recommends in every case, after four and one half months, the use of an

abdominal belt, stating that a certain widely advertised brand is the best.

In speaking of the care of the intestinal tract during the last four weeks of pregnancy, the author says, in a somewhat involved sentence:

"Even if they (the bowels) move every day, it is advisable, once a week, to give the patient either—(a certain artificial proprietary mineral water) or aperient water or magnesia or some aperient which cleanses the intestines."

In the list of supplies with which each patient who is to undergo labor at home is to furnish herself, he includes one package of each of several proprietary preparations rejected by the Council on Pharmacy and Chemistry. One he says is ideal. If the patient takes as much of another as the author mentions in succeeding chapters, one bottle will hardly be sufficient.

In his discussion of the treatment of hemorrhoids he recommends another rejected preparation. The last few chapters of the book are devoted to complicated labors, eugenics, puberty, etc.

If Dr. Bandler would have been as conservative in his recommendations of proprietary medicines and preparations as he was in most of his advice on the subject of obstetrics, the book would be more in accord with modern medical ideals.

INFLUENCE OF OCCUPATION ON HEALTH DURING ADOLESCENCE. Report of a Physical Examination of 679 Male Minors under 18 in the Cotton Industries of Massachusetts. By M. Victor Safford, Assistant Surgeon, United States Public Health Service. Paper. Price, 10 cents. Pp. 51. Public Health Bulletin No. 78. Washington: Government Printing Office, 1916.

Under this somewhat too general title is published a report of the results of the physical examination of 679 male workers under 18 years of age employed in the cotton industries of Massachusetts. This investigation was made in a state which has been a pioneer in matters of industrial legislation, and in which not only public bodies, but also private employers have shown a high sense of their duty in such matters. It is not surprising, therefore, to find that the result of the inquiry is negative; that is to say, that it did not disclose any instances in which the minors were employed in work which inherently, or in the special conditions presented, was liable to be injurious to their health. Nevertheless, the author of the report, Surgeon Safford, thinks it advisable to make recommendations providing against such a contingency, the most important being the improvement in the present method of issuing employment certificates to minors. He proposes that this work shall be vested exclusively in some central state agency, and that the certificate, when issued, shall not be irrevocable, its renewal being conditioned on a favorable report as to the physical condition of the minor at work.

MILK AND ITS HYGIENIC RELATIONS. By Janet E. Lane-Clayton, M.D., D.Sc., Assistant Medical Inspector under the Local Government Board. Cloth. Price, \$2.50 net. Pp. 348, with illustrations. Published under the Direction of the Medical Research Committee (National Health Insurance). New York: Longmans, Green & Co., 1916.

This book is published under the direction of the Medical Research Committee (National Health Insurance) in England. It represents a collection of the available scientific evidence on the hygienic relations of milk. Chapters are devoted to the general composition of human cow's milk; the organic and inorganic constituents; the biologic properties; the cellular content; breast feeding, and the relative values of boiled milk as compared with raw milk, especially in relation to the production of such diseases as scurvy and rickets. The later chapters of the book deal with the sources of contamination, the hygiene of production, and the methods of pasteurization. Each chapter is preceded by a short summary of its contents written in nontechnical language which enables the layman to obtain an insight into the subject. Each chapter is followed by a list of references to periodical literature on the subject discussed. The book will make a valuable reference work for those interested in pure milk production.

Medicolegal

Commission in Medical Reserve Corps Not Authority to Practice in State

(*Haberlin vs. Englehardt (N.Y.)*, 157 N. Y. Supp. 839)

The Supreme Court of New York, Appellate Term, First Department, reverses a judgment obtained by the plaintiff for medical services rendered by him to the defendant. The court says that the only question litigated was whether the plaintiff, who was never registered to practice medicine in New York state, nor authorized to practice medicine under the public health law of the state, was entitled to practice medicine generally in the state by virtue of his commission as a first lieutenant in the medical reserve corps of the United States Army pursuant to the act of Congress of April 23, 1908. The question presented is a new one so far as the court has been advised or has been able to discover from an examination of the authorities, but it is not deemed a difficult one to determine when the statutes pertaining thereto are analyzed. The public health law of New York state provides that no person shall practice medicine unless licensed and registered as required, but "This article shall not be construed to affect commissioned medical officers serving in the United States Army, Navy, or Marine Hospital Service, while so commissioned." Section 7 of the act of Congress of April 23, 1908, provides that "for the purpose of securing a reserve corps of medical officers available for military service, the president of the United States is authorized to issue commissions as first lieutenants therein to such graduates of reputable schools of medicine, citizens of the United States, as shall from time to time, on examination to be prescribed by the secretary of war, be found physically, mentally and morally qualified to hold such commissions, the persons so commissioned to constitute and be known as the Medical Reserve Corps. The commissions so given shall confer on the holders all the authority, rights and privileges of commissioned officers of the like grade in the Medical Corps of the United States Army, except promotions, but only when called into active duty, as hereinbefore provided, and during the period of such active duty." What was the intent of Congress in the enactment of this statute? Is it not clearly apparent from a reading of the context thereof that the object was the creation by appointment of a body of medical doctors eligible for the Medical Corps of the United States Army in the event of emergency, but who in the meantime, unless promoted to the Medical Corps, are to be their own masters so far as their individual time and labor are concerned? If this is not so, then why was the language in the last sentence quoted used? Giving to this statute a liberal construction, the court is of the opinion that the plaintiff's duties as a medical officer do not begin, unless promoted to the Medical Corps, until called into active duty by the government, and that he is not serving in the United States Army until so called into active duty. If the court is correct in its views, then clearly the plaintiff failed to bring himself within the provisions of the saving clause of the public health law, which calls for a reversal of the judgment herein, rendered in the plaintiff's favor, and a dismissal of the complaint on the merits. Judgment reversed, with \$30 costs, and complaint dismissed on the merits, with appropriate costs in the court below.

Malpractice Under Industrial Insurance Law

(*Ross et ux. vs. Erickson Construction Co. et al. (Wash.)*, 155 Pac. R. 153)

The Supreme Court of Washington holds that, in this action by Ross and wife against the construction company and a physician to recover damages alleged to have been suffered by reason of the malpractice of the physician in the treatment at his hospital of plaintiff Ross for an injury sustained in the company's service, the plaintiffs had no cause of action. The court says that the physician was employed to do the surgical and hospital work for the construction

company, and was paid for his services out of a fund made up by deducting \$1 from the monthly wages of the employees. After leaving the hospital the plaintiff made a claim under the industrial insurance law and accepted a final award. Subsequently this action was brought for the recovery of damages laid in the sum of \$15,000, and resulted in a verdict for the plaintiffs in the sum of \$1. The court directs that the case be dismissed. The defendants contended that no recovery could be had against either of them, for the reason that plaintiff Ross had been compensated for all injuries resulting from his primary injury, or proximately attributable thereto. The industrial insurance law is grounded in a humanitarian impulse. It takes account only of the place of injury and the extent of the disability, and compensates for the conditions resulting from the primary injury, or, in other words, it will reject no element of disability if it has accrued in consequence of the first hurt, or as an aggravation arising from any collateral contributing cause. The legislature knew that workmen had been compelled to meet the defense of nonliability on the part of the employer, who might plead the malpractice of the attending surgeon as a bar to recovery, and if they pursued their remedy against the malpractitioner they might be subject to the hazard of expert opinion evidence, from which a jury may generally find a sufficient warrant to follow its own inclination. There was no assurance of a recovery against either party, or against either offender. On the other hand, the employer and faithful and competent physicians and surgeons had been put to the hazard of ill-founded suits. The deserving had gone from the courts, their wrongs unredressed. The undeserving had taken that which, in good conscience, was not their own, and to cure all the legislature passed the industrial insurance law covering "all phases of the premises." These things seem clear to the court, but it must be admitted that it is exploring a new field, and there is but little to offer to those who find no assurance for their opinions unless something is found to throw on the shrine of "authority" and "precedent." To all such the court can say no more than that a diligent search has convinced it that there are no cases "in point." But to confirm its conclusion that the consequences of malpractice are an element which will be considered and compensated for by the state, the court can offer a few cases bearing slightly. But it is said that a holding that the master and the surgeon are not liable to answer for an aggravated condition resulting from the ill treatment of a wound, or the malpractice of a surgeon, may result in grievous wrong, in that only a partial recovery may be had. What is or what is not a full recovery in a given case is a relative question, with which the court has nothing to do. It is enough that the legislature has fixed a schedule of recoveries within which the discretion of the commissioners may move, subject to a "court review" as provided in the act, and in lieu of a system that often brought a full recovery in unmeritorious cases, and as often no recovery at all in meritorious cases, it has substituted a system that will insure an award in all cases. Surgical treatment is an incident to every case of injury or accident, and is covered as a part of the subject treated. When a workman is hurt and removed to a hospital, or is put under the care of a surgeon, he is still, within every intendment of the law, in the course of his employment and a charge on the industry, and so continues as long as his disability continues. The law is grounded on the theory of insurance against the consequence of accidents.

Account Taken of Effect on Health of Overflowing Land

(Southern Indiana Power Co. vs. Miller (Ind.), 111 N. E. R. 925)

The Supreme Court of Indiana says that the purpose of this action was to appropriate certain land overflowed by the construction of a dam by the company, and to assess the damages sustained by the owner of the land by such appropriation, or condemnation. Over the company's objection, two physicians were permitted to testify that in their opinion the overflowage from the dam would increase the breeding of mosquitoes along the river, and thus cause malaria among the tenants on the farm of the owner of the land in

question. The admission of this evidence was not objectionable. Courts take judicial knowledge of the fact that overflows and floods are followed by disease, and that swampy lands are detrimental to public health. Evidence of witnesses who are properly qualified to show the probable effect of such conditions on those living near is admissible.

Society Proceedings

COMING MEETINGS

Am. Assn. for the Study and Prev. of Inf. Mort., Milwaukee, Oct. 19-21.
Am. Assn. of Obstetricians and Gynecologists, Indianapolis, Sept. 25-27.
American Association of Railway Surgeons, Chicago, Oct. 17-19.
American Public Health Association, Cincinnati, Oct. 24-27.
American Roentgen Ray Society, Chicago, Sept. 27-30.
Clinical Congress of Surgeons, Philadelphia, Oct. 23-28.
Delaware State Medical Society, Milford, Oct. 9-10.
Idaho State Medical Association, Twin Falls, Oct. 5-6.
Indiana State Medical Association, Ft. Wayne, Sept. 27-29.
Kentucky State Medical Association, Hopkinsville, Oct. 24-27.
Medical Association of the Southwest, Ft. Smith, Ark., Oct. 2-4.
Minnesota State Medical Association, Minneapolis, Oct. 11-13.
Mississippi Valley Medical Association, Indianapolis, Oct. 10-12.
Nevada State Medical Association, Reno, Oct. 10-12.
New England Surgical Society, Boston, Oct. 5-7.
New Mexico Medical Society, Albuquerque, Oct. 11-13.
Southern Medical Association, Atlanta, Nov. 13-16.
Vermont State Medical Society, St. Johnsbury, Oct. 12-13.
Virginia State Medical Society, Norfolk, Oct. 24-27.
Wisconsin State Medical Society, Madison, Oct. 4-6.

COLORADO STATE MEDICAL SOCIETY

Forty-Sixth Annual Session, held at Glenwood Springs, Sept. 5-7, 1916

The President, DR. JOHN R. ESPEY, Trinidad, in the Chair.

Dysmenorrhea

DR. L. G. WELDON, Denver: An operation on the uterine canal for dysmenorrhea when something else is at fault is as much to be criticized and condemned as that of gastro-enterostomy done on a patient suffering from a Lane kink. I have demonstrated repeatedly that at the time when pain is most severe in a great many cases there is actually no blood in the uterus and the canal is perfectly free and normal. It is possible that in certain cases when we think the canal is obstructed because we fail to introduce the sound, the latter has merely become lodged in a pocket or fold of the cervical mucosa or met with an acute flexion. Unless the flexions are marked, they are not liable to cause enough obstruction to produce dysmenorrhea.

In 109 cases of dysmenorrhea seen in conjunction with other conditions the displacements were found in 38 per cent., pelvic pathologic conditions in 31 per cent., conditions pertaining to the structure of the uterus in 11 per cent., different forms of adhesions, cicatricial contractions, varicosities, cystic conditions, etc., in about 11 per cent., and mechanical obstructions to the uterine canal, including carcinoma of the cervix and vaginal deformities in 9 per cent.

Of the 109 cases operated on for dysmenorrhea nearly all had the uterine canal dilated and cureted from one to five times and in over 100 of these something definite was found in the pelvis as the unmistakable cause.

If, after using every means at our command in history-taking, physical examination, blood and urine tests, correction of erroneous habits, and rebuilding the general health we can eliminate beyond a reasonable doubt the existence of mechanical or inflammatory trouble in the uterine canal, and find that we can accomplish nothing, then no further time should be lost in going into the abdomen, for there the trouble will be found 99 times out of 100.

DISCUSSION

DR. ELLA MEAD, Greeley: I see many girls who are suffering from dysmenorrhea. Fifty per cent. of them never consult a physician. I suppose that 75 per cent. of the girls who do have dysmenorrhea do not realize that anything can be done for them, and only those who have the most frightful conditions consult physicians. I think constitutional con-

ditions have a great deal to do with these cases of dysmenorrhea. All know the intimate connection between the glandular secretion and the woman's sexual life. Recently gynecologists have spent considerable time in discussing the hypophysis, the thymus, and the thyroid gland in regard to pelvic disturbances, and the thymus and corpus luteum have been used to correct a great many of these disturbances, with gratifying results.

DR. L. C. WELDON: In the cases I have been able to examine regularly the point has been brought out in dysmenorrheal cases that there is a visible turgescence and swelling of the uterus. We may have cases of pelvic infection without a visible sign of redness or swelling, and consequently there is no dysmenorrhea.

New Growths and Infections Associated with and Following Chronic Suppurative Appendicitis

DR. C. E. TENNANT, Denver: Chronic irritation is recognized as a factor in the development of cancer about the stomach and other acid-secreting visceral organs. This theory may account for the rarity of cancer in the intestine and appendix. Meyer reports 269 cases of cancer of the appendix. In a splendid summary of the subject he says that "in carcinoma of the appendix we have a condition formerly believed to be very rare, but now known to occur in 0.5 per cent. of all removed appendices." It is a condition never recognized before operation, and usually unrecognized at the time of the operation, there being only 10 per cent. of removed appendices that are suspected before being sent to the pathologist.

DISCUSSION

DR. EMIL RIES, Chicago: I desire to call attention briefly to the question of pseudo-myxoma peritonei and to the origin of malignant neoplasms on irritated soil, or the question of trauma or irritation carcinoma. Is there one part of the bowel that is more frequently irritated chronically than the appendix, and is there one part of the bowel where there is less carcinoma than in the appendix?

Ulcer of the duodenum is much more frequent than ulcer of the stomach. Have any of you ever seen carcinoma of the duodenum? I have seen two on the operating table in my whole operative experience. I have seen less of carcinoma of the stomach, and if carcinoma of the stomach is caused by ulcer of the stomach, why is it that ulcer of the duodenum, which is more frequent, does not cause carcinoma more frequently?

As to malignant neoplasms of the appendix, as I remember, the literature contains about 300 such cases, including carcinoma. This is a small number of malignant neoplasms in an organ which is notorious for its chronically infected, irritative condition.

Complications Following Operations for Acute Appendicitis

DR. F. N. COCHEMS, Salida: The common complications to which references will be made are: 1. The accumulation of fluid in the pelvis which is frequently overlooked and its proper treatment. 2. Pulmonary embolism. 3. Necrosis of the intestine due to tying off the circulation. 4. Adhesions at the site of the line of incision and method of closing the wound. 5. Perforation of the intestine due to stiff drainage tube. 6. Some points in the treatment of intestinal obstruction accompanying diffuse peritonitis, and obstructions due to other causes.

In acute appendicitis with abscess formation drainage should be instituted immediately and to bring about the most suitable drainage, gravity and capillary attraction should be taken into consideration. A diligent search should be made for fecal concretions in cases of people suffering from appendicitis who are along in years, say above 50, especially in pus cases, lest the stone, which so often in these cases escapes the attention of the operator, is left to produce a varying degree of trouble. We have not used stiff drainage tubes for many years. We prefer the cigaret or plain gauze.

DISCUSSION

DR. J. N. HALL, Denver: I reported some time ago fourteen cases of abscess in the subphrenic space, in the liver or lung,

and I have seen many more such cases since that time. There is nothing more distressing than to see the ordinary appendix case which has been neglected in the early stages that is infected, retrocecal in origin, with the infection starting upward. It is not the appendix per se that makes the trouble, but the complications.

Chronic Appendicitis and Its Gastric Relations

DR. H. A. BLACK, Pueblo: In the chronic type of appendicular disease, the pain in the region of the appendix may be entirely absent, and when present, may be characterized by a feeling of distress rather than a clear cut attack. It will at times come on two or three hours after eating, but more often soon after the taking of food. Epigastric pain in these cases may be purely a reflex sensation, or as is probably more frequent, pain actually from the pylorus caused by reflex action on that structure. The cause of recurring gastric distress a few hours after the taking of food is a protective spasm of the pylorus, a clinical entity recognized only in the past few years, and which may be reflexly caused by irritation of the cecum from a chronically inflamed appendix. In all cases where the symptoms point to a chronic gastric disorder, aided by the Roentgen ray and the laboratory, most careful search must be made to determine the causative factor which in no small percentage of cases will be found to be that small outlaw inhabitant of the right iliac fossa.

DISCUSSION

DR. CRUM, Pueblo: We know that a chronic appendix, at times, will create a set of gastric symptoms similar to those associated with gastric ulcer. From a roentgenologic standpoint, we know also there are findings which are not so constant as would appear on first blush to be those of duodenal ulcer.

The Faucial Tonsil in Its Relation to Systemic Conditions

DR. ALEXANDER C. MAGRUDER, Colorado Springs: In cases of recurrent tonsillitis or quinsy, in which the patient is frequently incapacitated, the tonsils should be removed. In cases of malnutrition in children, in which tonsil and adenoids are diseased or obstructive, the removal of these organs gives the most gratifying results. In arthritis and muscular rheumatism, when associated with attacks of tonsillitis, removal of the tonsil alleviates or cures the condition. In enlarged thyroid with hypersecretion (not the colloid form) and in chorea good comes from enucleation of a diseased tonsil. The indiscriminate removal of tonsils is to be condemned not only because it is wrong but because such procedure has caused the laity and some physicians to regard a tonsil enucleation as a minor operation. Diseased tonsils may come to be recognized as one cause of sterility in women.

DISCUSSION

DR. THOMAS E. CARMODY, Denver: The essayist brought up the question as to whether tonsillectomy is a major operation or not. Recently I have performed this operation on two surgeons, and they both agree it is a major operation. I have believed for a long time that the teeth played an important part in some of these cases of tonsillitis, and physicians are awakening to the fact now more than they did a few years ago. We used to think that the removal of the tonsils made the male sterile, but that has been disproved. We all know of cases where couples have been married for years and years and have been sterile until something happened and the women became pregnant.

DR. H. A. SMITH, Delta: In some cases it is better to keep the patient under observation two or three weeks or a month before reaching a decision as to whether the tonsils should be removed. If you find a red line on the external part of the pillar take a hook and draw the pillar forward. If you find inflammation sufficient to justify you in dealing with the tonsil, do so carefully, and perhaps the condition of the patient will clear up.

DR. GERALD B. WEBB, Colorado Springs: I had the pleasure a short time ago of working out one or two cases with Rosenow, and I feel that the reason his work has not been corroborated better by the pathologists of the country is practically the same reason why Pasteur's work was not corroborated and endorsed by his confrères as it might have been in

the early days; namely, because these men do not pay the attention they should to the details and care with which Rosenow carries on his work. In removing an offending organ like the tonsils or decayed teeth, one should not expect too much because bacteria have already settled in other parts of the body.

DR. FRANK R. SPENCER, Boulder: I have personally enucleated tonsils for the following conditions: recurrent acute attacks of tonsillitis, quinzy, arthritis, muscular rheumatism, chorea, tuberculosis, headache, anemia, goiter, cervical adenitis and different types of ear disease. I have not enucleated tonsils for nephritis, peptic ulcer, multiple neuritis, hypertension, appendicitis and sterility in women. I believe if the laryngologist could have the cooperation and advice of a competent internist before completing his diagnosis, there would be fewer errors in advising for or against the removal of the tonsils and laryngology would be placed on a higher plane.

DR. J. W. AMESSE, Denver: Twenty years ago I suffered from diseased tonsils in coming up from Central America, and by the time I reached Baltimore my joints were considerably involved. I went to the Johns Hopkins Hospital. Dr. Porter made cultures from the material removed, and found the *Streptococcus viridans* which, when injected into rabbits, was followed by fatal results. Within two weeks following the removal of my tonsils my joints were relieved, and in a comparatively short time I gained 40 pounds.

Tumors of the Breast

DR. PHILIP HILLKOWITZ, Denver: There are only three pathologic conditions of the breast which the surgeon must keep in view and on whose recognition he shapes his policy of action: 1. The benign tumor known as fibro-adenoma. 2. Cystic disease of the breast. 3. Cancer. The indication for operative procedure in fibro-adenoma is naturally to extirpate the tumor, leaving the rest of the breast intact. As there are no metastases it is needless to touch the axillary region.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

September, CLII, No. 3

- 1 Diagnosis of Poliomyelitis. J. B. Neal and P. L. Dubois, New York.—p. 313.
- 2 *Value of Quantitative Estimation (Wolff-Junghans Test) of Dissolved Albumin in Gastric Contents in Diagnosis of Cancer of Stomach. J. Friedenwald and R. F. Kieffer, Baltimore.—p. 321.
- 3 *Pharmacology of Emetin. E. J. Pellini and G. B. Wallace, New York.—p. 325.
- 4 *Effects of Retention in Kidney of Media Employed in Pyelography. W. F. Braasch and F. G. Mann, Rochester, Minn.—p. 336.
- 5 *Transplantation of Thyroid in Dogs. C. Goodman, New York.—p. 348.
- 6 *Gastric Function in Pulmonary Tuberculosis. H. K. Mohler and E. H. Funk, Philadelphia.—p. 355.
- 7 Injuries to Peripheral Nerves Produced by Modern Warfare. C. B. Craig, Paris.—p. 368.
- 8 *Dietetic Management of Hypercholesterinemia in Cases of Cholelithiasis. M. A. Rothschild and N. Rosenthal, New York.—p. 394.
- 9 Influenzal Meningitis; Report of Case. R. G. Torrey, Philadelphia.—p. 403.
- 10 Tuberculosis of Tongue; Report of Case. J. R. Scott.—p. 411.
- 11 *Addison's Disease; Report of Case with Acute Onset, Terminating in Rapid Improvement and Complete Recovery. T. Ticken, Chicago.—p. 422.

2. Wolff-Junghans Test in Diagnosis of Cancer of Stomach.

—The authors conclude that the Wolff-Junghans test is of great value as an aid in the diagnosis of certain forms of gastric carcinoma. The test is, however, only useful in the diagnosis of the disease, when there is an absence of free hydrochloric acid in the gastric contents, and then only when the question of even traces of blood can be eliminated, and in the absence of all retained food residue or of swallowed saliva or sputum. The test has its greatest significance in the diagnosis between simple and malignant achylia. Posi-

tive reactions are rarely observed in simple achylia, while they are frequent in cancer.

3. **Pharmacology of Emetin.**—The following points are emphasized by Pellini and Wallace. Emetin depresses and may eventually paralyze the heart. It is a powerful gastro-intestinal irritant whether given by mouth or subcutaneous injection. It causes a definite derangement of metabolism, characterized by an increase in nitrogen loss and an acidosis. While in normal individuals given moderate doses, these actions may not be of importance, in pathologic states of the circulation, intestinal tract, or metabolism, they may be a very definite source of danger.

4. **Retention of Media Employed in Pyelography.**—Thorium nitrate, in 10 or 15 per cent. solution, Braasch and Mann state is the least harmful and objectionable substance to use in pyelography. Care must be taken in its preparation that the solution is thoroughly neutralized.

5. **Transplantation of Thyroid in Dogs.**—There was not, in the entire series of thirty experimental operations reported by Goodman a single instance of infection. In twelve of these cases, intratracheal anesthesia with the Janeway intratracheal apparatus was used. In the remaining cases ether was administered with an Allis inhaler. Among the homo-transplantations there were three instances in which the parathyroid gland remained in a normal state of preservation while the thyroid showed evidences of autolysis. In auto-transplantation Goodman succeeded in two consecutive instances in retaining the thyroid in its normal state microscopically. In twenty-five out of thirty instances the segments of the carotid artery remained free from thrombosis and in four instances the superior thyroid artery also remained patent and without any evidences of thrombosis, although the gland transplanted has undergone autolysis and was partly absorbed. The technic employed consists briefly in an implantation of the thyroid underneath the muscles of the neck and a biterminal suture of a segment of the attached carotid of the severed vessel of the host and end-to-end suture of the thyroid vein with the central end of the external jugular of the opposite side.

6. **Gastric Function in Tuberculosis.**—The patients studied by Mohler and Funk comprised twenty-two early and twenty-five advanced cases of pulmonary tuberculosis. Among the early cases, eleven complained of symptoms referable to the gastro-intestinal tract. Of this number three suffered with symptoms prior to and the remaining eight subsequent to the development of cough, fever, etc., symptoms common in early lesions. The gastric symptoms complained of in order of frequency were belching, fulness and distress in the epigastrium, anorexia and vomiting. The high point of total acidity occurred at or before the one and a quarter-hour period in eleven instances. Of these eleven cases three presented gastric symptoms and eight no symptoms. Of the twenty-five advanced cases, twenty-four patients complained of gastro-intestinal symptoms. The morning residuum revealed the presence of mucus, bacteria and leukocytes in excessive amounts in twenty of the cases. The tubercle bacillus was present in the residuum in eighteen cases. The high point for total acidity in this group of cases averaged twenty-four, and for free acidity twenty, distinctly below the normal.

The authors conclude that pulmonary tuberculosis causes a definite downward progression in both the motility and the secretory function of the stomach from the very beginning of the disease. Hyperacidity with symptoms occurring in early stages and described by previous writers as common is quite rare. Even hyperacidity without symptoms is rare—the type which corresponds to the normal "hyperacidity curve" of Rehfuess, existing in 40 to 50 per cent. of normal individuals (Rehfuess), exists considerably less frequently in early tuberculous patients. This would indicate that even in early tuberculous patients, changes in gastric functions are present. The so-called "pretubercular dyspepsias" of previous writers Mohler and Funk believe are in reality manifestations associated with definite tuberculous infection. They do not believe that there is an "irritative stage" governing hyperacidity in early tuberculosis. Their studies suggest that the gastric disorder is the result of disease of the gastric mucosa.

8. **Hypercholesterinemia in Cholelithiasis.**—Exactly as some individuals have a so-called gouty or uric acid diathesis with a retention of uric acid Rothschild and Rosenthal hold that some individuals retain their lipoids and the result is a retention hypercholesterinemia, the excretion of a more or less saturated bile, and ultimate precipitation of the retained cholesterin in the gallbladder, the common duct and its finer radicals. The subsidence of an attack means that the patient has rid himself of the obstruction and will be in good health until the saturation point in the blood and bile is again reached. The recognition of this diathesis is extremely important for the patient. Under proper dietetic management in a large percentage of these cases a secondary operation might be avoided. Hence one should examine the blood of every case of cholelithiasis without jaundice for cholesterin before operation. In the presence of hypercholesterinemia, provision should be made for drainage of the bile to deplete the body of the retained lipoids. The drainage tube should not be removed until the blood and bile show a normal cholesterin content, and during this period the diet should be low in lipoids. Further accumulation of cholesterin can be controlled by dietetic measures, placing the patient on a fat free diet which both excludes lipoids to a large extent and renders difficult the esterization of the free cholesterin in the food.

On a strict, practically lipid free diet, only vegetables are allowed excluding beans and peas which are fairly rich in a metamerie product, phylocholesterin. All other vegetables, as well as cereals and sugars, are allowed. The milk should be skimmed and fatfree buttermilk permitted. This diet is so strict that the majority of patients will not maintain it for a long period; therefore, the authors have devised "fast and feast day" periods. For three or four days a week the patient lives on the strict, lipid free diet outlined above, the so-called fasting periods, which serves to deplete the organism of the stored-up lipoids. For the next three or four days, dependent on the grade of the hypercholesterinemia, a more liberal diet is permitted, the so-called "feast days." On the "feast days" the patient is allowed, in addition to the articles stated above, well-cooked lean meats and fish, excluding salmon, shad and bluefish, the fat content of which is high. Oleomargarin is allowed instead of butter.

11. **Recovery from Addison's Disease.**—The case reported by Tieken occurred in a young man and ran an acute febrile course, with nausea, vomiting, diarrhea and marked asthenia. There was pigmentation of the skin, a low blood pressure, loss in weight, pain in the abdomen and lumbar regions, anemia, insomnia and marked cerebral disturbance. After a period of six weeks the patient began to improve and made a rapid recovery. After two years his health is still good.

American Journal of Orthopedic Surgery, Boston

September, XIV, No. 9

- 12 Anatomy of Visceroptosis. W. E. Sullivan, Boston.—p. 507.
- 13 Rôle of Visceroptosis in Etiology of Arthritis Deformans. D. Silver, Pittsburgh.—p. 513.
- 14 Medical Aspects of Visceroptosis. H. W. Bettmann, Cincinnati.—p. 522.
- 15 Visceroptosis from Roentgenologist's Viewpoint. F. H. Baetjer, Baltimore.—p. 530.
- 16 What Evidence Can Be Brought Forward to Show That Visceroptosis is Anything More Than Variation from Anatomic Norm and is of Frequent Causative Clinical Significance? R. B. Osgood, Boston.—p. 533.
- 17 Case of Fracture of Odontoid Process of Axis. P. Le Breton, Buffalo.—p. 549.

American Journal of Public Health, Boston

August, VI, No. 8

- 18 Improvement of Cancer Mortality Statistics in United States. C. E. Lakeman, New York.—p. 791.
- 19 Organizing State Campaign of Public Health Education. C. E. A. Winslow, New Haven, Conn.—p. 805.
- 20 Suppression of Drug Vice Considered from Demand Side. J. F. Chase, Boston.—p. 814.
- 21 Physical Examination of Employees. J. B. Andrews.—p. 825.
- 22 Latest Features in Diagnosis and Prevention of Some of Occupational Poisonings. W. H. Rand, Washington, D. C.—p. 830.
- 23 Scientific Management in Industry and What It Includes. G. M. Price, New York.—p. 836.

- 24 Comparison of Bacteriologic Methods for Examination of Oysters. C. Bates and L. A. Round, Washington, D. C.—p. 841.
- 25 Other Factors in Infant Mortality Than Milk Supply and Their Control. G. L. Meigs, Washington, D. C.—p. 847.
- 26 Milk Clarifiers. C. Bahlman, Cincinnati.—p. 854.
- 27 Fundamental Distinctions Between Larger and Smaller Cities in Health Administration. W. E. Park, Rockford, Ill.—p. 858.
- 28 Homogenized Milk and Cream. H. B. Baldwin, Newark, N. J.—p. 862.
- 29 Accuracy of Diagnosis of Municipal Health Conditions Based on Vital Statistical Data. F. C. Gram, Buffalo.—p. 865.
- 30 Water Chlorination Experiences at Toronto, Canada. F. Adams, Toronto, Canada.—p. 867.
- 31 Efficiency in Worker and Its Maintenance. W. I. Clark, Worcester.—p. 870.

Boston Medical and Surgical Journal

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- 32 Some Theoretic Considerations on Present Status of Roentgen Therapy. J. Shohan, Boston.—p. 321.
- 33 Some Efficiency Problems in Country Medical Practice. F. H. Washburn, Holden.—p. 328.
- 34 Circulatory Disturbance in Obese. C. L. Buck, Danvers.—p. 332.
- 35 Jean-Pierre David; The Man Who Potted Pott. J. Ridlon, Chicago.—p. 336.
- 36 Clinical Symptomatology and Laboratory Findings in Three Cases of General Paresis Under Intravenous Arsenobenzol Treatment. G. E. Mott and S. M. Bunker, Worcester.—p. 338.

Journal of Cutaneous Diseases, Boston

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- 37 *Principles of Treatment of Syphilis. S. Pollitzer, New York.—p. 633.
- 38 *Transmission of Syphilis; With Particular Reference to Paternal Source of Infection. U. J. Wile, Ann Arbor, Mich.—p. 645.
- 39 Meningococcus Meningitis with Unusual Purpuric Manifestations; Demonstration of Diplococcus in Skin. C. T. Sharpe, New York.—p. 659.
- 40 Histopathology. W. J. Heimann, New York.—p. 664.

37. **Treatment of Syphilis.**—Pollitzer's plan of treatment may be summarized as follows: Specific therapy should be instituted at the earliest possible moment after a positive diagnosis is made. Three injections of salvarsan should be administered in large doses, at intervals of twenty-four hours, and followed by a course of eight weekly injections of salicylate of mercury. If the treatment was begun before the appearance of the roseola, there is a strong presumption of cure and the case may remain under observation without further treatment. When the treatment is begun after the appearance of a rash, the first course of salvarsan and mercury is repeated after a pause of two months, and again after another similar interval. After three courses within the first year, if the Wassermann reaction has remained negative, further treatment may await the reappearance of a positive Wassermann reaction. In cases which come under treatment a year or more after infection, treatment should be continued till the Wassermann reaction becomes negative, and thereafter two more courses of treatment should be administered, even though the Wassermann reaction remains negative. After a year or more of constantly negative Wassermann reactions without treatment, the cure should be tested by a provocative injection of salvarsan and by an examination of the spinal fluid.

38. **Transmission of Syphilis.**—Wile's observations have led him to believe that a paternal inheritance usually results in expulsion of the fetus before birth in the first pregnancies and stigmatized children, if such are born alive, in the later pregnancies. Maternal infection, therefore, would not be hereditary, but would be an acquired form of syphilis, except when the syphilis is recent in the mother. For those cases in which maternal infection results in expulsion of the fetus, one would have to presume the unfertilized ovum to be the seat of the resting or active stage of the spirochete, as may occur with the male germ cell. That such is infrequent is established by the pathology of ovarian syphilis. Paternal infection, therefore, would be for the most of the cases, the commonest mode of transmission. With regard to placental transmission, Wile states that the weight of evidence is more in favor of a fetal infection of the placenta than of infection of the placenta by the mother. The complement binding substances passing through readily from the fetus to the mother, suggest an explanation for the uniformly posi-

tive tests in the mother and the otherwise inexplicable phenomenon that most of such mothers go through life Wassermann positive, without ever having clinical syphilis.

Journal of Infectious Diseases, Chicago

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- 41 Comparison of Rapid Method Lilliputian Plate Cultures of Counting Bacteria in Milk with Standard Plate Method. W. D. Frost, Madison, Wis.—p. 273.
- 42 Adaptation to Certain Tensions of Oxygen as Shown by Gonococcus and Other Parasitic and Saprophytic Bacteria. W. B. Wherry and W. W. Oliver, Cincinnati.—p. 288.
- 43 *Leptothrix Innominata* (Miller). W. B. Wherry and W. W. Oliver, Cincinnati.—p. 299.
- 44 Filterability of *Bacillus Bronchisepticus*. W. B. Wherry, Cincinnati.—p. 304.
- 45 New Model of Double Pipet Holder and Technic for Isolation of Living Organisms. F. Hecker, Kansas City, Mo.—p. 306.
- 46 *Complement Fixation in Tuberculosis. H. J. Corper, Chicago.—p. 315.
- 47 *Studies on Acquired Typhoid Immunity. F. W. Hachtel and H. W. Stoner, Baltimore.—p. 322.
- 48 *Causation of Gastric and Duodenal Ulcer by Streptococci. E. C. Rosenow.—p. 333.
- 49 Studies on Forage Poisoning. R. Graham and L. R. Himmelberger, Lexington, Ky.—p. 385.
- 50 Spontaneous Amebic Dysentery in Monkeys. A. Eichhorn and B. Gallagher, Washington, D. C.—p. 395.
- 51 Strength and Composition of Blackleg Vaccines. O. M. Franklin and T. P. Haslam, Manhattan, Kan.—p. 408.
- 52 *Bacteriology of Urine in Lobar Pneumonia. G. Mathers, Chicago.—p. 416.
- 53 Pathology of Dermatitis Venenata from *Rhus Diversiloba*. J. B. McNair, Berkeley, Calif.—p. 419.
- 54 Transmission of *Rhus* Poison from Plant to Person. J. B. McNair, Berkeley, Calif.—p. 429.
- 55 Refinement and Concentration of Antitoxins. P. G. Heinemann, Chicago.—p. 433.
- 56 Cytology of Exudate in Early Stages of Experimental Pneumonia. F. A. Evans, New York.—p. 440.
- 57 Agglutinins in Hog Cholera Immune Serum for *Bacillus Suipestifer*. H. Wehrbein, Ames, Iowa.—p. 446.
- 58 *Colloidal Chemistry and Immunology. M. von Krogh, Argentine.—p. 452.
- 59 *Experimental Scurvy in Guinea-Pigs. L. Jackson and J. J. Moore, Chicago.—p. 478.
- 60 *Bacteriologic Studies on Experimental Scurvy in Guinea-Pigs. L. Jackson and A. M. Moody, Chicago.—p. 511.
- 61 *Lesions in Rabbits Produced by Streptococci from Chronic Alveolar Abscesses. A. M. Moody, Chicago.—p. 515.

46. **Complement Fixation in Tuberculosis.**—The examination by Corper of 361 persons (25 of them normal, 11 questionably nontuberculous, and 325 definitely tuberculous), using both an emulsion and an autolysate prepared from living virulent human tubercle bacilli as antigens, shows that: (a) The complement fixation test for tuberculosis is not absolute, being positive only in about 30 per cent. of all the clinically definite cases of tuberculosis both active and inactive. Active cases give a higher percentage of positive results than inactive cases. (b) The value of the complement fixation test for tuberculosis lies in the fact that, taken in conjunction with other findings, a definitely positive reaction makes the diagnosis of tuberculosis certain. (c) It is of value also from a differential diagnostic standpoint in that it indicates tuberculosis, when positive, as against syphilis, carcinoma, abscess of the lung, empyema from other causes, bronchiectasis, etc. Corper points out that the practical absence of a reaction in nontuberculous cases makes this test, when positive, of far greater value in the diagnosis of tuberculosis than any of the biologic tests for tuberculosis thus far discovered. A positive test was never obtained in the absence of a positive von Pirquet reaction, but a large percentage of clinically normal individuals giving positive von Pirquet reactions were negative in fixation tests.

47. **Acquired Typhoid Immunity.**—The experiments reported on by Hachtel and Stoner were too few to form the basis of any dogmatic statement, but it would seem that the immunity following inoculation is due to a training of the cells in the production of antibodies so that afterward they yield these more prolifically.

48. **Gastric and Duodenal Ulcer.**—Streptococci having a characteristic affinity, for the stomach and the duodenum, have been repeatedly isolated by Rosenow from various foci of infection in patients with ulcer and from the ulcers themselves. They tend to disappear from the circulation and do

not commonly produce marked lesions otherwise. They have been isolated from ulcers in animals, and ulcer has again been produced on their reinjection. Filtrates of these cultures show no special tendency to produce ulcer. The necessary requirements have been fulfilled to warrant the conclusion that the usual ulcer of the stomach and of the duodenum in man is primarily due to a localized hematogenous infection of the mucous membrane by streptococci. Rosenow's clinical and experimental observations on which this conclusion is based are reported in detail.

52. **Urine in Lobar Pneumonia.**—Mathers found that during the course of an attack of lobar pneumonia, pneumococci may be excreted in the urine. They appear in the urine usually at a time just before or just after the crisis and do not seem to bear any definite relation to the other pathologic elements in the sediment. The pneumococcus strains isolated from the urine in Mather's experiments are similar to those found in the blood and the sputum hence a possible source of infection. Incidentally urinary cultures may be of great value in the diagnosis of pneumonia or of pneumococcal infections in general.

58. **Colloidal Chemistry and Immunology.**—It appears probable from von Krogh's analytical review that in the blood under normal as well as pathologic circumstances, in vitro as well as in vivo, there takes place a very complicated ensemble between several ferments and antiferments, all of them colloid substances whose degree of dispersity has great influence on their effect. And more, the equilibrium of these substances in a very labile one, so that a small change may give opportunity for the most far-reaching alterations. So it may be possible that the colloidal changes which take place through the union of antigen and antibody may disturb the equilibrium of the whole system and inactive ferments of any nature may be activated or active ferments put out of action by adsorption to the new formed colloidal union. Von Krogh suggests the possibility that the pathogenesis of a great many of the infectious diseases may be explained from this point of view; namely, that the living bacteria or protozoa disturb the colloidal equilibrium of the liquids of the organism and so put normal ferments out of action or pathologic ferments into activity. Theoretically such a process appears very probable, but as yet there is no experimental support for it.

59. **Experimental Scurvy in Guinea-Pigs.**—Experimental scurvy was produced in guinea-pigs by Jackson and Moore by diets of pasteurized, raw, boiled, skimmed and condensed milk, streptococcus broth and milk, milk and green vegetables, thyroid extract and milk, casein and water, oats, bread and bran. The addition of calcium lactate to milk or the injection of calcium lactate into guinea-pigs on a milk diet did not prevent scurvy. A cream diet, and a diet of olive oil added to milk, produced a "fat constipation" with early death. Daily injections of olive oil into animals on a milk diet had no antiscorbutic effect. Mixed broth cultures of *Streptococcus viridans* and *Streptococcus hemolyticus*, water, lactose water, and lime water did not produce scurvy. In a series of six guinea-pigs fed on goat's milk for over forty days, no symptoms of scurvy developed. The average time for the onset of symptoms with pasteurized milk was nineteen days. With other milk diets this varied from eleven to nineteen days. The earliest lesion was observed on the tenth, the latest on the twenty-ninth day. Cultures of the heart blood from guinea-pigs with scurvy from milk diet were sterile, and passage of blood from these animals to normal animals did not produce the disease.

60. **Experimental Scurvy in Guinea-Pigs.**—Bacteriologically, cultures of crushed tissue resulted in the isolation of a diplococcus of low virulence with a tendency to form chains and produce green on blood agar. Pure strains of these organisms inoculated into the circulation of guinea-pigs and rabbits living under ordinary conditions (a mixed diet consisting of green vegetables, hay and oats) gave rise in most instances to hemorrhagic and other lesions in the bones, joints, muscles, lymph glands, or gums. Streptococci of the same type as those injected were recovered from the lesions in these animals as late as forty days after a single intra-

cardiac or intravenous injection. Bacteria resembling the organisms described were frequently seen in the microscopic sections of the scurvy lesions. When animals, which had artificially received these streptococci in the circulation had their resistance kept high by proper feeding, the lesions produced did not have the same tendency to progress that was seen in animals receiving an unbalanced diet. Cultures of the heart blood from the affected guinea-pigs were sterile and passage of blood from an affected animal to a normal animal failed to produce the disease.

61. Pathogenicity of Streptococci from Alveolar Abscesses.—One hundred and seventy-eight rabbits were injected by Moody with pure strains of *Streptococcus viridans*, isolated from pyorrhea pockets at the roots of teeth and having no connection with the mouth cavity. Fifteen patients suffered from chronic alveolar abscess and artericular rheumatism; fifteen suffered from chronic alveolar abscess and some systemic disorder other than articular rheumatism; nineteen suffered from chronic alveolar abscess unaccompanied by any other illness. Lesions were produced more frequently in the stomach, muscles, joints, endocardium, kidneys and jaws in the order mentioned. Strains isolated from the patients having articular rheumatism (Group A), as a rule, produced a higher percentage of lesions in the usual regions of localization than did strains from patients in the other groups. There were, however, certain variations, the most notable being the production of hemorrhages in the stomach by organisms from Groups B and C. The gross lesions were chiefly hemorrhages of varying degrees of intensity and, in many instances, suppuration. Suppuration was most common in the joints. In the heart small hemorrhages occurred in the endocardium, especially in the right ventricle near the base of the tricuspid valve.

The kidneys revealed small hemorrhagic foci usually beneath the capsule and scattered throughout the cortex. There were very few instances of the development of an acute diffuse nephritis, but many instances of marked acute fatty changes. In the lower jaw below the incisor teeth and beneath the periosteum, there frequently were seen marked hemorrhages. Bacteria could be demonstrated in them. A suppurative cholecystitis developed in one animal. *Streptococcus viridans* was recovered from the pus in pure culture. The other instances of gallbladder involvement were characterized by the presence of small hemorrhages in the mucosa. Lesions in the other organs and tissues of the inoculated animals were marked by the presence of small focal hemorrhages. Microscopic examination, so far as made, corroborated the gross findings.

Journal of Nervous and Mental Disease, Lancaster, Pa.

August, XLIV, No. 2

- 62 Intramedullary Tumor of Cervical Cord, Diagnosis. Removal in Two Stage Operation; Gradual Improvement. F. X. Dercum and J. C. Da Costa, Philadelphia.—p. 97.
- 63 Cause of Allorhythmic Type of Tremor in Paralysis Agitans. L. J. Pollock, Chicago.—p. 104.
- 64 *Werdnig-Hoffmann Early Infantile Progressive Spinal Muscular Atrophy. M. A. Bliss, St. Louis.—p. 108.
- 65 Family Spastic Paralysis; Report of Four Cases. (To be continued.) J. H. W. Rhein, Philadelphia.—p. 115.

64. Progressive Spinal Muscular Atrophy in Infants.—Bliss reports three cases of a familial form of early infantile paralysis in a family group of four children. All of the children had drooling, their feet began to turn and droop at about the same age and the same dragging of one foot at the first and the same tired expression after a time and the same peculiar odor of the passages. All of them at about the same age, 16 months, had a bright rosy spot on each cheek. After a time this faded and left them pale. The spots were not like the normal rosy cheeks of a baby but were reddish spots about the size of a half dollar. All three children had attacks of rigidity. The clinical history of these cases is as follows: An apparently healthy and intelligent child, who had made the normal progress of an infant for the first few weeks or months of life, begins, without sudden onset, and without obvious cause, to lose power. The weakness is first noticed in the legs and in the hips; as the disease progresses the

lower portion of the back becomes affected, so that the child is no longer able to sit up. The disease pursues a progressive course, the shoulders, thighs, upper arms, forearms and legs being successively involved, and finally the muscles of the hands and feet. Fibrillar twitching of the muscles may be present, bulbar symptoms may supervene, and contraction of the limbs may be present in some cases. The limbs are usually absolutely flaccid, and the deep reflexes are abolished. There is no pain or tenderness, and no disturbance of sensation. The disease runs a slowly progressive course, death taking place from failure of respiration or bronchopneumonia.

Journal-Lancet, Minneapolis

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- 66 Physician and State. H. M. Bracken, St. Paul.—p. 467.
- 67 Submucous Resection of Septum. G. Golseth, Jamestown, N. D.—p. 471.
- 68 Foreign Bodies in Urinary Bladder. E. S. Judd, Rochester.—p. 474.
- 69 Bacteremia; Report of Case. W. F. Sihler and T. A. Peppard, Devils Lake, N. D.—p. 477.
- 70 Rubber Apparatus for Application of Heat to Growths, Cancerous or Otherwise. C. M. Adkins, Grygla.—p. 479.
- 71 Yeast Infection of Throat; Report of Case. W. F. Wilson, Lake City.—p. 481.
- 72 Therapeutics in Children. M. J. Hammond, Watertown, S. D.—p. 482.

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- 73 Narcotical Anesthesia in Surgical Work. R. E. Farr, Minneapolis.—p. 499.
- 74 Is Insanity Increasing? W. M. Hotchkiss, Jamestown, N. D.—p. 504.
- 75 Fractures of Leg; End-Results in One Hundred Consecutive Cases. F. E. Clough, Lead, S. D.—p. 509.
- 76 Fat Content of Sputum. J. W. Cox, University, N. D.—p. 515.

Medical Record, New York

September 2, XC, No. 10

- 77 Classification of Epilepsies. E. C. Fischbein, Sonyea.—p. 339.
- 78 Clinical Manifestations of Animal Protein Poisoning. R. C. Brown, Milwaukee, Wis.—p. 407.
- 79 Some Clinical Aspects of Radium Therapy. W. B. Chase, Brooklyn.—p. 410.
- 80 Eclampsia, Preventable Disease. J. W. Winston, Norfolk, Va.—p. 414.
- 81 Pellagra; Its Etiology and Treatment. J. F. Yarbrough, Columbia, Ala.—p. 416.
- 82 Wassermann Reaction in Two Hundred and Fifty-One Tuberculous Dispensary Cases. W. R. Jones, Seattle, Wash.—p. 418.

Michigan State Medical Society Journal, Grand Rapids

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- 83 Review of Medicine and Surgery, with Especial Reference to European War. A. W. Hornbogen, Marquette.—p. 415.
- 84 Early History of Michigan's State Board of Health. H. B. Baker, Holland.—p. 424.
- 85 Safety-Pin in Esophagus in Infant Fifteen Weeks Old, Successfully Removed by Gastrostomy. R. H. Crissey, Lansing.—p. 427.
- 86 Anomalies of Fifth Lumbar in Relation to Backaches. J. G. Van Zwaluwenburg, Ann Arbor.—p. 428.
- 87 Case Resembling Sprue. H. B. Schmidt, Ann Arbor.—p. 432.
- 88 Case of Atonic Senile Ectropion Treated by Plastic Operation. G. Slocum, Ann Arbor.—p. 434.
- 89 Results After Prostatectomy. I. D. Loree and R. W. Kraft, Ann Arbor.—p. 435.

Missouri State Medical Association Journal, St. Louis

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- 90 *Atony, Basic Factor of Most Alimentary Pathology. J. M. Bell, St. Joseph.—p. 425.
- 91 *Stomach Troubles—Their Significance. F. Reder, St. Louis.—p. 427.
- 92 Duodenal Alimentation; Report of Cases. J. W. Larimore, St. Louis.—p. 430.
- 93 *Obligations of Physicians; How May They Best Be Met? W. S. Allee, Olean.—p. 433.
- 94 Selective Effect of Irradiation on Living Cells. W. L. Brocius, Gallatin.—p. 437.
- 95 *Raw Starch in Treatment of Diabetes. E. B. Knerr, Kansas City.—p. 442.
- 96 Cardiac Arrhythmias. M. P. Overholser, Harrisonville.—p. 445.
- 97 Roseola Infantum, or Rubella? J. Zahorsky, St. Louis.—p. 448.
- 98 Importance of Eye-Ground Findings in Diagnosis and Prognosis of Bright's Disease. J. E. Jennings, St. Louis.—p. 451.
- 99 School Child in Its Relation to Eugenics. H. E. Gerwig, Downing.—p. 454.

90, 91 and 93. Abstracted in THE JOURNAL, June 24, pp. 2119 and 2120.

95. **Diabetes Treated with Raw Starch.**—The carbohydrate par excellence for the diabetic Knerr has found to be raw starch. It matters not what variety of starch be utilized, provided it be raw and uncooked. Knerr has fed as much as 3 ounces of raw corn starch daily and the stools on subsequent examination failed to show any undigested starch. American corn starch as ordinarily marketed in paper boxes for culinary uses is ideal for this purpose. Also washed potato starch is good. This may be prepared by stirring the grated potatoes in a large volume of water and decanting the floating pulp from the settled starch after a few minutes' standing. Or the potatoes may be eaten raw, seasoned with a little salt. A rounding teaspoonful of the raw starch of whatever variety taken three or four times daily stirred in a glass of water is about the average quantity required, provided a fair supply of green vegetables is also taken, either as salads or boiled.

Briefly, the Knerr treatment of the diabetic is, as follows: First place him in a hospital or sanatorium, away from the meddlesome temptations of his friends; then place him on raw starch and water only, until he has burned out all the sugar in his system and circulation. This may require from one to four days, though the glycosuria usually disappears in from twenty-four to thirty-six hours. The patient may lounge about his room as he pleases, but he must keep himself warm. A dram of starch in a glass of water every two hours is all the nutriment allowed until the urine is sugar free. Also a daily sponge and rub is ordered. As soon as the sugar is out of the urine the patient may be allowed some green vegetable, as lettuce or celery, with a little salt and a soft egg. This allowance is gradually increased from day to day by the addition of meats and boiled vegetables, all the while with the continuation of the raw starch, though taken less frequently as the vegetables increase. However, the dram of raw starch three times daily should be continued for months and perhaps a year or more, depending on the case. All direct sugars and cooked starchy foods are prohibited indefinitely. After a patient has been sugar free for some months, an occasional indulgence in bread or toast may be allowed. Should his sugar return at any time the patient must at once drop back to only starch and water for a day or two until he is free again.

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- 101 Plumbing and Hot Water Systems for Hospitals. F. Sutton, New York.—p. 196.
- 102 Private Room Building of Robert Packer Hospital. O. H. Waltz and D. Guthrie, Ithaca, N. Y.—p. 198.
- 103 Small Community Hospital—Planning. J. A. Hornsby, Chicago.—p. 202.
- 104 Canned Vegetables—Food Value and Trade Methods. J. P. Street, New Haven, Conn.—p. 205.
- 105 Value of Employees' Medical and Social Service Departments. A. P. McCleery, Chicago.—p. 208.
- 106 Ward Patient at Sloane Hospital for Women, New York City. M. E. Hutchison, New York.—p. 210.
- 107 New General City Hospital, Aurora, Illinois. N. B. Jordan and R. S. Shepardson, Aurora, Ill.—p. 213.
- 108 Efficient Heating for Institutional Groups. A. L. Baum, New York.—p. 217.

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- 110 Operative Treatment of Trachoma, and Its Complications. H. Davis, Genoa.—p. 37.
- 111 Plea for Conservatism in Treatment of Acute Otitis Media. W. P. Wherry, Omaha.—p. 40.
- 112 Multiple Abscesses of Liver Following Unrecognized Appendicitis. K. S. J. Hohlen, Lincoln.—p. 45.
- 113 Chorea and Tonsils. L. B. Bushman, Omaha.—p. 47.
- 114 End Result of Tonsil Enucleation. F. F. Teal, Lincoln.—p. 48.
- 115 Diagnosis of Pituitary Tumor. J. B. Potts, Omaha.—p. 52.
- 116 Inadequacy of Privately—Feed Medicine. I. C. Philbrick, Lincoln.—p. 54.

New Orleans Medical and Surgical Journal

September, LXIX, No. 3

- 117 Disease and Death Rate in Human Types. R. B. Bean, New Orleans.—p. 175.

- 118 Pulmonary Syphilis; Report of Case. J. M. Perret, New Orleans.—p. 191.
- 119 Some Questionable Forms of Prescribing. O. W. Bethea, New Orleans.—p. 197.
- 120 Vaccine Treatment of Whooping Cough. C. J. Bloom, New Orleans.—p. 200.
- 121 Enucleation of Eyeball and Faulty Technic Cosmetically Considered. T. J. Dimitry, New Orleans.—p. 205.
- 122 Interstitial Pregnancy. W. Kohlmann, New Orleans.—p. 210.

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- 123 Pyorrhea Alveolaris. J. A. Roddy, E. H. Funk and D. W. Kramer, Philadelphia.—p. 433.
- 124 Preexisting Condition of Injured. (To be concluded.) G. R. Doré, Bordeaux, France.—p. 439.
- 125 Therapeutic Applications of Human Thyroid Extract. S. P. Beebe, New York.—p. 445.
- 126 Syndrome of Asthenia, of Mental Origin. M. Solomon, Chicago.—p. 449.
- 127 Spasmus Nutans. M. B. Gordon, New York.—p. 453.
- 128 Primary Perithelial Sarcoma of Spermatic Cord; Report of Case. A. Brand, New York.—p. 454.
- 129 Heart Disorders in Children. J. Epstein, New York.—p. 456.
- 130 Graves' Disease. C. H. Keogh, Chicago.—p. 457.

Ohio State Medical Journal, Columbus

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- 132 Murphy's Operation for Prolapse of Uterus. M. Millikin, Hamilton.—p. 603.
- 133 Intranasal Tear Sac Operation. W. Mithoefer, Cincinnati.—p. 604.
- 134 Study of Typhoid in Ohio. F. G. Boudreau, Columbus.—p. 608.
- 135 Merits and Dosage with Method of Administration of Antitoxin in Diphtheria; Report of Case. A. J. Bell, Cincinnati.—p. 618.

Ophthalmic Record, Chicago

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- 136 Eye, Ear, Nose and Throat in Diseases of Thyroid and Thymus. H. Lissner, San Francisco.—p. 433.
- 137 Preservation and Mounting of Eye Specimens for Museum and Teaching Purposes. H. Albert and V. Bennett, Iowa City, Ia.—p. 441.
- 138 Case of Unilateral Wood Alcohol Retrobulbar Neuritis. H. W. Cowper, Buffalo.—p. 452.
- 139 Massage of Eye. O. Wipper, Chicago.—p. 454.
- 140 Case of Divergent Strabismus Coupled with Autonomic Control of Refractive Status of Eyes and Treatment. C. Sheard, Cleveland.—p. 455.

Providence Medical Journal

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- 141 Light Under Bushel. W. McDonald, Jr., Providence.—p. 232.
- 142 Internal Secretions and Mental Disease. A. H. Ruggles, Providence.—p. 240.
- 143 Subphrenic Abscess. C. E. Hawkes, Providence.—p. 251.
- 144 Use of Glatzel Mirror in Rhinology. J. W. Leech, Providence.—p. 268.
- 145 Harrison Law. J. J. Pastille, Providence.—p. 279.

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- 146 Case of Streptococcus Meningitis. B. M. Randolph, Washington.—p. 299.
- 147 Pott's Disease in Adults; Report of Sixty-One Cases. T. M. Foley, Washington.—p. 303.

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- 1 Tetanus. C. H. Browning.—p. 14.
- 2 Case of Tetanus of Paraplegic Type. E. N. Burnett and W. Tulloch.—p. 43.
- 3 Case of Tetanus Localized to Right Arm. E. Ritson.—p. 48.
- 4 Generalized Tetanus. Death from Pneumonia. E. Ritson.—p. 49.
- 5 Suggestions for Treatment of Fractured Jaws. A. C. Valadier.—p. 64.
- 6 Contemporary American Surgery. G. W. Crile.—p. 74.
- 7 Shrapnel Wound of Posterior Wall of Pericardium; Removal of Missile. R. S. Skirving.—p. 96.
- 8 Gunshot Wound of Pericardium and Heart; Pneumohemopericarditis; Operation; Recovery. L. Jones.—p. 103.
- 9 Pituitary Fossa; Methods of Surgical Approach. V. Z. Cope.—p. 107.
- 10 Tunnels and Large Cavities in Bone. N. F. Lock.—p. 145.
- 11 Treatment of Tuberculosis of Spine. F. McG. Loughnane.—p. 156.

- 12 Traumatic and Arteriovenous Aneurysm. R. J. Swan.—p. 169; C. H. Whiteford—p. 179 and J. L. Joyce—p. 181.
- 13 Surgical Anatomy of Synovial Membrane of Knee Joint. A. Fullerton.—p. 191.

Journal of Tropical Medicine and Hygiene, London*August 15, XIX, No. 16*

- 14 Case of Cataleptic Trance. J. A. Haran.—p. 189.
- 15 Measurements of Dutton and Todd's Gambia Strain of Trypanosoma Gambiense Dutton, 1902. A. J. Chalmers and W. R. O'Farrell.—p. 189.

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- 16 Educational Number.—p. 353.

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- 17 *New Method of Bloodless Circumcision. H. Curtis.—p. 101.
- 18 Hyperalgesia in Abdominal Disease. D. Ligat.—p. 106.
- 19 Reaction of Child to Faulty Environment. H. C. Cameron.—p. 137.
- 20 *Vicious Circles in Disease and Nature's Efforts to Deal with Them. F. P. Weber.—p. 145.
- 21 Acute Local Pyrexia. J. H. Wilson.—p. 149.
- 22 Dermatitis Due to Hair-Dyes. J. L. Bunch.—p. 173.
- 23 Report on Six Months' Gynecologic Operations. A. B. Lindsay.—p. 180.
- 24 Case of Extensive Malignant Ulceration Treated by Roentgen Rays. F. Hernaman-Johnson.—p. 188.
- 25 Ether and Chloroform Anesthesia. R. E. Humphrey.—p. 191.

17. **Bloodless Circumcision.**—The method devised by Curtis is briefly as follows: On either side of the median dorsal line, the prepuce is seized between two pairs of forceps, the points of which are pushed right up to the level of the corona glandis. The prepuce between the clamps is slit up to the corona into two lateral flaps each of which is clamped from below upward, at a distance of about one sixth of an inch from its attachment in the circumcoronal region. The clamp, in the case of each flap, is applied with the point directed upward and inward, that is, toward the median dorsal line, the angle of union of the blades being made to lie at a point about one sixth of an inch distant from the frenum. More than one clamp is generally necessary, and to secure bloodlessness, it is essential to apply the second, or higher clamp, so that there is no interval of prepuce left unclamped between the first and second (or more) clamps, from which oozing could subsequently occur. With a catgut suture, threaded at both ends with short straight needles, perforate the flap just proximal to the clamp, from mucous membrane to skin, pulling the catgut nearly halfway through, so that the midpoint of the suture will lie over the free lower margin of the flap, close to the frenum. A second needle is then passed in the opposite direction, from skin to mucous membrane, through the same stitch hole, and the ends of the suture are drawn taut, much as is done in stitching a boot. This maneuver is repeated to the other end of the flap, passing the needles in opposite directions from mucous membrane to skin, and vice versa, the two needles always passing through one and the same aperture, until the upper cut edge, near the median dorsal line, is reached. The ends of the suture are drawn comfortably taut and tied. The other lateral flap is similarly stitched. The ends of this second suture being drawn taut and tied, are then tied to one or both ends of the first suture. The clamps are then removed from the flaps, and the redundancy trimmed off all round, just distal to the suture line, completing the operation. The hemorrhage should be nil.

Bulletin de l'Académie de Médecine, Paris*August 8, LXXVI, No. 32, pp. 107-120*

- 26 Transient Albuminuria a Common Biologic Incident in the Healthy. (Sur les albuminuries transitoires.) Capitan.—p. 107.
- 27 *The Iodin Urine Reaction. Petzetakis.—p. 110.
- 28 *Serotherapy in Typhoid. A. Rodet.—p. 114.
- 29 Smallpox at Marseilles in 1915-1916. Arnaud.—p. 116.
- 30 *Revival of Ancient Endemic Focus of Malaria in France. (Reviviscence d'un ancien foyer de paludisme autochtone dans la vallée de la Seille.) G. Etienne.—p. 118.

27. **The Iodin Reaction in the Urine.**—Petzetakis' so-called "new iodoreaction" was described in these columns September

16, p. 911, abstract 60. In 76 cases of pulmonary tuberculosis the findings were constantly negative in a group of 33, none of whom have died during the four months since. In 12 with a slightly positive reaction, one died the fortieth day, and 2 died in a group of 10 giving a positive reaction, and 15 of 21 giving a very strong reaction—all within two months.

28. **Serotherapy in Typhoid.**—Rodet is convinced that serotherapy shortens the course of typhoid when begun in time. The difference in the outcome according to the date it is begun testifies further to its efficacy. The average duration of the disease was 23.7 days among 167 typhoid patients given serum treatment before the eleventh day, and thirty-three days in twenty-eight who did not receive it till later. Any associated infection impairs its action.

30. **Revival of Malaria in French Valley in War Zone.**—Etienne relates that malaria had long been endemic in the Seille Valley, which is infested with the malaria mosquito, but he had not known of any new case since 1888 until last year. In 1915 a number of new cases were encountered, all in persons who had never been in tropical or other malarial regions. He thinks it probable that troops from Africa and French China have brought virulent malaria parasites into the country, and thus the mosquitoes are serving anew as intermediary hosts.

Presse Médicale, Paris*August 17, XXIV, No. 46, pp. 361-368*

- 31 *Technic for Gastrectomy with End-to-Side Gastrojejunostomy. (Cure radicale du cancer du pylore.) V. Pauchet.—p. 361.
- 32 Can There Be an Ideal Antiseptic? A. Jousset.—p. 364.

31. **Gastrectomy for Cancer of the Pylorus.**—Pauchet's article is accompanied by sixteen illustrations showing the various steps of the end-to-side gastrojejunostomy which he advocates. The stump of the duodenum left projecting is capped with a piece of the gastrohepatic ligament drawn down for the purpose. He advises lavage of the stomach before the operation not only to clear it out but also to train it in this exercise, as it may be necessary after the operation if the patient vomits or has fever. He has the patient wrapped in cotton from head to foot the day of the operation, and gives him subcutaneously from 1 to 3 liters of physiologic serum with sugar. He always prefers regional anesthesia as general anesthesia is too dangerous on account of lung complications. It generally has to be supplemented with a few whiffs of a general anesthetic in operations for ulcer, but this is rarely needed with cancer. The jejunum is drawn up through a hole made in the mesocolon. The segment sutured to the stomach is about 15 cm. from the duodenojejunal angle. If the cut end of the stomach is too long for the slit in the jejunum, the stomach end can be sutured independently for a stretch. The head of the pancreas must be carefully examined, and if it has been denuded or otherwise molested it must be covered with omentum, sutured in place. The patient leaves the bed the fourth or fifth day and the threads are removed the twelfth. Some of the patients have diarrhea. He gives them every day 1 or 2 liters of water containing five lumps of sugar, 1 gm. hydrochloric acid, and the whites of two eggs to the liter. The stomach reduced to one third of its former size functionates like a normal stomach. This method permits removal of two thirds of the stomach by a simple and remarkably rapid technic. Before attempting the operation he has the teeth put in order and systematically cleaned before and afterward, painting the gums with iodine. During the week before and after the patient drinks nothing that is not sterile and taken from sterile vessels.

Correspondenz-Blatt für Schweizer Aerzte, Basel*August 12, XLVI, No. 33, pp. 1025-1056*

- 33 *Recent Research on the Cornea and Retina. (Neue Beobachtungen an Hornhaut und Netzhaut des Auges.) O. Haab.—p. 1025.
- 34 Physiotherapy in Military Circles. (Die physikalischen Heilmethoden in unserm Armeesaniitätsdienst.) Haslebach.—p. 1033.
- 35 Types of Field Latrines Now in Use. (Hygiène militaire. Les latrines de campagne.) F. Messerli.—p. 1038.

33. **Subsidence of Keratitis Under Tuberculin.**—Haab calls attention to a form of keratitis which he has named *Buchstaben*-, "letter," keratitis. He has encountered only seven cases of it in the course of eighteen years. Its detection requires illumination from the side, with an exceptionally powerful light, such as a Nernst or Osram light. The surface of the cornea shows certain linear irregularities, the epithelium projecting a trifle to form short lines which, as they meet and cross, form figures resembling the straight line letters, A. W. V or X. Small round infiltrations may be scattered along the lines, and there may be some irritation of the eye. The keratitis may subside in from one to three weeks but in some cases it returns again and again. It may entail reduction of the intra-ocular pressure or even loss of vision from the changes in the depths and on the surface. In one such case a woman of 25 had lost the use of the left eye from years of the keratitis, with permanent opacity of the cornea. She had been under specialist treatment for years without avail. The right eye finally became involved. No treatment seemed to have any power to arrest the slow progress of the affection until, after nine months, as a last resort, a course of tuberculin treatment was commenced, and at one stroke the trouble was checked. The inflammation subsided, the cornea became smooth and vision improved from $\frac{5}{60}$ to $\frac{1}{3}$ in less than two months and finally became $\frac{6}{60}$. In the course of three months twenty-four injections of tuberculin had been given, and there can be no doubt that this saved the eye which was slowly going the way of its mate, in which vision had long been only $\frac{1}{10}$. He has had no opportunity to try tuberculin in any other case of the kind. See following abstract.

33. **Recent Research on the Retina.**—Haab declares that the red color of the fundus is not due to the blood, as generally assumed, but to pigmented epithelium back of the retina. The red of the fundus does not give the hemoglobin line in the spectroscope, and in a case of lipemia—the blood nearly white—the fundus showed its normal red color but the finer capillaries in the retina were quite white. He comments further on the peculiar vulnerability of the macula lutea, the tiny yellow spot on which we depend to gain our daily bread. Any slight trauma is liable to injure it, even cause production of a hole in it. Any metal foreign body in the vitreous body or sudden compression may set up an isolated disturbance of the fovea alone. It seems probable that the great demands made physiologically on the fovea may wear it out prematurely. The foveal reflex—the transverse oval shape—occurs only when the macula and its environment are sound, and hence is an index of the condition of the macula. With atrophy of the optic nerve, the foveal reflex enlarges, showing that the fovea has become flatter. With myopia, the premature disappearance of the central reflex is the first symptom of pathologic conditions in the macula, and calls for treatment at once. Linear reflexes may be observed with optic neuritis or other affections involving the macula. These linear reflexes occur radial to the center of the fovea, leaving the center free, and may form a halo around the macula. They are always of pathologic import. Sometimes they are due to edematous swelling of the retina, throwing it into folds, or the folds may be in the hyaloid membrane. The preceding abstract is from the first half of Haab's article.

Gazzetta degli Ospedali e delle Cliniche, Milan

August 13, XXXVII, No. 65, pp. 1009-1024

- 36 Clinical Importance of Mixed Infection in Diphtheria. F. Lanza-rini.—p. 1010.

Policlinico, Rome

August 13, XXIII, No. 33, pp. 995-1018

- 37 Physical Measures in Treatment of Accidents and War Wounds. (La terapia fisica nella traumatologia e nella medicina in guerra.) R. Pinali.—p. 999.
38 *Heliotherapy for the Wounded. (L'elioterapia rigeneratrice delle forze.) A. Maffi.—p. 1001.
39 Albuminuria and Life Insurance. I. Romanelli.—p. 1003.

Medical Section No. 8, pp. 281-312

- 40 *Pernicious Anemia; Four Cases. A. Roccavilla.—p. 281.

- 41 *A Subacute and a Chronic Case of Leukemia. (Leucemia subacuta mieloide a piccole cellule linfocitoidi. Leucemia cronica mieloide a sindrome tifoidea.) A. Bolaffi.—p. 294.

38. **Heliotherapy for the Wounded.**—Maffi has been making a special study of the effect of sunlight as a means of treating bone and joint tuberculosis and other lesions, and has obtained most excellent results in the last two years. In one case of leg ulcer with huge elephantiasis of the leg below, the ulcer of twenty years' duration, rebellious to all measures, systematic heliotherapy healed the lesion in two weeks, and with the aid of Thiersch flaps the ulcer was completely cured by the end of the month. Extreme and individual care is necessary in the tuberculous cases on account of danger of overflowing the organism with the toxin set free, but in all other cases the method can be applied with confidence without special care. It had been his intention to make a special study of heliotherapy on transatlantic liners, but the war interfered with these plans. The exhausted, sick and wounded soldiers returning from the front benefit immensely from a course of heliotherapy, exposing the front one day and the back the next, gradually increasing the exposures. The men bask in the sunlight with enjoyment, and thrive much better than those not taking the heliotherapy.

40. **Pernicious Anemia.**—Roccavilla reports in minute detail four cases of pernicious anemia in men of from 50 to 65. death occurring in four or five months after the increasing weakness had first attracted attention. In one a syphilitic origin was probable.

41. **Leukemia.**—In the first of the two cases described, the patient was a lad of 15 and the white corpuscles were almost exclusively of the immature forms. The blood-producing organs showed histologic changes at necropsy after five months' course of the disease. The spleen and liver were much enlarged and Bolaffi cultivated the *Streptococcus conglomeratus* from the blood. The case was distinguished by its long duration and by the absence of any lesions on the mucosa. The bone marrow showed myeloid metaplasia and there was micromyeloblastic proliferation. The other patient was a previously robust man of 41 who developed suddenly extreme prostration with fever, dying the fortieth day after presenting diarrhea, the spleen and liver progressively enlarging, the blood showing myelocyte leukemia.

Brazil-Medico, Rio de Janeiro

July 29, XXX, No. 31, pp. 241-248

- 42 Cotton Hygrometer. (Sobre um novo hygrometro.) A. Godoy.—p. 242.

Russkiy Vrach, Petrograd

XV, No. 23, pp. 529-552

- 43 *Dietetic Treatment of Gastric Ulcer. (O dieticheskoy lietchenii krugloi yazvi zheludka.) A. I. Yarotsky.—p. 529.
44 Operative Technic in Region of Subclavian Vessels. (V oblasti podklyuchichnikh sosudov.) N. A. Dobrovolskaia.—p. 537.
45 Organization of Aid for Maimed Soldiers. S. A. Brushtein.—p. 539.
46 Action of Guanidin and Methylguanidin on Blood Vessels and Circulation. (Vliyanie metilovikh proizvodnikov guanidina na krovoobrashtshenie.)—p. 544; (O sosudosuzhivaiushchem diei'-vie guanidina i ego metilovikh proizvodnikh.) M. P. Bovshik and E. I. Sinelnikoff.—p. 546.
47 *Research on the Periodical Activity of the Gastro-Intestinal Tract Under Various Conditions. (Niekotoriya noviya danniya o vliy-anii razlichnikh uslovii na periodicheskuyu dieyatelnost pishtshe-varetelnago pribora.) A. I. Nikulin.—p. 574.

No. 24, pp. 553-576

- 48 Independent Automatic Irregular Contractions of the Blood Vessels, Studied on Rabbit's Ear. (O samostoyatelnykh sokrashtsheniyakh sosudov.) N. P. Kravkoff.—p. 553.
49 Ultimate Disability from Poisoning with Asphyxiating Gases; Five Cases. A. S. Solovtsova.—p. 565.
50 Device to Aid in Holding Dressings in the Shoulder Region. A. T. Berdiaeff.—p. 567.

43. **Treatment of Gastric Ulcer.**—Yarotsky describes in detail his method of treatment of gastric ulcer, which is exclusively dietetic. When the patient enters the hospital he gets the next morning, even in the presence of hemorrhage, one raw white of an egg, without salt, and in the evening of the same day 20 gm. of fresh butter, also without salt. Each succeeding day the amount of the whites of eggs is increased by one, and that of butter by 20 gm., until eight whites and 160 gm. of butter are given. The latter amount may be con-

tinued for one or two days, and then mashed potatoes may be added, prepared with water and butter. Any oil, of good quality, may be given instead of the butter. No water is allowed, as this increases the flow of gastric juice. Water may be given in the form of enemas if the thirst is excessive. Later on, weak sweetened tea is allowed. Milk is not given for a long time, but vegetables and various gruels with oil or butter are well borne. This diet Yarotzky found ensures the greatest rest for the stomach, relieves the pain, the belching, the burning and the inflation of the epigastric region, and causes contraction of the cavity of the stomach. This helps to bring the edges of the ulcer together and promotes healing. The gastric acidity with this treatment is greatly reduced. It was found useful also in cases of poisoning with caustic acids and alkalis threatening perforation, also in cases of hyperchlorhydria and gastrosuccorhea when it is necessary to keep the stomach at rest, and in the after-treatment of operations on the stomach. Yarotzky gives the details of fifteen cases to illustrate the advantages of this dietetic method.

47. Periodical Activity of the Gastro-Intestinal Tract.—Boldireff and Nikulin of the pharmacologic laboratory of the University of Kazan have been conducting extensive research on the periodical activity of the gastro-intestinal tract during and outside of digestion. An article by Nikulin on the subject was summarized in *THE JOURNAL*, Oct. 9, 1915, p. 1316. He here reports further research in this line to determine which factors promote and which inhibit this periodical activity. He made sixty-eight experiments on two dogs with permanent fistulas into the stomach and duodenum. The substances that check the periodical activity of the gastro-intestinal tract may be classified as true and accidental inhibitors. Pain, heating the animal, introduction of very hot or cold fluids into the gastro-intestinal tract, in amounts not less than 60 c.c., and acids in a certain concentration, all have a decided effect in checking the periodical activity of the tract, as true inhibitors. The accidental inhibitors include indifferent substances such as water, liquid petrolatum, white of egg. The work of the digestive tract is checked by the true inhibitors at any stage of its activity, and the inhibition occurs more readily and promptly if the stomach or bowels are in a pathologic catarrhal condition. During experiments on the gastro-intestinal tract, the reaction of the stomach content should be alkaline, as acids may modify the periodical activity of the stomach, and thus mistaken conclusions may be drawn. Nikulin thinks that this is responsible for Carlson's recent statement that water, tea, coffee and bitters are true and constant inhibitors.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

August 12, II, No. 7, pp. 521-592

- 51 *Multiple Small Attacks as Rudimentary Form of Epilepsy. (Drie opstellen over epilepsie. II. De pathogenese der veelvuldige, kleine aanvalletjes.) G. C. Bolten.—p. 527.
- 52 *Vaccine Therapy in Typhoid. J. L. A. Peutz.—p. 555.
- 53 *To Improve Appearance of Thick Lenses in Eyeglasses. (Een cosmetische verbetering van den vorm der sterke negatieve brillen.) W. Koster.—p. 568.

51. Multiple Slight Attacks Suggesting Epilepsy.—Bolten discusses Friedmann's and others' statements in regard to multiple slight "absences" of which he has encountered a number of cases. He disagrees with those who regard them as a morbid entity or as identical with Gelineau's "narcolepsy," declaring that the multiple small attacks do not form a sharply circumscribed clinical-morphologic picture but vary within wide limits. They may be merely the simplest form of disturbance of consciousness ("absence") or merely a slight sensation of dizziness or the most elementary motor response to irritation (rolling the eyes), or they may be of a complex character, with actual though rudimentary "motor discharges" of the most varied nature. The different cases have only the one feature in common that these small attacks occur repeatedly and often and that each is very brief. From the clinical standpoint they must be regarded as the most rudimentary form of the epileptic seizure. They differ from it only in degree and quantitatively. The pathogenesis also differs in the various cases. A small proportion of the cases belong to

hysteria; the largest proportion are of the cerebral epilepsy type, while there can be no doubt that "true" epilepsy is responsible for others. They have nothing to do with narcolepsy nor with what Bratz calls *Affect-Epilepsie*, and they cannot be regarded as a separate morbid entity either from the standpoint of a neurosis or of anatomy. Fourteen cases are described from Bolten's own experience, grouped according to the above scheme of the pathogenesis. He meets the objection that the mind shows no impairment with these multiple brief attacks, even through many years, by citing some cases of men and women with severe epileptic seizures who were yet able to conduct a more or less important business for from twenty to forty-seven years after they began to have the severe true epileptic seizures at the age of about 20, and with no signs of mental impairment at any time since.

Bolten's most typical case exhibiting the multiple, small attacklets, as he calls them, was in an intelligent and placid young woman of 18, absolutely free from signs of hysteria or emotionalism, one of eight healthy children. Without known cause, at the age of 6, she began to have these attacks, averaging from eight to twenty a day but sometimes many more. They were always of the same character: She does not stop what she is doing; if she was running, she keeps on running, but she grows pale and stares at vacancy; the cornea and pupil reflexes are abolished during the attack, but she never falls or bites her tongue or passes urine or drops anything from her hands during the brief attack. If she is playing the piano, her fingers keep on touching the keys but the discord shows that something is the matter. Sometimes merely her nonreplying to a question is the only thing that attracts attention to the fleeting attack. Nothing seems to influence the coming on or warding off of the attacks, and no shaking, calling to her or pulling on her has ever had the slightest influence in shortening or interrupting an attack, and no treatment for hysteria, epilepsy or anything else has ever shown any influence, which, Bolten remarks, excludes "true" epilepsy. The attacks are precisely the same now as when he made a careful study of the case four years ago. Otherwise the young woman seems mentally and physically sound, rather above the average.

52. Vaccine Therapy of Typhoid.—Peutz concludes his report of his experiences with vaccine therapy in eleven cases of typhoid with the quotation from Deutsch: *Wir müssen den günstigen therapeutischen Angaben mehr als skeptisch gegenüberstehen*. "We must be more than skeptical in accepting favorable reports of therapeutic action." He says that in his eleven cases the results of vaccine therapy were but little more than nothing (*weinig meer dan niets*).

53. Improved Shape for Negative Eyeglasses.—Koster suggests that the extreme edge of the thick lenses required for strongly negative glasses might be made to taper instead of showing the broad and unsightly edge. It would make no difference in the use of the glasses, except in looking far to the side, if the edge, beyond the visual expanse was ground to taper to a sharp edge all around. This would immensely improve the appearance of the glasses.

Finska Läkaresällskapets Handlingar, Helsingfors

LVIII, No. 5, pp. 719-882

- 54 *Interpretation of Findings on Direct Visual Inspection of Interior of Thorax and Abdomen. (Bidrag till kännedom om laparoch torakoskopi.) A. Johnsson.—p. 719.
 - 55 *Aneurysm of the Aorta; Study of Thirty-Four Cases. J. C. Sjöblom.—p. 749.
 - 56 *Epidemic of Typhoid in Finnish City. (Tarntyphusepidemia i Tammerfors 1916.) M. Björkstén and C. Nyberg.—p. 808.
- No. 6, pp. 883-1056
- 57 *Predisposing Factors in Appendicitis. (Till kännedom om appendicitens förekomst samt något om de disponerande momenten i appendicitens etiologi.) W. Backman.—p. 883.
 - 58 *Congenital Rhabdomyoma of the Heart. E. H. Jägerskiöld.—p. 953.
 - 59 *Chronic Indurative Pancreatitis; Two Cases. F. Stenius.—p. 966.
 - 60 Treatment of War Wounds of the Femur; Sixty-Four Cases. (Krigskirurgiska erfarenheter om behandlingen af skottskador å femur.) A. F. Hornborg.—p. 976.

54. Laparoscopy and Thoracoscopy.—Johnsson has been applying the cystoscope in investigation of the interior of the

abdomen and thorax, and describes the findings in twelve abdominal and eight thorax cases. The technic is simple, but interpretation of the findings is not so easy. It is a valuable aid in diagnosis in dubious cases. He reproduces some of the views thus obtained; one shows scattered hemorrhages of different ages scattered over the costal pleura after removal of a cancer of the spine in a woman of 35. The pleural trouble was evidently part of the metastasis picture.

55. Aneurysm of the Aorta.—Sjöblom found a history of syphilis in over 77 per cent. of 34 cases of aortic aneurysm at the Helsingfors hospital since 1900. In the 10 tested for the Wassermann reaction, it was positive in 90 per cent. The shortest interval since infection was seven years, the longest 35. The youngest patient was 30 at the time of his death, the oldest 70. In 9 cases rupture of the aneurysm was the cause of death, and in 13, interference with the action of the heart. In all but 2 cases the aneurysm was in the thoracic aorta; one patient had an aneurysm in both this and the abdominal aorta. In one case there was pronounced acute nephritis, but 7 presented albuminuria. Under anti-syphilitic measures subjective improvement for a longer or shorter time was realized; 3 of the 13 are now clinically sound with unimpaired earning capacity during the year to date. By an early diagnosis and prompt treatment it may prove possible to arrest the aneurysm in its incipency. It is liable to be accompanied by symptoms of cardiac insufficiency or angina pectoris, or there may be merely neuralgiform pains, cough with or without blood in the sputum, or symptoms from the pressure in the mediastinum. The physical symptoms may not appear until late in the course of the aneurysm, and the diagnosis may depend almost altogether on the Roentgen picture. A serous effusion in the pleura is a common complication, and is liable to mask the aneurysm. Puncture of the effusion in such a case might be dangerous as it might open the aneurysm. Although the pains and other disturbances may subside completely under antisiphilitic treatment, yet there is little chance of the aneurysm retrogressing.

56. Typhoid at Tammerfors.—From forty-one cases in January the epidemic jumped to 1,609 cases in March. The water supply had been accidentally contaminated by dredging near the mouth of the intake pipes. The epidemic was combated by providing quarters in the hospitals to receive all typhoid patients—which was by no means an easy task at first—and by getting ample nursing and disinfecting service for which the city appropriated ample funds from the start. The water contained numerous typhoid bacilli and it was at once chlorinated, after which the epidemic died out although occasionally a few typhoid bacilli are still found in the water. The chlorination can thus be regarded as quite satisfactory, but not as an absolute guarantee against typhoid bacilli.

57. Appendicitis in Finland.—Backman analyzes 946 operative appendicitis cases in the last five years in a district with 104,198 inhabitants. The proportion was thus 1.28 per thousand. Only 29.4 per cent. of the total cases were of the destructive type, and in 21.6 per cent. of this group a familial predisposition was manifest. A nervous or tuberculous taint was evident in 50 per cent. and only 8.4 per cent. of all the appendicitis patients could be classed as robust. Dyspepsia had been noted in 51.6 per cent. of the destructive and in 58.8 per cent. of the catarrhal cases. Gastroptosis was found in 34.7 per cent. of the severe cases in men and in 79.7 per cent. in the women; in the catarrhal cases, in 55.2 per cent. of the men and 77.7 per cent. of the women. These figures indicate a constitutional factor as an element in the etiology of appendicitis. The well-to-do are affected more than the working classes. Chronic constipation has a share in its development, but no connection with acute enteritis or colitis was evident, and no influence from acute infectious disease or the seasons. In 727 cases the appendix varied in length from 2 to 19 cm.

58. Rhabdomyoma of the Heart.—The case described by Jägerskiöld was in an infant of 7½ months who had developed apparently normally except for striking pallor. There was

no cyanosis, no restlessness, merely a slight cough for a few days, and the boy died silently in bed one night. The case resembles in every respect Seiffert's case, and sustains his views as to the origin of the growth from giant embryonal heart muscle cells. Nothing abnormal was found in the brain or kidney.

59. Chronic Pancreatitis.—Stenius found that a cancer had obstructed the outlet to the pancreas in each of the two cases of indurative pancreatitis he describes. The women were 64 and 50, and this obstruction amply explains the pancreas trouble although some local infection had probably accelerated it.

Norsk Magazin for Lægevidenskaben, Christiania

August, LXXVII, No. 8, pp. 989-1124

61 *Roentgenography in the Diagnosis of Suppuration in the Accessory Nasal Sinuses. (Röntgenogrammens betydning for diagnosen av naesebihulernes empyemer.) R. Gording.—p. 989.

62 *Scorbutus and Its Prophylaxis. (Fortsatte undersøkelser om skjørbuk med specielt sigte paa at konservere hvitkaal med bibehold av dens antiskorbutiske egenskaper.) A. Holst and T. Frølich.—p. 1008.

63 *Thymus Treatment of Chorea. (Corea minor. Aetiologie og patogenese.) A. O. Haneborg.—p. 1043.

61. Roentgenography of the Accessory Nasal Sinuses.—Gording's study of this subject is illustrated with twenty-one roentgenograms of healthy and diseased sinuses, and of sinuses in the cadaver. Roentgenography as an aid to the diagnosis is of most import with frontal sinusitis and in the discovery of involvement of more than one sinus. It is also valuable in revealing asymmetry in the sinuses, which may otherwise prove misleading. The sphenoidal sinus is the only one that is not shown up by sagittal roentgenography. Even the picture from the side is not reliable, as the shadows of the two cavities are superposed and blend. When there are septa, and the front wall is thick, the shadow may be dark even with a healthy sinus.

62. Further Research on Scorbutus.—Holst and Frølich reiterate that scorbutus in young children and in adults is the same affection, the difference being merely that the bones are complete in adults and hence do not show the changes observed in infants. They have induced scorbutus in guinea-pigs and in monkeys, the clinical picture including even hemorrhage in the kidney, exophthalmos and microscopic changes in the bones. They have also cured the disease in the animals by giving the same antiscorbutic food that cures it in man. The research they here report was undertaken to discover some means of preserving the essential elements in the antiscorbutic articles of food, so that they could be taken on long voyages, etc., where there is danger of scorbutus. They dried white cabbage so that it kept for two years all its antiscorbutic properties as tested on experimental animals. It also retained approximately its color and taste. The drying process was done at a temperature of only 37 C. A dish of phosphorus pentoxid was placed in the air-tight exsiccator with the cabbage. The dish of the pentoxid was changed for a fresh dish now and then, as the weeks passed, until it ceased liquefying. This was the sign that the cabbage was thoroughly desiccated even at the temperature of 37 C. (98.6 F.).

63. Chorea Minor.—Haneborg gives the details of sixty-nine cases of chorea, and then discusses the views of various writers as to its etiology. He says further the hysteric form is rare and is accompanied by other signs of hysteria, and it often occurs from imitation. One feature peculiar to chorea minor is that it begins exclusively in children. Adults can develop acute rheumatism, but never chorea. The chorea age, Haneborg emphasizes, is from 2 to 16, and this age is the period of the thymus gland. Is it not possible, he suggests, that chorea may be the result of deficient or perverted functioning of the thymus gland? Does the thymus gland contain substances which have a tranquilizing influence on the nervous system, so that any deficiency in its internal secretion may leave the nervous system in the young free to behave abnormally? The adult nervous system has acquired a stable balance so that it does not suffer from lack of thymus functioning.

It seems plausible to assume that with acute articular rheumatism or any other acute infectious disease the thymus may suffer. It need not inevitably suffer but, if it does, its secreting function may be impaired and the unstable nervous system of the child may feel the lack of the normal restraining influence from the thymus. The nervous system is thus left free for exaggerated reflex irritability, and we have the clinical picture of chorea. Thymus extract seems to have a sedative influence on the nervous system. Vetlesen has been giving it systematically to patients with exophthalmic goiter, finding it decidedly beneficial, and Haneborg has given it with good effect to control convulsions. He mentions the case of a congenital idiot who had had for years from fifteen to thirty convulsions a day, rebellious to all measures, until they subsided under a course of thymus treatment. They returned later, but milder, and only one or two a day. After a second successful case of convulsions subsiding under thymus treatment, Haneborg began to treat chorea with thymus, and the clinical histories here reported show the abrupt turn for the better when this was done. Sixteen hospital patients were given the thymus treatment and several in his private practice. The results were most satisfactory, both in the infectious and in the hysteric form of chorea, even in cases of many months' standing. The choreic movements returned in one case when the treatment was suspended after a week, but subsided anew when it was resumed.

His idea is that the thymus is not the only factor involved in the production of chorea, but that an insufficiency in the functioning of this gland may be the drop that makes the cup spill over—upsetting the unstable balance of the immature nervous system, and allowing the play of uncoordinated, choreic movements. There is much to sustain the assumption that an infection is the primary factor, an infectious encephalitis. But this alone does not bring on chorea, as otherwise chorea might occur in adults. The additional factor which imprints the chorea stamp on the clinical picture is thymus insufficiency, and thymus treatment may do away with this factor. He advises the salicylates at first for two days if there are rheumatic pains and fever; otherwise not. At the same time he gives from three to six thymus tablets daily—a child of 10 getting four or five a day. He suspends the thymus treatment when the jerking movements have ceased.

In two cases of pregnancy chorea, the jerking movements subsided under thymus, without other measures, as he expected, but in two cases of tic convulsif, a purely nervous affection, no effect was apparent.

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- 64 *Pandy's Test for Albumin Reaction in Cerebrospinal Fluid. (Om Pandy's Reaktion i Cerebrospinalvædsken.) C. With.—p. 1353.
65 *Lumbar Puncture in Syphilis. (Om Generne ved samt om Indikationerne for Lumbalpunktur ved Syphilis.) C. With.—p. 1353.
66 *Congenital Syphilis at Copenhagen General Hospital. Ehlers.—p. 1370.

64. **Test for Albumin in Cerebrospinal Fluid.**—With has been applying Pandy's test with parallel tests according to the Bisgaard, Ross and Jones method in 225 clinical cases. He tabulates the findings in the cases of syphilis, comparing them with the cell count and the Wassermann reaction. Pandy's reagent is a concentrated solution of liquid phenol in distilled water. About 80 c.c. of the liquid phenol are mixed with the distilled water, stirred and placed in the incubator for several hours. After keeping for a few days at room temperature, the upper, watery part is used for the reagent. A drop of the cerebrospinal fluid is transferred with a Pasteur pipet to the bottom of a watch glass filled with the reagent. If no precipitate is thrown down in five seconds, the findings are negative. Pandy reported negative findings in all but 5 of 133 patients free from paresis, and these 5 had a history of syphilis. In 106 cases of paretic dementia the reaction was very pronounced and there was a weak response in 7, and no response in 9. With concludes from his study of the reaction in 325 cases that an absolutely negative reaction is strong testimony in favor of normal conditions while a very pronounced reaction testifies the opposite.

As the technic is so extremely simple and as the findings are complete in a few seconds, he thinks the test will find useful application at the bedside, accepting the absolutely negative or the strongly positive responses as a criterion, not trusting to the less decided responses. A strong positive response calls for the application of other, more exact tests, while an absolutely negative reaction is a fairly certain sign that the fluid is normal.

65. **Lumbar Puncture.**—With has had opportunity to study the effects of lumbar puncture on large numbers of patients and tabulates the outcome, listing the symptoms which followed the puncture when only 5 c.c. were withdrawn and in the cases in which the lumbar puncture was repeated two or more times. The cases are classified further as the puncture was done in the hospital or on outpatients. He insists on a week's rest afterward if the patient cannot be induced to enter the hospital, and warns that a brain or spinal cord tumor in a syphilitic need not necessarily be of syphilitic origin, relating a few cases. In 453 cases of syphilis apparently not involving the nervous system, 56 of the men and 74 of the women had severe headache and vomiting for a few days to a week, after the lumbar puncture. With remarks in conclusion that although he has had no experience of the kind and has not encountered any altogether reliable account on record, yet it seems plausible to assume that the fluctuations in the pressure in the spinal fluid after lumbar puncture might spread a previously localized process. Holm has reported a case which suggests this: A child with symptoms of a tumor in the brain developed symptoms of meningitis five days after lumbar puncture, and necropsy revealed a tubercle in the brain and tuberculous meningitis.

With recapitulates his experiences with lumbar puncture done 490 times on patients without signs of nervous disease that more or less serious by-effects followed in 28 per cent. The by-effects were more numerous and more severe the larger the amount of fluid withdrawn and when the puncture was done on outpatients. With patients presenting symptoms of involvement of the nervous system, the by-effects were less pronounced, but were often severe in the neurasthenic. He insists that lumbar puncture should not be done the same day as the injection of salvarsan. At the same time he emphasizes the necessity for lumbar puncture in all cases of syphilis in the hospital when it has not been done before. A negative response to tests of the cerebrospinal fluid is no guarantee that the nervous system is not involved. When an old syphilitic with no symptoms left but a positive Wassermann reaction is in the hospital for any reason, he urges not to miss the opportunity of getting an oversight of the case from all sides.

66. **Congenital Syphilis.**—Ehlers has been keeping for years a general register of all cases of syphilis that have passed through his hands at the public hospital. He has found it of great use in determining the age of the syphilis when the patients return later, and in determining the share of syphilis in nervous affections, cardiovascular disease, etc. This general register now includes all the adult patients as far back as 1887 and the children to 1863. It includes not only all the children with congenital but also those who have acquired syphilis, as the fifty-three years of experience have shown that the two may be superposed and blend into a clinical picture which is illuminated by the facts gleaned from the general register. His register is on the card catalog system, each case being recorded with the full name, place and exact date of birth, the diagnosis and the time of treatment. Sooner or later, he says, the old prejudice against full statistics of syphilis, as a "disgraceful disease," will be overcome and it will be managed like other acute and chronic infections to permit adequate prophylaxis. During the period he mentions there were 1,622 children with congenital syphilis, of whom 591 died. The mortality has declined somewhat; the highest figure was 53 per cent. in 1871-1880 while since 1900 it has been 32 and 34 per cent. He adds that those who died were in a very grave condition, practically moribund, when brought in. The treatment of children with congenital syphilis, when given a chance, is by no means the ungrateful task which many physicians think or as these statistics seem to show.

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THE PROBLEM OF THE CHRONIC CRIPPLE*

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NEW YORK

The increasing interest throughout the country in the problem of the chronic cripple creates an opportunity for this section to be of great service in shaping the future development of work for this class of sufferers. As knowledge of the fact that there are large numbers of people in every community who need orthopedic care increases, and as methods of treatment are perfected, a large number of men are going to select orthopedic surgery as a specialty, and will seek opportunities to equip themselves for this work. It seems to me that we of this section should be able to furnish some suggestions to such men in determining the nature of their equipment, and the best means of applying it to the needs of the cripple. In answering such questions, the fact must be emphasized that almost all our work in orthopedic surgery has to do with the treatment of the chronic sufferer, which means that our results are long delayed, often requiring years of painstaking care to detail for their accomplishment, and may be secured only by men giving the same enthusiastic consideration to the treatment of these patients which is so easily given to the treatment of the acutely ill. In other words, we have got in some way to keep ourselves working under the inspiration of a chronic enthusiasm as the only means by which we can meet the tremendous difficulties in the treatment of chronic diseases. Not only is such enthusiasm important on the part of the surgeon, but also it is of immense importance in its influence on our patients. If it is tiresome and discouraging to the surgeon to find results long delayed, how much more so is it apt to be to the patients themselves.

Such enthusiasm is of slow growth, and suggests that the orthopedic surgeon as compared with the general surgeon should have a longer period of preliminary preparation. Not only is this necessary for the development of a spirit of enthusiasm but also is it best for technical equipment.

As has been indicated, the results of our methods of treatment are slow in showing, and a thorough knowledge of them cannot be obtained except by studying the individual case for a considerable time in varying conditions of treatment, in the hospital, dispensary and home. The great volume of work for the cripple is

done in the outpatient or dispensary department, and careful training in this work is as necessary as in the hospital. A large number never have any hospital treatment at all, and those who are admitted to the hospital stay for a short time in comparison with the duration of treatment, and under modern conditions, except in the case of country hospitals for joint tuberculosis, most orthopedic patients are admitted to the hospital for some form of operative treatment. During the past year I have made inquiries of seven clinics in various parts of the country as to the total number of patients treated in each clinic and what proportion of that number were admitted to the hospital for operation. The results of these inquiries have been most surprising, because in the larger clinics, and those which have been longer established, the percentage of patients admitted to the hospital for operation of the total number treated in the dispensary varied from 3 to 10 per cent. In a few instances, the percentage was as high as 18. The average percentage for the whole number was 10.

These facts have an important bearing on the question we are discussing. If the man's training is only in the hospital, his preparation for the treatment of the 90 per cent. of the cases which never enter the hospital is poor. There is a great deal more written about the 10 per cent. who have operations than the 90 per cent. who do not, and I think therein lies a danger to the future development of our specialty, that in the consideration given to the operative side of the work, we may neglect the nonoperative. I am not attempting to raise any question as to the value of operations in orthopedic surgery. There can no longer be any question that the operative aspect of our work is of great importance. All I am concerned about is that the vastly larger volume, the nonoperative, be not neglected. As a matter of fact, the greatest possible operative skill will be defeated in the accomplishment of the greatest amount of good for our patients, unless the man who exercises it has taken pains long before to perfect his equipment in the much more difficult and much more tedious nonoperative work.

Assuming, therefore, the proper training of the man, our second question is, What is the best means of applying it to the needs of the cripple?

This brings us to the question of organization, and I feel sure that from the standpoint of the cripple and his needs, the orthopedic surgeon can be more effective in meeting them in institutions wholly devoted to the treatment of the cripple. There are many communities throughout the country where such work is new and unfamiliar to the profession and the laity, and such places offer wonderful opportunities for men to initiate organizations ideally fitted to the need of the cripple,

* Chairman's address, read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

unhampered by the difficulties of attempting to do work for the cripple in a small and insignificant orthopedic department in a general hospital, the spirit and atmosphere of which I do not believe is most helpful to work of this kind.

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TREATMENT OF CONSTIPATION

BY CONSERVATIVE SURGICAL CORRECTION OF RETARDATIVE DISPLACEMENTS OF THE COLON *

CHARLES A. L. REED, M.D.

CINCINNATI

It is no longer necessary even to affirm that constipation due to displacements, distortions or malformations of the intestines is frequently the cause of various forms of persistent ill health. The demonstration, clinical and pathologic, has been made so frequently and so conclusively that the relationship has become accepted as axiomatic and fundamental. It is no longer a matter of surprise when a progressive practitioner states that constipation is the underlying cause of successively systemic infection, toxemia, acidosis

retardative angulations of the colon, large, flabby and mobile cecum, dilated ascending colon, atrophied transverse colon, redundant transverse colon, retardative angulation at the splenic flexure, retardative angulation with or without adhesion at or near the terminal ileum, and redundancy with or without adhesions of the sigmoid. Each of these conditions, whether coexisting with other of the conditions enumerated or not, is organic; each is associated with tissue or structural change. Each condition must, therefore, find ultimate correction by physical means.

TREATMENT OF MECHANICAL STASIS

Hygienic and Medicinal.—There may be mechanical distortions of the alimentary canal which, because of their limited extent or because of the nonobstructive character of the resulting angulations, do not cause serious disturbance of function. These are the cases which, because of the limited extent and slight character of the distortion, produce less severe consequences—consequences that may be susceptible of temporary relief by hygienic and medicinal means. These, however, are not the cases that are referred to the surgeon, at least until after the temporizing means shall have failed to arrest the progress of the invalidism. They

are not, therefore, the cases that are here under consideration. The cases that are here considered are those in which there is a demonstrated physical impediment to the fecal current, as shown by Roentgen-ray transit studies, and in which there is a demonstrated relation between the intestinal condition and the constitutional state and, finally, in which previous hygienic and medical treatment has failed either to bring relief or to arrest the progress of the invalidism.

I make this last remark largely in deference to the mistaken notion that it is always better to try everything else before trying surgery,

and I say it in recognition of the fact that the day will come when a condition that is obviously surgical from the start will be given the benefit of surgical treatment before the health has become profoundly and dangerously impaired by dalliance with a futile therapy.

Surgical.—The central idea in surgical treatment of mechanical stasis is, as far as possible, to restore or reestablish the physiologic drainage of the intestines. It may not always be possible to accomplish this purpose for the reason that established pathologic conditions may be of such character as to make impossible the restoration of even a functional equivalent of the *status quo ante*. A cecum that has become dilated, flabby and hypermobile by distention due to retardative angulation at the hepatic flexure, a transverse colon that has become atrophied by prolonged enervation due chiefly to purgation, a mucous membrane of either the large or small bowel that has become the seat of deep interstitial and follicular infection, as in some cases of epilepsy, and a marked redundancy of any portion of either the colon or the sigmoid are examples of pathologic change that defy functional restoration.



Fig. 1.—Residual barium in stomach after twenty-four hours, visible duodenum, ileac stasis, coloptosis.



Fig. 2.—Marked coloptosis with ileac and colonic stasis shown forty hours after ingestion.

and terminal edemas. This new point of view has come to be accepted by the profession as explanatory of many chronic headaches, neuralgias and rheumatisms; of many anemias and neurasthenias; of many digestive troubles, including ulcer of the stomach; of various disorders of the secretory organs, such as Bright's disease and cirrhosis—conditions heretofore recognized as separate diseases but now known to be correlated results of a common origin, or, in other words, the effects of toxic or infectious states often originating in constipation. It is also now recognized that constipation has a contributing causal relation not only to these conditions, but to any or all so-called diseases, the inception or progress of which may be deleteriously influenced by general infection, or by toxemia with resulting acidosis. It is also recognized, thanks to the pioneer work of Bouchard, Glenard and Lane, that logical treatment of these conditions must begin with the correction of the initial anatomic disturbance.

ANATOMIC CAUSES OF CONSTIPATION

As I have stated in previous publications, I have found, chief among causes of constipation, ptosis with

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

On the other hand, there are cases, for example, in which an angulating ptosis may occur in an otherwise fairly normal intestine, or in which a prolonged wasting catharsis has left at least some of the muscularis; or, in short, in which there is an apparent possibility of functional restoration. It is obvious that these two classes of cases present very different surgical problems. Thus, the hopelessly played-out, flabby and infected cecum, or the equally atrophic and infected colon ought, under favoring conditions, to be removed, while either or both of these structures, when obviously susceptible of restoration, ought to be given the benefit of helpfully reparative treatment.

It is considerations such as these that have resulted in the development of two classes of operations as follows:

(a) Radical measures, such as excision of the cecum, resection of the transverse colon, resection of the sigmoid, colectomy and the various short-circuiting operations.

(b) Conservative measures, such as the plication of the mesocolon, fixation of the sigmoid, gastropexy and omentopexy.

It is not my purpose to discuss the radical operations. The so-called conservative operations to which I have alluded,



Fig. 3.—Retardative angulation at hepatic flexure with adhesions between proximal surfaces in each curve of letter S. Ileac stasis marked. Exposure twenty-four hours after ingestion.

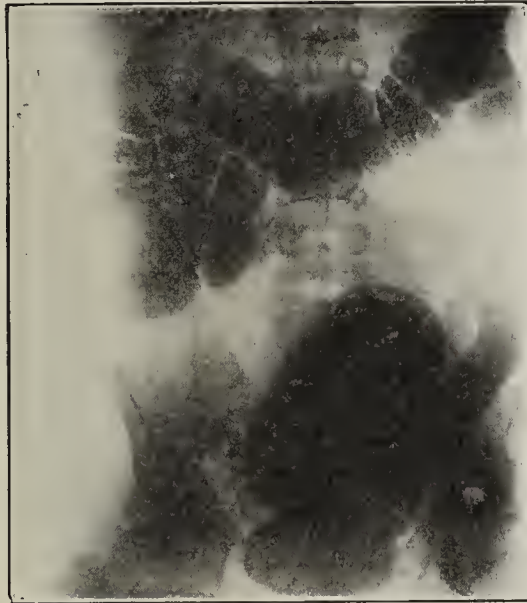


Fig. 4.—Redundance of the cecum (double cecum) and redundant sigmoid, not remediable by parietal implantation of colon.



Fig. 5.—Extreme coloptosis with ileac stasis thirty hours after ingestion.

especially as they have ordinarily been done, have very generally fallen into disuse and, therefore, require no discussion. The fact remains, however, that there is a rational demand for some conservative procedure to assist in the functional restoration of the affected bowel.

PARIETAL IMPLANTATION OF THE COLON

It was for the purpose of meeting the clinical demand for some such procedure that I several years ago devised the operation for parietal implantation of the colon. The object of this operation was, as nearly as possible, to restore the ptotic colon and stomach to their normal position, and to keep them there indefinitely. In this way, it was intended to break up possible adhesions, overcome the retardative angulations, relieve the mechanical disturbance of the whole splanchnic circulation, give freedom to the peristaltic activity and thus drain away the toxic and infectious content of the tract. It was hoped to accomplish these purposes without sacrificial operation on any part of the intestines, while at the same time effecting an implantation to the properitoneal structures that would insure the maximum of permanency.

The essential steps of the procedure are as follows:

A. Lower Zone of the Abdomen:

1. Make a median incision from near the umbilicus to near the pubes. [This incision, closed, is shown only in Figure 7].

2. Explore the viscera, preferably in the following order: (a) cecum, (b) appendix, (c) first 12 inches of the terminal ileum, (d) ascending and transverse colon, (e) stomach, (f) sigmoid, (g) proximal intestinal surfaces, (h) pelvic viscera.

3. Break up any adhesions that may be found.

4. As far as possible, correct all peritoneal abrasions that may have been made by adhesions, giving particular attention to those, the correction of which may have resulted in exposure of the muscularis of the intestines.

5. Approximate the peritoneal margins and hold them together with hemostatic forceps until all work in the upper zone of the abdomen has been finished.

6. After completing all interference in the upper zone, close the lower incision by laminated chromic gut sutures, fortified with a few interrupted silkworm-gut sutures.

7. If there have been adhesions, particularly if numerous or extensive, put a liter of hypertonic salt solution into the peritoneal cavity just before completing closure by suture of the lower incision.

B. Upper Zone of the Abdomen:

1. Make an incision transversely across the intercostal interval about three-fourths inch below the tip of the ensiform cartilage, extend-

ing the same incision at an obtuse angle downward and to the right about a half inch below the costal margin for a distance of from 5 to 6 inches (Fig. 6).

2. The incision just indicated divides (a) the integument, (b) subcutaneous fat, (c) superficial fascia, (d) inner half of the left rectus, (e) all of the right rectus, and (f) the inner margins of the external oblique, internal oblique and the transversalis muscles, and, finally, (g) the transversalis fascia through the entire length of the incision, care being taken not to extend the incision along this line through the peritoneum.

3. Begin at the epigastric fat and dissect the peritoneum away from the transversalis fascia for a distance of three-quarters inch along the whole length of the incision (Fig. 6).

4. Evert the lower flap by seizing the transverse fascia at several points with deep bites of hemostatic forceps (Fig. 6).

5. Divide the peritoneum and the ligamentum teres along the lower line of denudation and bring the ligamentum teres out through a puncture at the base of the peritoneal flap (Fig. 8).

6. Explore the upper zone particularly with reference to (a) the stomach, (b) duodenum, giving special attention to frequent enveloping exudate, (c) gallbladder, (d) pancreas.

7. Put the patient in the Trendelenburg position, bringing the transverse colon and omentum out through the incision.

8. Stitch the omentum to the denuded transversalis fascia by stitching the base of the former by its external surface, to the lower margin of the denuded surface of the latter, employing a continuous-interrupted suture, and exercising care to avoid wounding or constricting important omental vessels (Fig. 8).

9. Close the wound by the following steps: (a) Stitch the margin of the upper peritoneal flap to the under surface of

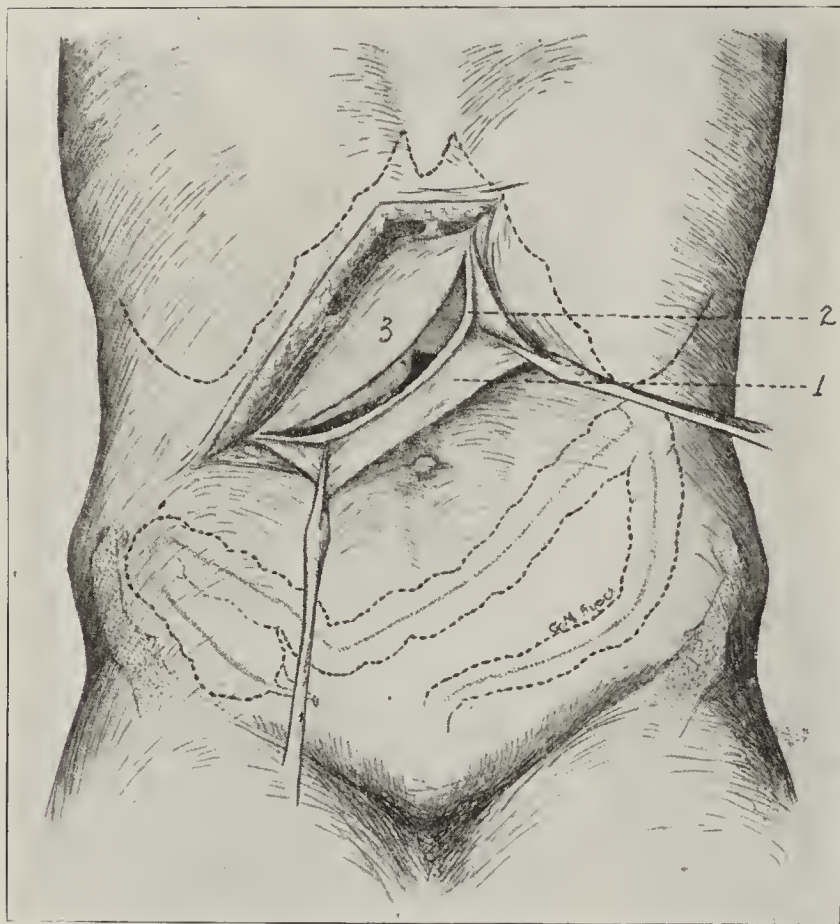


Fig. 6.—The incision in right upper quadrant: 1, everted lower lip of wound showing transversalis fascia; 2, margin of the peritoneum; 3, upper peritoneal flap.

the transversalis fascia. (b) Approximate the divided ends of the muscles by continuous-interrupted sutures of chromic gut passed through the superficial fascia, muscle and transversalis fascia. (c) Fortify the last line of sutures with a few silkworm-gut sutures, passed through the fascial muscle and skin. (d) Close the skin according to the operator's usual method, that employed by the writer being preferably the continuous button-hole stitch with fine catgut.

Limitations.—It is not intended that this operation shall be adopted in cases the careful roentgenologic and clinical study of which shows that the perturbation of intestinal function may be controlled by non-surgical measures. It is not an operation to be justified by other than profound consequences of conditions, local and general, to which I have alluded.

It is not intended that this procedure shall in any way supplant the more radical operations to which I have alluded in cases in which the latter are demanded by conditions which I have described. On the other hand, it would not only do the patient no good, but would merely complicate later operation if, for example, parietal implantation were practiced on a colon so atrophied and so functionally dead that its subsequent removal were a necessity.

Results.—In the last nine years, I have done this operation 226 times in cases in which I have done parietal implantation alone, and sixty-two times in which I have combined it with other operations such as cholecystotomy, gastro-enterostomy, resection of the transverse colon, resection of the sigmoid, appendectomy, appendicostomy, cecostomy and for various

conditions within the pelvis. I have had no death in cases in which parietal implantation was done alone. I lost one case in which sepsis developed from an infected gallbladder, two in which I also did resection of the sigmoid, and three in which I had to deal with complicating purulent conditions within the pelvis—a gross mortality of a little over 2 per cent. All of these fatal cases were of long standing, and in all of them there existed a profound and irreversible acidosis, death taking place by vasomotor paralysis. As a rule, the secondary or final results have been most satisfactory. In some of my earlier cases, I did not understand the significance of purgation atrophy of the colon and, consequently, did implantation when extirpation ought to have been done, with, of course, unsatisfactory results. In a few other of my earlier cases, I did the fixation to the parietal peritoneum instead of to the transversalis fascia, with the result that the peritoneum gradually loosened from the abdominal wall, permitting the colon to redescend into the pelvis. In a few cases that I recall, also among my earlier ones, I failed to appreciate the significance of an enlarged and ptotic cecum and thus compromised my results. I also at that time failed to grasp the purport of ileac adhesions with resulting ileac stasis which perpetuated constitutional symptoms that I had sought to relieve. I have had only a very few cases of recurrence, two of them having been traumatic and due to a fall.

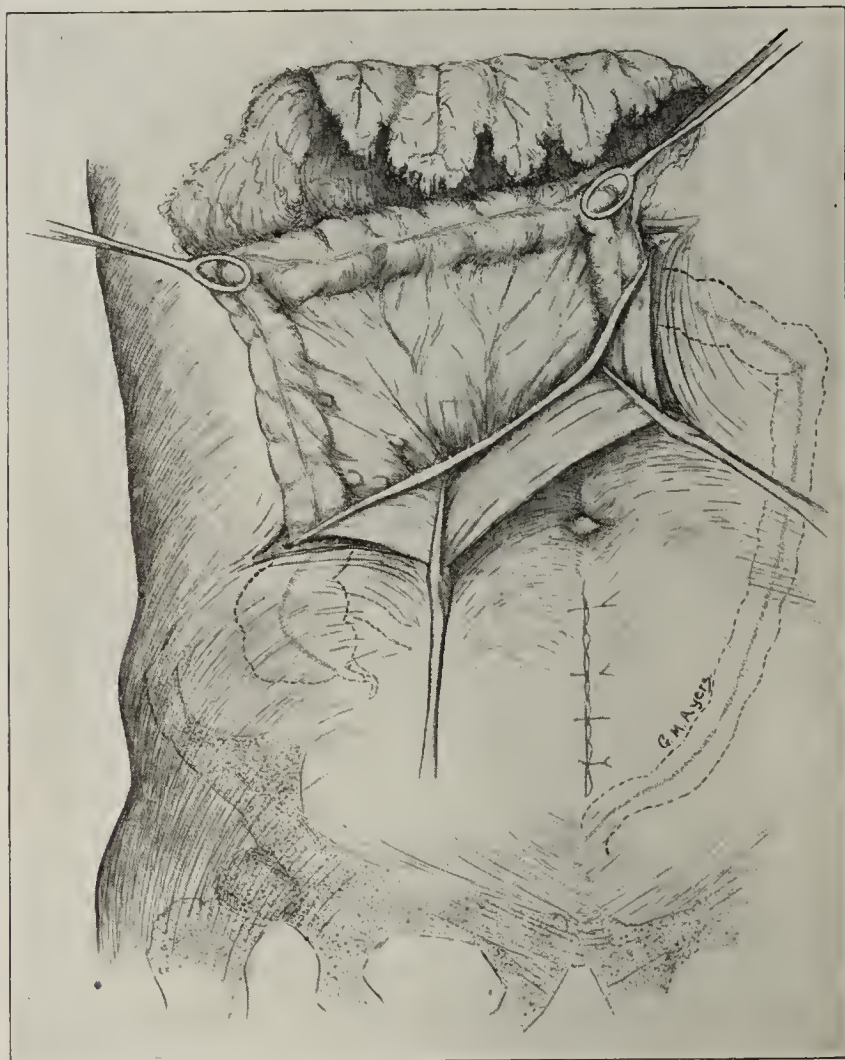


Fig. 7.—The colon and omentum brought out through the operation wound by which the cecum is lifted to its approximately normal position.

On the contrary, I have had the opportunity to follow a number of these cases through several years, always with evidences of persistently good results. In a case in the practice of Dr. Patterson of Brookville, Ind., I did a parietal implantation of her colon seven years ago. She remained perfectly well until a

few months ago when it was found that she had developed an enormous fibroid. This was removed by hysterectomy. The large incision enabled me to inspect the colon which was found precisely in the position in which I had implanted it seven years before. This case is a sufficient answer to the aca-

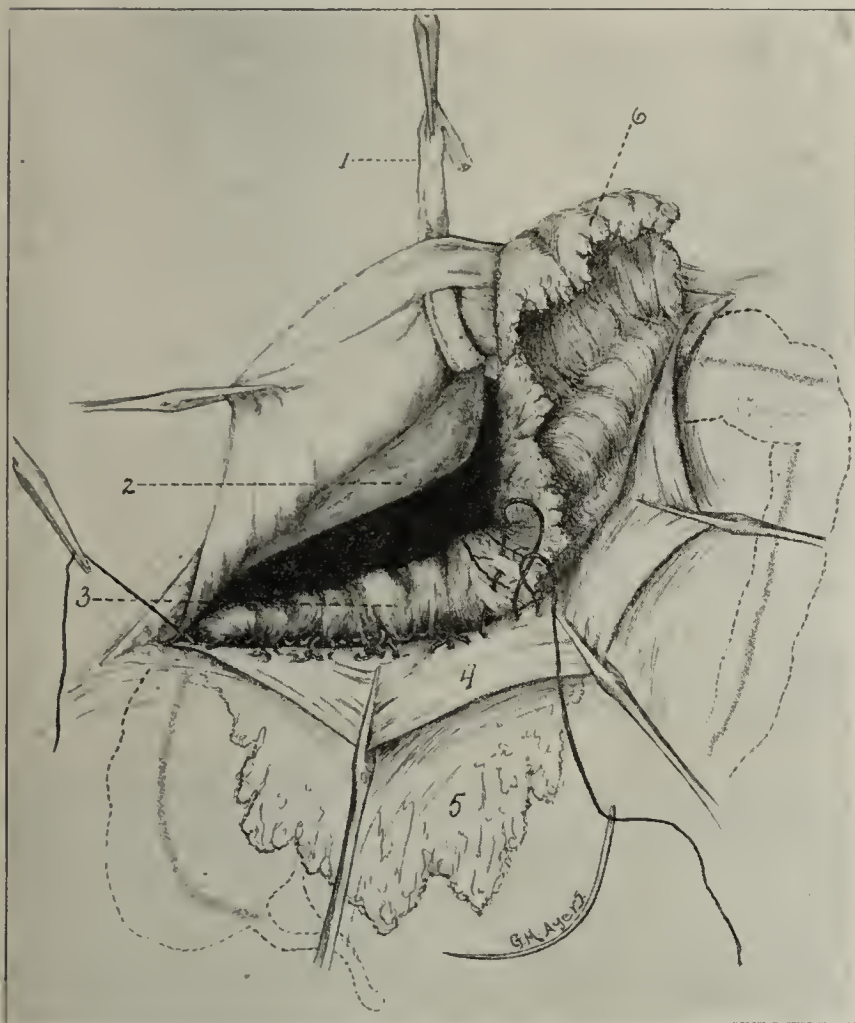


Fig. 8.—The implantation to the transversalis fascia is shown in progress, the fixation being effected by continuous-interrupted suture, care being taken as shown to avoid important vessels in the omentum: 1, ligamentum teres divided and brought out through the peritoneal flap; 2, margin of the liver; 3, colon covered by the base of the omentum; 4, transversalis fascia; 5, right half of omentum hanging in normal position within the abdomen; 6, left half of the omentum, the base of which has not yet been implanted.

demic criticism sometimes heard that this fixation cannot prove permanent.

I am convinced that in the great majority, I do not hesitate to say that in over 250 of them, results varying from marked improvement to functional cures have been realized. As already indicated, the restoration, more or less complete, of the bowel function is the rule, and with it a corresponding disappearance of the constitutional symptoms. In a large number of cases digestive disturbances have been overcome practically from the date of operation. The improvement in weight is generally marked, patients often picking up from 30 to 60 pounds within a few months after operation. Mental depression amounting in some cases to simple melancholia, which often exists in these cases before operation, is generally overcome with great promptness. The same may be said to be true of headaches, neuralgias and various of the rheumatoid conditions that depend on toxemia of intestinal origin.

Union Central Building.

ABSTRACT OF DISCUSSION

DR. FRANKLIN H. MARTIN, Chicago: A few fundamentals should be emphasized: First, all displacements of the colon and stomach shown by roentgenograms do not necessarily lead to serious symptoms; second, adhesions in the abdominal

cavity do not necessarily indicate that pathologic conditions exist which should be relieved; in other words, they do not lead to symptoms. The first is illustrated many times in the open abdomen and particularly by the pictures shown by Dr. A. J. Ochsner at the Clinical Congress in Boston. Many pictures of ptoses were shown where there were no symptoms. The second is illustrated every day as we open the abdomen when we encounter adhesions everywhere with no symptoms arising from them. What gives rise to symptoms? Displacements of these organs with fixation in disadvantageous positions; adhesions causing kinks and holding viscera in disadvantageous positions, this, in turn, making more kinks and interfering with function. How does nature seek to cure these difficulties? This is answered by the way nature hangs up the colon when the animal assumes the upright position—by peritoneal fusion. Therefore, if it is necessary to make a pexy, or to hang up anything, in the abdomen or pelvis, it is proper to hang it up by the peritoneum, because that is the way it is done by nature. Few of these cases require operation; it is only those cases in which the viscera are held in disadvantageous positions. What is our experience with pexies, with the hanging up of viscera in the abdomen when it becomes necessary to do something because of ill health? We may not be able to restore such patients to a normal condition, but we can restore them to a more nearly normal condition. What is our experience in the best way of doing this? It is by operations which secure peritoneal fusion. Any shortening of the round ligament of the uterus that does not include the peritoneum with the round ligament will be a failure always. Any shortening of the sacro-uterine ligament which does not also include the peritoneum will be a failure. In the few cases in which we have had to do pexies, how do we do the operation to get the best results? The few times when we have found it neces-

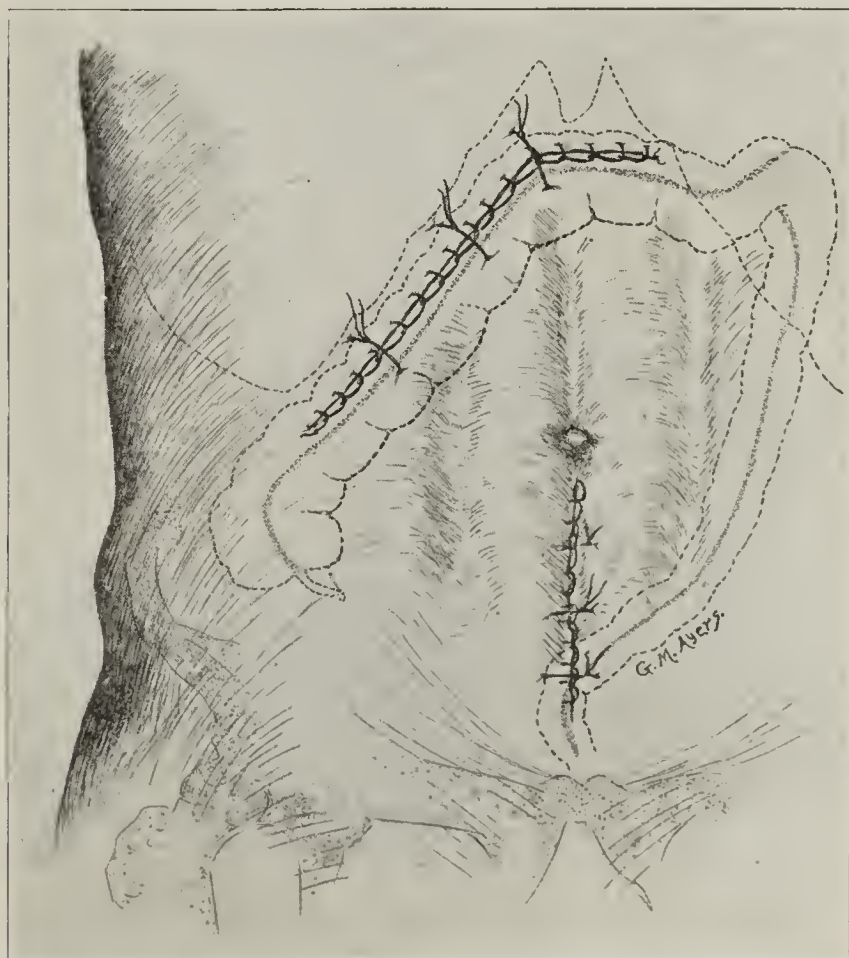


Fig. 9.—Both incisions closed with the colon in its restored position.

sary to suspend the stomach and the intestines we were surprised at the success we got in the hammock operation of Coffey, notwithstanding we always dread to do it. I have done a number of hammock operations under mental reservation but have always been agreeably surprised at the result. The operation that secures the stomach to the abdominal wall is an operation that one dreads to do, but it is almost invariably successful when the indications are clear for any kind of an operation.

DR. ROBERT T. MORRIS, New York: Surgery is a brutal way of overcoming what the internist overlooks. In dealing with ptosis cases in general, we have to consider two very important factors: (1) the group of susceptible individuals predisposed, and (2) a matter which has been overlooked very generally by the profession until recently; that of anaphylaxis. Unless we can take these cases as a whole and make a very elaborate analysis, ruling out—and here is the point—the peripheral irritations and the focal infections, we shall not lessen a patient's ills much by doing any one operation. We have to include the psychic feature also. You may do almost any operation on a patient with epilepsy and that patient will feel better for months. If you report your cases quickly enough you will have a brilliant series to report, but if you wait a year you will have less satisfactory results. The day is coming when we shall have either a Cabot syndicate system or, as I prefer, we shall make up a report on any case in the form of a brief, very much as the lawyer makes up a brief for presentation to his client. The consultant of the future is to group together the ideas of various specialists and then gradually deduce his conclusion. To do a pexy for the relief of a condition which has neurasthenia as an incidental factor, not causative, may be a surgical mistake. When concentrating our attention on causative factors the surgeon is similar to any other therapeutic resource which assists the general practitioner, very much as he would be assisted by the employment of a dose of salts. The surgeon is a therapeutic resource in cases of neurasthenic or psychasthenic patients with ptoses.

DR. EMERY MARVEL, Atlantic City, N. J.: The colon is the most susceptible part of the intestinal tract to stasis. Dr. Reed has mentioned the enlargement of the caliber of the cecum and passed the reduction of its caliber aside by infolding. To that position it seems to me proper to take exception. In the pictures presented by Dr. Reed each case showed, not only before operation, but also after, to have stasis in the cecum. It seems to me, therefore, that some consideration of the cecum might be added to that which Dr. Reed gives to the transverse colon. It is from results following the operation of reduction of the caliber of the cecum that I have found much benefit to accrue to patients inconvenienced by stasis of this type. If the peritoneal covering of the bowel

only be coapted, it will probably be followed by stretching, but should sutures be applied to the longitudinal bands, the nonelastic striae, there will not be any stretching. You, no doubt, have observed that most of the distention in the cecum is below the ileocecal valve; this can easily be reduced by inserting the sutures obliquely, which when lightened will draw the pouch up and obliterate it. I suggest this procedure as a consideration with

Dr. Reed's paper, so when the bands of adhesions are cut a few additional moments only would be necessary for reducing the caliber of the cecum.

DR. CHARLES A. L. REED, Cincinnati: The question of susceptibility to this displacement has some foundation. There are certain flabby persons who are ptotic because of their flabbiness. There are certain of these cases, especially redundancies, which are congenital. But the case of the very heavy man who as a baggage lifter had one of those heavy trunks suddenly precipitated on him, caught it on his abdominal muscles and, while he had had previously perfectly

healthy alvine function, suddenly developed constipation and all of its sequelae, was obviously traumatic. These ptotic conditions are common in shopgirls and in women in various employments calculated to bring persistent downward pressure on the viscera. The question of predilection, so far as the predilection is made to mean heredity, is obviously not of very broad application. The psychic factor is not much of a determining factor in these cases. No one, by

taking thought, can put his bowels out of joint. The woman knows when she has pain and the various physical difficulties to be found among the sequelae of abdominal lesions. Therefore, you cannot talk such a patient into a cure. When there is a functional restoration, the talking is not necessary. Dr. Marvel's suggestion is a very good one, and especially taken in connection with this fixation or implantation operation, when it may very well be done. The infolding of the cecum and lessening of its capacity may be done as a part of the conservative measure, but very

often the wall of the cecum is so thin that the infolding and stitching might better not be undertaken.



Fig. 11.—Showing result in narrow-waisted woman, five years after parietal implantation; patient had been twenty years an invalid; since operation, she has acquired new profession and gained 60 pounds in weight.



Fig. 10 (same case as Figure 5).—Normal position of colon ten months after parietal implantation; from two to three normal evacuations daily; 48 pounds increase in weight.

CONTRIBUTIONS TO THE PHYSIOLOGY OF THE STOMACH

XXXV. THE NEWER INTERPRETATION OF THE GASTRIC PAIN IN CHRONIC ULCER *

HARRY GINSBURG, S.B.,
ISIDOR TUMPOWSKY, M.D.
AND
WALTER W. HAMBURGER, M.D.
CHICAGO

The precise nature of the characteristic pain of peptic ulcer is a matter of some dispute. It is generally assumed to be dependent on and to bear a direct relation to gastric acidity. This view has seemed especially plausible in view of the alleviation of the pain by alkalis. Many textbooks and teachers state that the pain is due to direct irritation of the sensory nerve endings at the base of the ulcer by the acid or by mechanical means by invoking peristalsis. Still others believe the distress is caused by the acid bolus impinging against the pylorus.

HAS THE STOMACH PAIN NERVES?

Before discussing the irritating action of acidity or motility, we must consider the existing confusion regarding visceral pain in general and gastric pain in particular. The situation is well discussed in Hertz's work.¹ From observations in a case of gastric fistula, Carlson² concludes that the sensation of pain cannot

* Dr. Ginsburg died March 9, 1916, during the course of the research for which he was most responsible.

* Read before the Section on Practice of Medicine at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Hertz: Sensibility of the Alimentary Tract, London, 1911, p. 47.

2. Carlson, A. J.: Am. Jour. Physiol., xxxvi, 154.

be produced from the normal mucosa by any stimulation confined to the mucosa itself. Lennander³ concluded from his researches that only the parietal peritoneum is sensitive to pain and that visceral pain is due to stimulation of the parietal peritoneum by pressure, inflammation or traction on the mesentery. The conclusiveness of these experiments was overthrown by Kast and Meltzer,⁴ who pointed out the fallacy of employing cocain infiltration. They demonstrated that local infiltration with cocain abolishes all sensation even after electrical stimulation, that the same amount of cocain injected into the leg would produce the same results, and that, therefore, systemic absorption of the drug is sufficient to abolish visceral sensations. Furthermore, they proved that there is actual pain sensation and that the sensitivity of the inflamed organ is still greater. These results were confirmed by Ritter.⁵ The slight degree of sensitiveness of the viscera as compared with the skin is due to the smaller number of afferent nerves, as shown by Langley.⁶ We may assume that the stomach has pain nerves. The question arises, Does the acid irritating the ulcer cause pain?

THE RELATION OF ACIDITY TO PAIN

In normal stomachs, injection of weak acids causes no pain. This has been shown repeatedly. Lowenthal⁷ gave 250 c.c. of hydrochloric acid by tube and left it

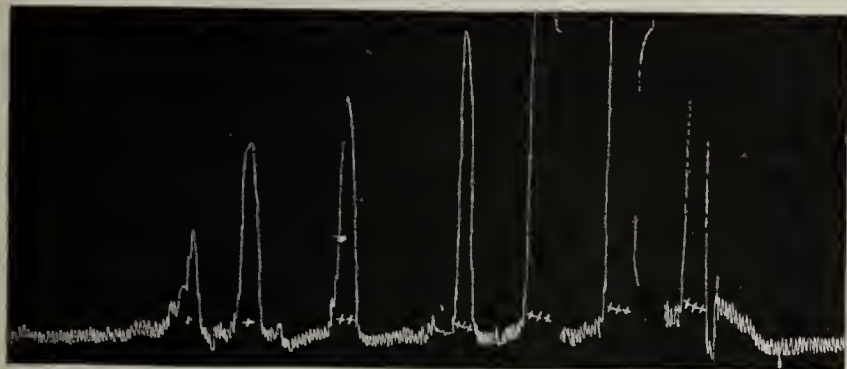


Fig. 1.—Case of gastric ulcer, showing that degree of pain varies with strength of contractions.

in one minute. With 0.3 per cent. no sensation was produced, while with 0.5 per cent. an occasional subject would experience a warm sensation. Hertz, Cook and Schlesinger⁸ found that 0.5 per cent. hydrochloric acid causes no sensation in normal individuals. Schmidt,⁹ using from 0.5 to 2 per cent. acid through gastrostomy openings of the empty stomach in three cases failed to produce symptoms. Boring,¹⁰ with the enormous strength of acid of 5 per cent., experienced a sensation very much "like the ache of hunger."

In cases of ulcer, the most varied results have been reported. Heinecke and Van Selms¹¹ produced pain in four cases of ulcer by administering from 0.1 to 0.4 per cent. acid by tube. Bonminger¹² states that 100 c.c. of 0.36 per cent. hydrochloric acid always produces a violent pain in ulcer which is temporarily relieved by milk. On the other hand, Hertz¹³ reports

that in six cases of ulcer whose diagnoses were confirmed by operation, 4 ounces of 0.5 per cent. hydrochloric acid produced no sensation even when pepsin was added. Lowenthal's results agreed with those of Hertz. These results are especially valuable since it is doubtful whether the free acidity of the gastric contents ever exceeds this concentration. It is well known that hyperacidity symptoms may be present with normal acid values¹⁴ and even in cases of achylia.¹⁵ Boas

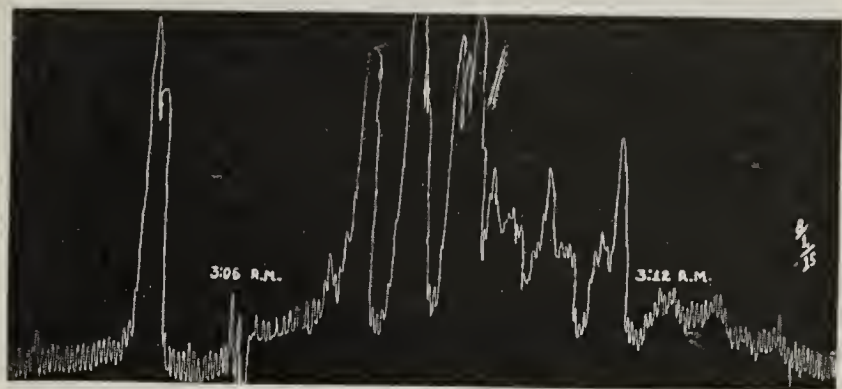


Fig. 2.—Case of gastric ulcer, showing period of tetany.

and others report cases in which persons obtain relief from soda who have no increased acid values.¹⁶ Bolton,¹⁷ also, states that pain has little or no relation to acidity inasmuch as pain is relieved by food whether the gastric contents are acid or not. Hyperacidity may remain when pain is relieved by treatment.¹⁸ Some of these diametrically opposed results may perhaps be explained by the suggestion that they depend on the emptying time and the condition of the pylorus, and that the acid is neutralized by the bile and intestinal juices. We may also assume that the stomach in some of these cases presents a hyperesthesia for acid. However, it appears sufficiently clear from such a great diversity and absolute disagreement of findings that acidity alone cannot be the cause of pain.

TENSION THE ADEQUATE STIMULUS

More recent advances in stomach physiology tend to the conclusion that the adequate stimulus for pain in hollow viscera like the stomach is tension. Hertz pointed out that observers of gastric sensibility overlooked this factor. He believes that tension is the only cause of true visceral pain, and demonstrated that

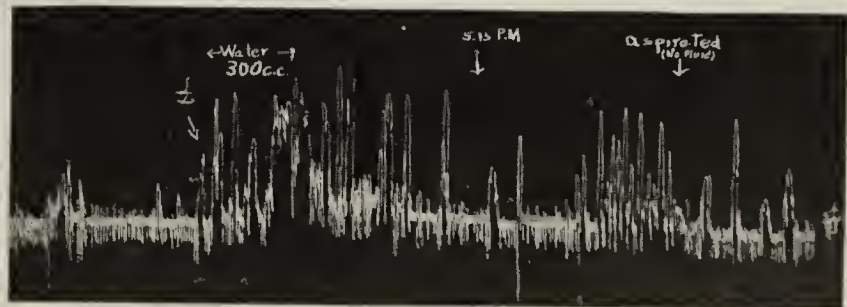


Fig. 3.—Immediate effect of rapidly injecting 300 c.c. of tap water.

inflation of the stomach leads to a sensation of fulness when the intragastric pressure is from 12 to 15 mm. of mercury.¹⁹ Actual pain results if distention is produced rapidly. The tension factor in stomach con-

3. Lennander, K. G.: Abdominal Pain, *THE JOURNAL A. M. A.*, Sept. 7, 1907, p. 836.

4. Kast and Meltzer: *Med. Rec.*, New York, 1906, lxx, 1017.

5. Ritter: *Central. f. Chir.*, 1908, xxxv, 609.

6. Langley: *Brain*, 1903, xxvi, 23.

7. Lowenthal: *Berl. klin. Wchnschr.*, 1892, xxix, 1188.

8. Hertz, Cook and Schlesinger: *Jour. Physiol.*, 1908, xxxvii, 481.

9. Schmidt, J. E.: *Mitt. a. d. Grenzgeb. d. Med. u. Chir.*, 1909, xix, 278.

10. Boring: *Sensations of the Alimentary Tract*, *Am. Jour. Psychol.*, xxvi, 48.

11. Heinecke and Van Selms: *Arch. d. mal. de l'app. digestif*, 1908, ii, 467.

12. Bonminger: *Berl. klin. Wchnschr.*, xlv, Sec. 1, p. 396.

13. Hertz: *Sensibility of the Alimentary Tract*, p. 57.

14. Talma: *Ztschr. f. klin. Med.*, 1884, vii, 407.

15. Einhorn: *Arch. f. Verdauungskr.*, vii, 23. Kuttner, L.: *Ztschr. f. klin. Med.*, liii, 1. Leo: *Therap. d. Gegenw.*, December, 1904.

16. Boas, I.: *Diagnostik und Therapie der Magenkrankheit*, Ed. 6, Leipzig, 1911, p. 355.

17. Bolton: *Ulcer of the Stomach*, London, 1913, p. 149.

18. Hertz: *Sensibility of the Alimentary Tract*, p. 56.

19. Hertz: *Sensibility of the Alimentary Tract*, pp. 47, 54. Boring: *Sensations of the Alimentary Tract*, p. 45.

tractions can well be demonstrated. Fluoroscopic examination discloses in even the normal fasting stomach peristaltic waves beginning about the middle of the body, growing deeper as they reach the pylorus, contracting the cavity. It is easy to understand that the exaggerated peristalsis in the hypertonic organ causes an excessive intragastric pressure, and that the mus-

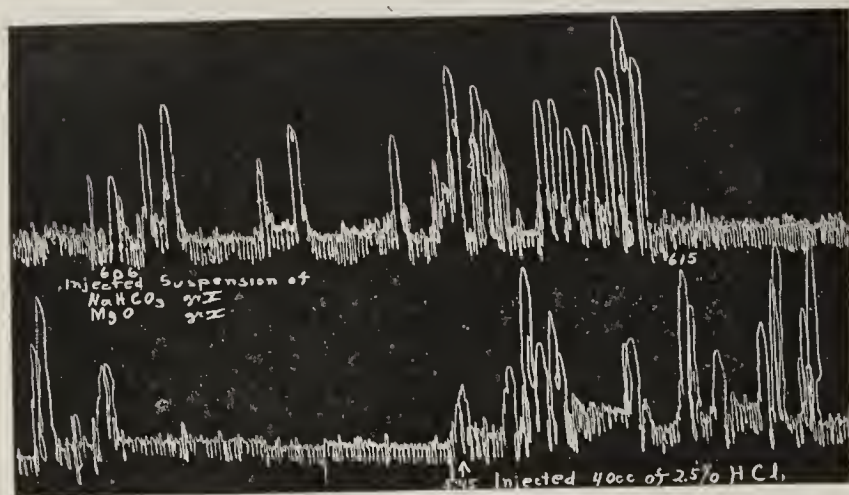


Fig. 4.—Injection of 40 c.c. of 2.5 per cent. hydrochloric acid giving fairly vigorous contractions lasting thirty minutes which were abruptly terminated nine minutes after the administration of an aqueous suspension of magnesium oxid and soda, 10 grains of each.

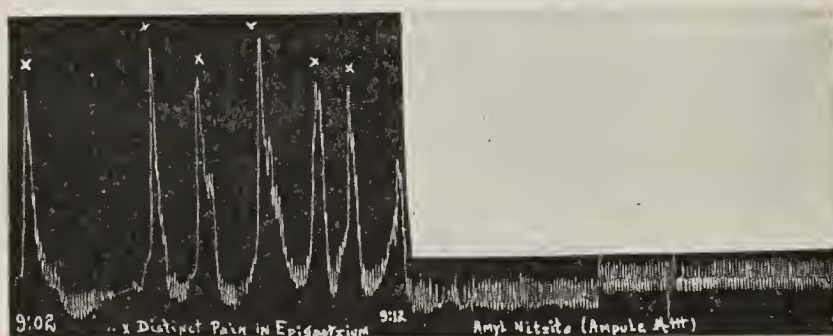


Fig. 5.—Inhalation of a 3 minim pearl of amyl nitrite absolutely abolished the painful stomach contractions, resulting in a state of flaccidity which persisted for four hours.

cular tension in the irritable condition causes pain. Moynihan²⁰ now believes that the pain is not so much due to the chemical changes in the chyme as the alterations of the muscular activities of the stomach and duodenum which may be stimulated by the chemical factors. Boas²¹ also suggests that gastric pain and tenderness occur only at the time of emptying and are rapidly relieved by food taking, due, as he says, to abnormally strong pyloric contractions occurring stronger at the end of digestion. Bayliss and Starling²² state that a wave occurs in one part of the alimentary tract while the part below should relax. Organic diseases or spasm from reflex irritation may prevent it so that the segment between the peristaltic contractions and the obstruction is subjected to a steadily increasing tension.

With tension as the immediate cause of pain an explanation of the relation of acidity is offered from a consideration of the work of Edelman²³ and Ducchessi.²⁴ They find that hydrochloric acid stimulates peristalsis. Such action would, of course, tend to increase intragastric tension. Carlson²⁵ does not find this to be true in normal man, and we have not found

it so in the few cases in which we used it in ulcer. Cannon finds peristalsis and tonus even when the stomach contents are alkaline.²⁶ Hertz¹³ offers another solution which might reconcile the relation of acidity and pain on the ultimate basis of tension. Excess acid passed into the duodenum prevents relaxation of the pylorus, permitting an increase in intragastric tension. The effect of acidity in the duodenum, of course, will depend on the alkalinity of the duodenal juices. Hertz also suggests that there are more nerve endings in the deeper structures of the stomach wall when exposed by ulcer and that these are stimulated by acid, alcohol and coarse foods, causing increased peristalsis and inhibition of pyloric relaxation. This view has been confirmed by paralysis of the nerve endings with orthoform. His Roentgen-ray examinations show that duodenal ulcer is accompanied by increased gastric tonus. Hyperacidity may then cause pain indirectly in many ways, causing hyperperistalsis and prevention of pyloric relaxation with usually intensified gastric tonus. In this way it effects a true pyloric syndrome which may be aggravated if there is also a hyperesthesia toward acid. It has been emphasized that chronic appendicitis and gallbladder disease are often associated with hyperperistalsis and hyperacidity, which may explain the epigastric pain so frequently found in these conditions. Cannon and Murphy²⁷ demonstrated that injury of the intestines causes inhibition of pyloric relaxation which may lead to hypertonus. The pylorus may be felt as a tumor in operating for the lesion. All these considerations tend to prove that the pain in gastric ulcer is not primarily a matter of mere acidity but a condition due to motor activity of the stomach manifested by hypertonus, hyperperistalsis

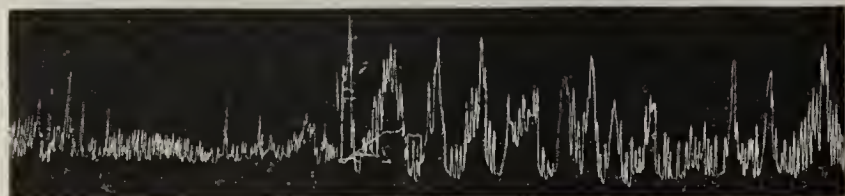


Fig. 6.—Injection of 15 minims of pituitary extract subcutaneously; contractions began in ten minutes, lasted thirty-five minutes, and were followed by a long period of inactivity.

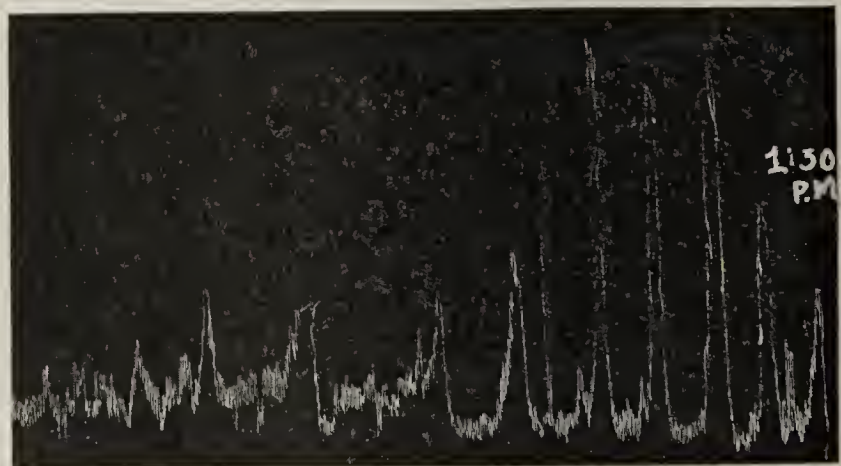


Fig. 7.—Case of gallstones, showing the onset of contractions, which were accompanied by pain.

and pylorospasm, often with a condition of hyperesthesia.

HUNGER AND TENSION

The mechanism of hunger has been quite definitely established through the work of Carlson²⁸ and Cannon

20. Moynihan: Duodenal Ulcer, 1912, Ed. 2, Philadelphia and London.
21. Boas, I.: Diagnostik und Therapie der Magenkrankheit, Ed. 6, Leipzig, 1911, p. 616.
22. Bayliss and Starling: Recent Advances in the Physiology of Digestion, London, 1906.
23. Edelman: Dissert. (Russian); abstr., Jahresb. ü. d. Fortsch. d. Physiol., xv, 119.
24. Ducchessi: Arch. p. le Sc. Med., 1897, xxi, 154.
25. Carlson: Am. Jour. Physiol., xxxii, 249.

26. Cannon: Am. Jour. Physiol., 1907, xx, 299.
27. Cannon and Murphy: Ann. Surg., 1906, xliii, 512.
28. Carlson: Am. Jour. Physiol., xxxi, 151, 175, 212, 318; xxxii, 245, 369.

and Washburn.²⁹ They studied the activity of the empty stomach by means of a delicate balloon attached to a manometer which registered the changes in intragastric pressure due to contractions of the stomach. Boldireff,³⁰ using dogs, was the first to apply this method. He found that the whole alimentary tract had a periodic activity when not digesting. He found periods lasting from twenty to thirty minutes characterized by rhythmic contractions ten to twenty in number followed by a rest of one half to two hours and repeated. He believed that hunger caused the contractions. Cannon and Washburn extended their observations to man. They found that the strong contractions of the stomach were accompanied by the sensation of the hunger pang. While the tracing was taken the observed, who could not see the results, was asked to press a key when the sensation was noted. Invariably, the feeling occurred after the powerful contractions had reached their height. The feeling disappeared when the contractions ceased, and the contractions could not be controlled by the observed. Carlson elaborated extensively on these results, using a gastric fistula man in part of the work. He found a fairly close correspondence between the degree of hunger and the strength of the contractions, and that the recognition of this condition as hunger depends also on the rapidity of the contraction phase.³¹ It was reported as early as 1898 that when the stomach empties itself the midregion becomes narrowed to a tubular portion as seen by the Roentgen ray.³² Waves then originate as tonic rings separating the tube from the rounded cardiac sac. These rings form depressions seen in the Roentgen-ray plate. A more recent Roentgen-ray examination of a normal fasting stomach with simultaneous record of the hunger contractions by means of a bismuth coated balloon was made by Rogers and Hardt.³³ Fluoroscopic examination, which the authors had the privilege of witnessing, disclosed peristaltic waves beginning about the middle of the body, growing deeper as they reached the pylorus. There were frequently as many as three constricting rings passing over the stomach at one time. As these occurred the tracing registered extremely high hunger contractions, and the subject invariably pressed the key recording the hunger pang accompanying the contractions. As Carlson states, the afferent nerves of the mucosa are not primarily concerned in the genesis of hunger. Hunger seems to be produced by contractions only, that is, by stimulation of the nerves in the muscularis.³⁴

THE PRESENT PROBLEM

It has probably already occurred that there is a significant similarity between the condition of the stomach in hunger and in ulcer. The difference appears to be largely a matter of degree of sensitivity caused perhaps by hyperactivity and hyperesthesia. The situation admirably illustrates that the laboratory man is justified in censuring the clinician who only considers those things pertinent which manifest clinical symptoms. For as the laboratory worker points out, the same condition acting in two cases may produce clinical symptoms in one and none in the other. That the hunger contractions of the normal stomach have a direct bearing on the pain in ulcer might have been

anticipated from the statements of Hertz³⁵ that "the same mechanism producing pain gives fulness: this latter sensation occurs for months before pain"; and Moynihan,³⁶ that "the characteristic hunger pain of duodenal ulcer is preceded and accompanied by sensations of fulness and hunger." From the close analogy between the state of hunger and the more plausible view that ulcer pain is due to tension, it was thought that a study of the conditions by the balloon method would yield a concrete demonstration of the tension in the one case and prove its similarity to hunger contractions in the other.

METHOD AND RESULTS

Ten cases under the care of one of us (W. W. H.) at the Cook County and Michael Reese hospitals diagnosed clinically as peptic ulcer were examined. Two tubes, each about 5 mm. in diameter, were prepared. To one was attached the balloon. The other was a modified Rehfuess tube made by enclosing a piece of lead at the very end and perforating the tube for about 3 cm. above. It was expected that the weight would carry the tube to the dependent parts so that the contents might be aspirated from time to time. The two tubes were swallowed at once. The balloon tubing was connected with a T tube through which the balloon was distended and a chloroform manometer. A cork float on the column of chloroform supported a rod to which was attached an indicator to write on a slowly moving drum. The aspiration tube was connected with a wash bottle holding about 300 c.c. By suction through the shorter arm of the bottle the contents of the stomach could be quickly aspirated. By the same arrangement various solutions could be rapidly and easily forced into the stomach without the knowledge of the observed. The subject was at rest in bed while the tracings and manipulations were made, and usually fell asleep, aroused occasionally by distress. Observations lasted as a rule from two to four hours, and in one case a continuous twenty-four hour tracing was obtained.

REPORT OF CASE

P. S., man, aged 27, was admitted to the Michael Reese Hospital, July 19, 1915, complaining of pain in the epigastrium coming on about one hour after eating. The distress had been growing worse for the preceding two years. It was not present in any other part of the abdomen, and was not referred posteriorly. It was aggravated by food of any description and by drinking, and was more severe about an hour after eating. It was relieved by pressure over the abdomen and by vomiting. Nausea and vomiting began with the onset of the condition, and occurred about one-half to one hour after meals. Vomiting sometimes occurred after water. There was a sour taste and odor and a burning sensation on vomiting. He had noticed a small amount of blood in the vomitus only once, seven months before entering the hospital. Eructations occurred more or less constantly all day and caused a sour taste in the mouth and burning in the throat. He had never noticed blood in the stools. He had lost forty pounds in weight since the beginning of his illness.

Examination showed marked visible peristalsis extending from the left upper to the right lower abdomen. This region was distended and somewhat rigid. After an Ewald meal, 750 c.c. were recovered. Between 1,000 and 2,000 c.c. were commonly recovered on aspiration of the stomach at different times. The free acidity averaged about 28 and the total about 60. Fluoroscopic examination showed a large stomach displaced downward. No cap was seen. A thin line of bis-

29. Cannon and Washburn: *Am. Jour. Physiol.*, 1912, xxix, 441.

30. Boldireff: *Arch. biol. de St. Petersburg*, 1905, xi, 1.

31. Carlson: *Am. Jour. Physiol.*, xxxi, 180.

32. Kaestle, Rieder and Rosenthal: *Arch. Roentgen Ray*, 1910, xv, 21, 24.

33. Rogers and Hardt: *Am. Jour. Physiol.*, xxxviii, 274.

34. Carlson: *Am. Jour. Physiol.* xxxi, 188.

35. Hertz: *Sensibility of the Alimentary Tract*, p. 59.

36. Moynihan: *Duodenal Ulcer*, p. 101.

muth was seen to pass. Otherwise the pyloric end was very broad and sharply cut off from the rest of the organ. After thirty hours considerable bismuth still remained in the stomach.

A diagnosis was made of cicatricial pyloric narrowing following gastric ulcer with gastropsis. Tracings taken from this case showed extremely marked contractions accompanied by visible peristalsis usually (Fig. 1). Periods of tetany were quite frequent (Fig. 2).

From repeated observations on ordinary cases, the regular picture of the normal hunger contractions was obtained, but it was striking that the contractions were not more severe and of approximately the same excursion as the normal hunger picture. In hunger the sensation is interpreted as a pang; in ulcer, as a pain. With the onset of the strong contractions shown in our tracings, the patients complained of symptoms varying in interpretation from a feeling of fulness and tightness to severe epigastric pain. In several cases the patient was aroused from sleep with the complaint of pain. The sensation nearly always came on when the contractions had reached their height. In one case at the height of the contraction the patient vomited. Between the periods of activity the patient registered no complaint. These contractions could not be seen and were not understood by the patients. While the record was taken, various substances were injected into the stomach by the arrangement described. In one case 300 c.c. of milk caused transitory contractions. The same was found true by an equal quantity of tap water (Fig. 3). This may have been caused by the rapid introduction of the liquids causing distention.³⁷ Hydrochloric acid in strengths of 0.5 and 1 per cent. caused little or no effect on the contractions and no effect on the sensations. In one case 40 c.c. of 2.5 per cent. acid caused a period of rather vigorous contractions lasting one-half hour and terminating abruptly nine minutes after administering a suspension containing 10 grains each of soda and magnesium oxid (Fig. 4). In another single case 70 c.c. of 5 per cent. acid caused intense burning, and the patient vomited balloon and tubes. Administration of soda immediately relieved him, and he ate his luncheon five minutes later entirely comfortable. The subjective sensations caused by 2.5 per cent. acid could not be relied on since the subject was very ignorant and untractable. One per cent. solutions of soda in 300 c.c. quantities caused no noticeable effect. A 3 minim pearl of amyl nitrite was given by inhalation in one case. The patient became extremely faint, and the strong contractions which had been registering absolutely ceased, to be followed by a period of absolute flaccidity which lasted four hours (Fig. 5). While a tracing was taken of a quiescent stomach, 15 minims of pituitary extract were injected subcutaneously into the arm. In ten minutes well marked hunger contractions set in, even displaying short periods of tetany. This lasted for thirty-five minutes, when the stomach again became flaccid (Fig. 6). In a case of gallbladder disease in which fluoroscopic examination of the stomach showed no abnormality, strong contractions occurred with pain, closely resembling the results in ulcer (Fig. 7).

CONCLUSIONS

1. The finding of strong contractions of the stomach accompanying the pain of gastric ulcer seems to confirm the idea that pain is due to tension.

2. The marked hunger contractions cause pain in a hyperirritable condition of the stomach by increasing intragastric pressure.

3. The conception that gastric pain is due to tension will explain many obscure conditions simulating gastric ulcer, viz., achylia gastrica, chronic appendicitis and gallbladder disease.

4. Hyperacidity, alone, may be a factor by reflexly causing hypertonus, hyperperistalsis and pylorospasm, allowing greater tension to be produced.

5. The subjective relief of pain by alkalies does not necessarily prove that acid is the cause of pain, but may be interpreted on the basis that alkalies prevent the development of pain producing hypertonus by neutralizing the causative factor of such hypertonus, i. e., acid.

6. Pituitary extract stimulates contractions, as is to be expected from its property of stimulating smooth muscle.

7. Amyl nitrite in the case reported abolished the contractions, probably by stimulating the inhibitory nerves or by lessening the reflex excitability.

8. From the results obtained, hydrochloric acid in the strength that it may occur in the stomach (about 0.5 per cent.) causes no appreciable effect. The authors do not feel justified in drawing final conclusions regarding the effect of acidity until more cases are studied whose emptying time and condition of the pylorus is more thoroughly observed.

CARBOHYDRATE RESTRICTION IN THE MEDICAL TREATMENT OF GASTRIC HYPERACIDITY AND ULCER*

WILLARD J. STONE, M.D.

TOLEDO, OHIO

Gastric hyperacidity forms a very considerable part of the symptoms of dyspepsia which the physician is called on to treat. It may exist (1) as part of the syndrome associated with prolapsed viscera and the attendant neurasthenic state coupled with a faulty dietary; or (2) as a result of reflex disturbance from some neighboring abdominal organ, such as the gallbladder or appendix, or (3) as a result of faulty habits of mastication and the choice of appropriate food.

Although easy of diagnosis, the cause of the disturbance is not always so easy to fathom. The chief factor concerns the remote results of chronic hyperacidity. It is safe to say, in the present state of our information, that ulceration in stomach or duodenum rarely occurs without long standing hyperacidity. Moreover, the medical treatment and cure applicable in a large percentage of ulcer cases depends to a great degree on neutralization of the acid secretions by the administration of appropriate food and sufficient alkali. This has been amply demonstrated by Sippy.¹

Of the many explanations as to the cause of chronic ulcer offered since the day of Cruveilhier and Rokitsky, but few have stood the test of time. The corrosive action of hyperacid chyme, coupled with factors which render the gastric mucosa more susceptible to digestion, such as metastatic emboli, local thrombosis,

* Read before the Section on Practice of Medicine at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Sippy, B. W.: Gastric and Duodenal Ulcer; Medical Cure by an Effective Removal of Gastric Juice Corrosion, THE JOURNAL A. M. A., May 15, 1915, p. 1625.

trauma, infection or a combination of these conditions, serves as the usual explanation.

In the production of ulcer there may be mentioned the experimental ligation of arteries supplying certain portions of the gastric wall; the addition of bacterial infection to acutely traumatized areas of gastric mucosa; the local injection of substances acting as chemical irritants; the production of general anemia with the addition of local irritants, and last, by artificial occlusion of the pylorus with resulting motor insufficiency after acute ulceration has been produced. Although acute ulceration can be readily produced by these means, the majority heal readily and do not become chronic. In other words, the tendency to heal is rarely absent in experimentally produced lesions.

In patients manifesting ulcer symptoms the same tendency is present, providing the cause is sought for and relieved and the ulcer area protected from the action of acid chyme by properly selected food frequently administered and by doses of the alkalies adequate to secure neutralization of the gastric juice. As Pawlow² has stated: "In clinical, pharmacologic and physiologic textbooks, it is stated that the alkaline salts of sodium promote a flow of gastric juice. We may look in vain, however, for any experimental foundation to support this doctrine." In fact, alkalies have been shown to exert a distinct inhibitory influence on the gastric glands quite distinct from their neutralizing effects on acids already present. In most patients a combination of causative factors can usually be found. The first aim, of course, should be to correct the cause.

Of the first group mentioned above, prolapse of the viscera, including the stomach, is, in my experience, frequently associated with the hypersecretion of acid chyme. If with this factor there is also associated a faulty dietary, especially of the carbohydrate elements, favoring bacterial decomposition within the organ, and if, because of the chronicity of the prolapsus, spasm and motor insufficiency has occurred, the conditions are favorable to the train of symptoms which we have come to recognize as chronic ulcer. Our first aim should be, therefore, to support the viscera, including the stomach, by proper appliances or belts in as nearly a normal position as is possible under the circumstances, and second, to restrict or limit the intake of carbohydrate foods in order to lessen bacterial fermentation and the elaboration of organic acids. As is well known, hypomotility favors bacterial fermentation within the stomach.

Enough experience has accumulated to show the importance of attention to septic foci about the teeth and tonsils. The organisms daily swallowed by patients with septic mouths, septic tonsillar crypts and nasal sinuses, may contribute materially to bacterial fermentation of the carbohydrate elements usually present in excess in a mixed meal, if not, as believed by many investigators, to actual ulceration. In this connection it has always been a source of wonder to me why more patients with septic mouths from extensive pyorrhea did not manifest stomach symptoms. Alveolar abscesses may serve as foci of infection, although it is difficult to understand the method of bacterial metastasis and the supposed selective affinity for certain tissues.

Of the second group in which reflex disturbance from some neighboring organ may be a factor of importance, my records of the past ten years have shown that in approximately 50 per cent. of the

patients manifesting symptoms of hyperacidity and ulcer various causes have appeared to be operative. In order of frequency these have been coincidental gallbladder disease, stones or adhesions; chronic obliteration, twist or adhesions involving the appendix; uterine malposition or adhesions; tubal disease; renal or ureteral stone and abdominal hernias. On the other hand, many patients with such conditions do not complain of disturbed digestion, while many others with no secretory disturbance complain of gastric distress. Syphilitic ulcer has been excluded from these figures, for when it has existed the cure has resulted from the employment of specific measures in addition to those applicable to the treatment of simple septic ulcer.

In the third group there occurs apparently an increasingly large number of patients in which the disturbing causative factor appears to be a tendency to an abnormal consumption of carbohydrates, coupled with poor salivation as a result of hurried and faulty mastication due to poor teeth. The monosaccharids, such as dextrose, levulose and galactose, are fermented by yeast into alcohol and carbonic acid. Lactic acid is also formed by the action of the *Bacterium lactis*. The disaccharids, such as saccharose, maltose and lactose, are not fermented by yeast, but may be broken up into lactic acid by the *B. lactis* or butyric acid by the *B. butyricum* of Pasteur, or the micrococci of butyric fermentation discovered by Fitz. Of the polysaccharids, starch is likewise subject to bacterial fermentation with the formation of organic acids.

For years the idea has held ground that an excessive protein diet was a factor of importance in the causation of hyperchlorhydria. There can be no doubt that the symptoms of such a condition and that of ulcer are sometimes found in patients who have been excessive meat eaters. For this reason, and certain experimental data, the belief has been prevalent that meat extractives caused the hypersecretion of hydrochloric acid through acting as chemical excitants, and as such should be avoided in the treatment of gastric hyperacidity. This is a matter of relative importance only. Regardless of what experiment may show in animals, the deductions when applied to patients must justify themselves by results. It may be mentioned that foods rich in albumin bind larger quantities of hydrochloric acid than carbohydrate foods. This holds true in experiment on normal animals and is probably true under pathologic conditions in man.

The tendency of the past few years has been toward the restriction of meats and albuminous foods in the treatment of hyperchlorhydria and ulcer and the substitution therefor of carbohydrate foods. This belief has gained ground largely from the work of Pawlow, who published his experiments in 1902. He showed that in dogs the quantity of gastric juice secreted from hour to hour was greater after meat than after bread and milk. He likewise showed that the acidity of juice secreted after meat was greater (0.56 per cent.) than after bread (0.46 per cent.). The juice secreted after bread contained, however, more ferment than that secreted after meat. The point should be noted that the hourly intensity of gland work was much less with bread, which would mean that the time required for the digestion of its protein constituents was longer and that the duration of gastric secretion was correspondingly protracted. It seems, therefore, in the type of carbohydrate digestion manifested by bread and cereals, that there exists a slightly lower hydrochloric acidity, but a more protracted secretion. Since there is no provision in the stomach for carbohydrate diges-

2. Pawlow: The Work of the Digestive Glands, London, 1902.

tion, it has seemed plausible, in this day of excessive sugar consumption, that this common dietetic fault might be responsible for the altered gastric secretion found in a large majority of patients suffering with hyperacidity, pyloric spasm and ulcer.

I am indebted to L. M. Estabrook, Chief of Bureau of Crop Estimates, U. S. Department of Agriculture, for Table 1, published in an earlier article,³ which shows the great increase in sugar consumption for the period 1871 to 1911 in the United States, United Kingdom, France and Germany. The per capita consumption⁴ has been computed by adding the production of a given country to its imports and subtracting its exports.

The point is made that the moderate consumption of carbohydrates under normal digestive conditions is a different matter than excessive consumption when hyperchlorhydria is present. In patients with pyloric spasm or ulcer the excess is required to remain in the stomach during the process of protein digestion of the other constituents of a mixed meal, with the result that bacterial fermentation follows and the symptoms of so-called amylaceous dyspepsia become evident. As is well known, patients with hyperacidity complain of their inability to digest starchy foods. Their distress appears to be due primarily, not to the hydro-

truer picture of gastric secretion than the Ewald meal.

Clinically, patients with hyperacidity, delayed motility and ulcer do better when their intake of carbohydrate foods is lessened. Deeks⁶ called attention to this in 1912. Although I cannot subscribe to all the restrictions imposed by him, I am convinced that excess of carbohydrates is a common dietetic error with such patients. I am also convinced that restriction generally to those articles of food which do not contain more than from 10 to 15 per cent. carbohydrates, with small additions of food which contain more than 20 per cent., such as bread and potato, together with sufficient alkali to limit the secretion of hydrochloric acid, has given better results than heretofore obtained. The following general diet list in hyperacidity I have found useful, articles from which may be omitted if found necessary in any given case.

Proteins and Fats.—Soft boiled or poached eggs, omelette, broiled or baked fish, bacon, chicken, oyster or clam broth, custard (use slight amount of sugar), butter, milk and cream, cream cheese, olive oil, tea.

Five Per Cent. Carbohydrates (Fodder-Vegetables and Fruits).—Asparagus, cauliflower, water cress, spinach, eggplant, lettuce, beet or dandelion greens, string beans, olives, grape fruit pulp.

Ten Per Cent. Carbohydrates (Fodder-Vegetables, Fruits and Nuts).—Onions (boiled), squash, turnips, carrots, beets, lemon juice (one teaspoonful with one ounce olive oil twice daily as salad dressing), orange juice and pulp, peaches, watermelon, cantaloupe or musk melon, hickory nuts, filberts.

Fifteen Per Cent. Carbohydrates (Fodder-Vegetables, Fruits and Nuts).—Green peas, parsnips, canned Lima beans, baked apple (pulp), pears, pecans, almonds, English walnuts.

The patient may take daily in addition, one potato, three slices of toast, one portion breakfast cereal or rice, purée of pea, corn ("Kornlet") or spinach.

Avoid excess sugar in above foods, candy, syrups, condiment sauces, pickles, green corn, tomato, cornstarch, macaroni, spaghetti, bread, crackers, cocoa, chocolate, coffee and vinegar.

In addition the patient is requested to take one glass of milk between meals and at bedtime. After each meal and after each glass of milk between meals, a powder consisting of heavy magnesium oxid, sodium bicarbonate and bismuth subcarbonate is to be taken in from one half to one teaspoonful doses in one third glass of water. If evidences of hypersecretion exist the powder is given every two hours, regardless of the feedings, between 7 a. m. and 10 p. m., with an additional glass of milk and a dose of the powder should the patient awake during the night. By this plan, the details of which were more generally stated in the previously published article,³ relief is soon obtained, the evidences of pyloric spasm and food retention are decreased and the pyrosis and hunger pain soon disappear due to the lessened gastric secretion and hunger contractions. It is, of course, difficult to rid the stomach of the bacteria of organic acid fermentation. If the organic acids persist, as evidenced by flatulence and pyrosis, gastric lavage may be used once daily one hour before the principal meal. A liter of a solution of salicylate acid 1 to 1,000 is well adapted for this purpose.

In the treatment of ulcer it is necessary to secure absolute rest, usually in the hospital. Patients treated at home are usually unable to secure the rest and nursing cooperation necessary to the best results. In other words, they, as a rule, cannot be made while at home to attend strictly enough to the business of getting well. Although the details of the ulcer diet here given

TABLE 1.—ESTIMATED AVERAGE PER CAPITA CONSUMPTION OF SUGAR IN FOUR IMPORTANT COUNTRIES

Year	United States,* Pounds	United Kingdom† (Net Imports), Pounds	France,‡ Pounds	Germany,§ Pounds
1871	36	44	17	12§
1881	43	64	22	15
1891	61	78	26	21
1901	71	91	24	27
1911	77	92	39	42
1912	82.4			

* For years ending June 30.

† For years ending December 31.

‡ For years ending August 31.

§ For 1872.

chloric acid content of the stomach, but to the bacterial elaboration of organic acids from carbohydrate fermentation. Later in the process of gastric digestion, usually after one hour, hypersecretion of hydrochloric acid occurs as a result, I have believed, of the stimulating effect of such organic acids as butyric, lactic, acetic and proprionic. If either the Rehfuß, Einhorn or simple duodenal small tube with the catheter end is employed after a hastily swallowed bulky carbohydrate meal and the secretion removed at five to ten minute intervals the curve of hydrochloric acid does not reach its maximum as a rule until after the expiration of one hour, while the organic acids become evident within a much shorter interval. Pawlow² has shown that butyric acid strongly excites gastric secretion. Although my experience with the test meal advocated by Skaller⁵ is limited, it has much to commend it. It consists of 5 gm. of Liebig's beef extract in 200 c.c. of water. It is more palatable and gives a

3. Stone, W. J.: The Carbohydrate Factor in the Causation and Treatment of Hyperacidity and Ulcer, THE JOURNAL A. M. A., Jan. 29, 1916, p. 324.

4. Consumption includes all uses in households, in factories and elsewhere. Figures for the United States and the United Kingdom refer partly to raw and partly to refined sugar; for France, figures for 1871, 1881, and 1891 refer to raw, and for 1901 and 1911 to refined sugar; for Germany, figures for 1871 and 1881 refer to raw, and other figures to refined sugar. This table was compiled from the Statistical Abstract of the United States, Statistical Abstract of the United Kingdom, Annuaire Statistique (France), and Statistische Jahrbuch für das deutsche Reich (Germany). Those interested may also consult Bull. U. S. Dept. Agriculture, No. 66, March 10, 1914.

5. Skaller: Berl. klin. Wchnschr., 1915, lli, 105.

6. Deeks, W. E.: New York Med. Jour., Nov. 30, 1912.

differ somewhat from the plans advocated by Lenhartz and by Sippy, the essentials are the same in so far as the attempt is made to control the supersecretion, to limit the secretion of hydrochloric acid and by frequent feedings and sufficiently large doses of the alkalis to prevent continuous local irritation of the ulcer area. This plan has been used with slight modifications since 1913 with good results in prepyloric, pyloric and duodenal ulcers.

Remarks on Treatment.—Neutral sodium citrate, 3 grains to each ounce of milk, may be given to prevent curd formation in the stomach.

Give $\frac{1}{2}$ to 1 teaspoonful of alkaline powder (usually magnesium oxid 5, bismuth subcarbonate 5, sodium bicarbonate 20) after each feeding at 6 a. m. and 10 p. m.

The albumin water contains white of one egg flavored with orange or lemon juice, with no sugar.

If a taste of the milk remains in the mouth, use a weak borax mouth wash after each milk feeding.

If patient has been starved, give proctoclysis daily, by drop method, of 1 quart tap water containing 1 ounce dextrose.

TABLE 2.—ULCER FEEDING SCHEDULE

Day	Diet and Frequency	Time	
		A. M.	P. M.
1st	Milk, 2 ounces, every 2 hours.....	6	8
	Albumin water, 3 ounces, every 2 hours...	7	9
2d	Milk, 2 ounces, cream, 1 ounce, every 2 hrs.	6	8
	Albumin water, 3 ounces, every 2 hours....	7	9
3d	Milk and cream as above, every 2 hours...	6	8
	Albumin water, as above, every 2 hours...	7	9
4th	One soft boiled egg, with feeding at.....	7	7
	Milk and cream as above.....	6	8
	Albumin water as above.....	7	9
	One egg as above, with feeding at.....	7	7
5th	Soft, well cooked cereal, 3 ounces, with feeding at.....	8	2
	Milk and cream as above.....	6	8
	Albumin water as above.....	7	9
	One egg as above, with feeding at.....	7	1 and 7
6th	Cereal as above with feeding at.....	8	2
	Purée, 3 ounces, with feeding at.....	12 M.	6
	Milk and cream as above.....	6	8
	Albumin water as above.....	7	9
7th	One egg with 2 slices bacon, with feeding at.....	7	1 and 7
	Cereal as above, with feeding at.....	8	2 and 8
	Purée as above, with feeding at.....	12 M.	6
	Repeat above and 3 ounces broth, with feeding at.....	10	4
8th	Same as seventh and broth, with feeding at.....	10	4 and 10
9th to 14th	Same as eighth and $\frac{1}{2}$ slice toast with three feedings. Custard, 3 ounces, may be substituted for one or two milk or albumin water feedings if desired		

Butter may be added to cereal or egg if desired.

Avoid much sugar in preparation of custard.

Purée refers to pea, spinach or corn ("Kornlet").

Cereal refers to Cream of Wheat, Ralston's, boiled rice or Farina (measured after cooking).

Broth refers to chicken, oyster or clam.

Bacon should be fried crisp.

If retention of food exists lavage stomach one hour after last feeding at night.

Take weight of patient every alternate day.

It is obvious that in extensive ulcer areas involving the lesser or greater curvature with hour-glass constriction, a medical cure may not be secured; but since most of these are the result of a spasmodic indrawing of the curvature opposite the ulcer, relief is many times as adequately secured by the medical cure as by surgical intervention, since the spasm diminishes in direct ratio to the protection given the ulcer. This may not be true in chronic ulcers with undermined edges or of course in those with definite scar tissue formation. It has been surprising, nevertheless, to note the relief obtained in those patients manifesting symptoms of long-standing pyloric obstruction in

whom scar tissue contraction was suspected but which, from the results obtained, could have been nothing more than edematous infiltration of the pyloric ring incidental to spasm.

Gastro-enterostomy, so frequently performed in such patients, does not give any more adequate results. In fact, unless performed for the relief of perigastric adhesions or perigastric abscess, the result of an earlier walled-off perforation, or for severe hemorrhage, which is rarely necessary, or following partial resection or excision of an area suspected of being carcinomatous, the operation will probably be less and less indicated. During the past five years it has been necessary to have gastro-enterostomy performed in only two patients, in one of whom with extensive ulceration near the pyloric ring it was difficult to secure cooperation in the medical cure; in the other the operation was advised and performed on a young man in the ward for long-standing hematemesis, which seemingly could not be controlled. At the operation no ulcer was found nor could the bleeding point be located. The end-result in both instances was satisfactory.

In brief, while the short loop posterior gastro-enterostomy has given good results in securing relief from the symptoms present in ulcer, no adequate method of pyloric closure has yet been devised which prevents the food from passing through the pylorus after the ulcer has healed. The operation has merely given more adequate drainage and diverted the stomach contents from the ulcer area until healing has taken place. The tendency to heal is always in evidence and will occur in most instances if constant irritation of the ulcer by acid chyme is prevented. The opinion may be ventured that the operation would be far less popular if it was generally realized that by medical means the same results might be secured. This refers as well to the so-called obstructive types, in which, under the management here emphasized, the pyloric opening has increased as the spasm decreased. In the past it is safe to say that the operation of gastro-enterostomy has been frequently performed without adequate prior trial of dietetic and medical measures founded on principles now well established. From the viewpoint of the physiologic principles involved should operative means be indicated, excision of the ulcer and pyloroplasty has more to commend it and will probably in the future be the method of choice.

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ABSTRACT OF DISCUSSION

DR. SAMUEL JAMES MELTZER, New York: I have dealt with the question of sensation of the abdominal viscera at various times. I have taken an interest in two questions. One was concerning the sensation of pain in the abdominal viscera in general. Lennander and other surgeons have put up the claim that the visceral peritoneum possesses no nerve fibers for pain. It is a fact that when the abdominal cavity is opened under cocain anesthesia, the viscera can be manipulated without producing any pain to the conscious patient. We have explained this fact in two ways. In the first place, in all these cases cocain was used, and we discovered that cocain may have even a distant analgesic effect. In the second place we have tried to show experimentally that the mere opening of the abdominal cavity is capable of greatly reducing the sensibility of the viscera. The opening of the abdominal cavity also exerts a profound influence on the motility; it stops all peristaltic movements; it exerts further also an inhibitory effect on trophic functions. This is illustrated by the well-known fact that the mere incision of the abdominal cavity is capable of curing tuberculous peritonitis. I would

remind of the further fact that exposure of the brain or of the cord is capable of abolition of sensation of these organs. My second interest was concerned with the nature of pain in colic. My interpretation of it was based on the so-called "law of the intestines." When any place of the intestines is stimulated it produces a contraction above and a relaxation below. That is the normal effect of a stimulus. However, in an abnormal state, it may occur that a stimulation may cause simultaneously a strong peristaltic contraction above and a constriction below the stimulus. The progress of the peristalsis downward has the effect that the same mass, fluid and gas, would have to find place in a smaller volume; hence the colic. I applied the same explanation to gastric colic. It may occur when the strong contraction of the preantrum is progressing forward, while the pylorus remains strongly constricted.

DR. MILTON HOWARD FUSSELL, Philadelphia: There is no easier problem to be solved than the relief of symptoms of duodenal and gastric ulcer. Take a case of gastric or duodenal ulcer, whether acute or chronic, and place that patient on Lenhart treatment, or the treatment that has been suggested here, or on any of the accepted medical forms of treatment, and in a very short time the patient will be relieved of the pain. He will soon gain in weight and apparently he will be cured. But simply to attack and relieve the symptoms and say then the patient is cured is a great error. I believe the medical treatment of acute peptic ulcer has its place and every case should be so treated. But I also believe that the chronic ulcers should not be so treated. Operations now are much more valuable in chronic ulcers than is medical treatment. The statistics published by the Mayos, Deaver, and others, show that hour-glass contractions, perforation, hemorrhage and carcinoma are much less common in those cases that are treated surgically, and the end results are much more frequently cures than are the results of medical treatment. I have therefore come to the conclusion that every individual who has a chronic gastric or duodenal ulcer is no longer a medical but a surgical case and should be treated by a skilled surgeon. When the operation is done I believe that patient is out of danger from carcinoma, particularly if it is a chronic gastric ulcer. This cannot be said of the medical treatment of chronic ulcers.

DR. ANTHONY BASSLER, New York: Since about one half of the cases of gastro-duodenal ulcers have a subnormal or absent acidity, then the pain is motor rather than sensory; thus I think the points raised are well taken. On this basis the relief of the subjective symptoms, by lowering peristalsis with alkalies, should prove of value. Also, when an excision of the ulcer, or a gastro-enterostomy is done, there is a distinct lessening of the motility of the stomach for a time. There is an interference accomplished by the operation which causes a lowered status of motility. I am not arguing in opposition of drainage, as a factor in operation, but in favor of relief of pain. Without wishing to criticize the carbohydrate diet in a personal way I believe that the benefits accomplished in hyperacidity or in ulcer are not so much due to any restriction of the carbohydrates as to the restriction of all food constituents. It makes little difference whether we restrict the proteins or the carbohydrates. The main thing is that the majority of hyperacidity patients eat themselves into hyperacidity, leaving out the neurologic and psychologic cases. The restriction of carbohydrate and the normal amount or lesser amount of protein makes little difference in the end. The main thing is that the diet should only be equal to the patient's individual necessities, and it is not necessary to weigh the food to accomplish this in every case.

DR. J. W. DRAPER, New York: The question of operation in these cases, from the surgical standpoint, is by no means decided. We have recently experimented on a large number of animals, trying to find the cause of this impairment. Dr. Barber has shown that if a segmental resection of the stomach is made, the function afterward remains practically perfect. Whereas, if a V-shaped piece is removed the function is impaired. There is another point of great interest, the differential diagnosis between duodenal and gastric ulcer. Carcinoma never follows ulcer of the duodenum but it does frequently follow ulcer of the stomach. It is not known why this is so. Hyperchlorhydria is an interesting subject. It has

appeared to us from a study of the biologic side that this may be a protective factor by which the organism attempts to prevent aggressions of different kinds. It is unquestionably a symptom.

DR. ISIDOR TUMPOWSKY, Chicago: The "law of the intestines" supports our conception of gastric pain, i. e., when the part above contracts and the part below fails to relax pain results. When gastric peristalsis occurs and the pylorus fails to relax either from spasm or deficient neutralization of the excessive acid passed into the duodenum, pain results from increased intragastric tension. The pain is accompanied by contractions. Pain is not felt unless contractions are present. In the quiescent periods pain is not registered. This seems to point to the conclusion that tension is the cause of the gastric pain.

DR. WILLARD J. STONE, Toledo, Ohio: I believe it is up to the surgeon who advocates gastro-enterostomy without appropriate prior medical treatment to prove that there is no impairment of stomach function after this operation. The vast majority of gastric and duodenal ulcers are amenable to medical treatment by the methods outlined by Sippy and Lenhart or by the plan here suggested. If, a reasonable length of time after the so-called medical cure has taken place with the patient free from symptoms, there is a recurrence, we may then consider the possible necessity of operative procedures. The point I wish to make is that many gastro-enterostomies are being performed today without efficient prior medical treatment.

SYPHILIS AS A PROBABLE FACTOR IN VAGUE STOMACH DISORDERS*

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Hospital and private case records show stomach troubles as the chief or presenting symptom in a very large percentage of all patients. In many others, while not the chief complaint, it figures prominently in the chronicle of their troubles.

The former presumption of guilt on the part of the complaining stomach led to many fine-spun diagnoses to fit elaborate classifications. The more recent view of innocence on the part of the stomach until guilt is proved makes for greater thoroughness in the search for causes of symptoms both intragastric and extragastric.

It is not difficult to understand why the stomach protests so frequently and so emphatically against disturbances originating outside itself when we recall the embryologic relation of the whole alimentary apparatus with its common innervation by branches of the vagus and great sympathetic abdominal plexus.

This provides a mechanism so marvelously delicate as to respond to the slightest stimulus either psychic or somatic, for example, the sight or odor of appetizing food producing gastric secretions or the reflex irritation of a chronic appendix causing regurgitation of food.

The problem of determining and separating the two classes, those in which the lesion is in the stomach (organic) and those in which this organ suffers reflexly or vicariously (functional), has been greatly simplified by improvement in diagnostic methods in general, enabling the more certain recognition of all extragastric diseases. But of far greater value have been the roentgenologic studies of the gastro-intestinal tract and of surgical pathology after exploratory laparotomy.

* Read before the Section on Practice of Medicine at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

Notwithstanding these methods for thorough sifting, there is still too large a class of so-called functional diseases of the stomach which in reality is made up largely of sufferers from visceroptosis, pyogenic infections, early myocardial or valvular disease, hyperthyroidism, latent tuberculosis and syphilis.

There is a rapidly growing literature of organic syphilis of the stomach, diagnoses now being based on positive clinical Roentgen-ray and serologic findings, in spite of the contention of pathologists that the disease is rarely demonstrable in tissue examinations after operation or post mortem.

The acceptance as bona fide gastric syphilis of cases in recent reports by Smithies, twenty-six cases, Eusterman, twenty-one cases, Downes and LeWald, eight cases, Morgan, seven cases, all based on clinical, Roentgen-ray and serologic findings, will lead us to expect from other workers a great many cases of the same character. On the other hand, fewer could be accepted as undisputed stomach syphilis, if all cases were to conform to the requirements laid down by Chase, namely, a positive Wassermann, evidence of syphilis elsewhere in the body, demonstration of lesions in the stomach by Roentgen ray, and finally, therapeutic improvement.

A question of great theoretical interest as well as practical importance is how we shall classify cases which meet only the first and last of these requirements, that is, those with stomach disorders showing positive Wassermanns in which all symptoms are relieved by antisyphilitic treatment.

In the light of the newer pathology syphilis may be said to affect the stomach in some one or all of the following ways: (1) by producing gumma, erosion or endarteritis in the organ itself; (2) by causing demonstrable structural changes in other organs closely situated anatomically or allied in function to the stomach; (3) by producing changes not recognizable histologically, but due to spirochetal action direct, or through the agency of its toxins on the stomach itself, on the general nervous system, or on the blood.

In the case of the first two groups, that is, cases in which gross structural changes are presented, the striking and urgent character of the symptoms and physical findings usually lead to the employment of the Roentgen ray, the Wassermann reaction and often to surgical operation. The very gravity of the symptoms is the salvation of these patients.

Unfortunately the third group of cases, showing no gross changes in organs, presents manifestations of such mild and varied character, often in so many different parts of the body, that the stomach symptoms may at times be obscured by other features and the general impression of nervous instability leads one to brand the patient as neurotic or as having nervous dyspepsia. Boas says:

By nervous dyspepsia the authors who have paid special attention to this subject, Von Leube, Stiller and Ewald, understand a variety of conditions. Nervous dyspepsia is not a disease but a symptom complex in which organic changes connected directly with the digestive organs may be detected or absent.

The idea of syphilis as a cause of functional gastric disorders is by no means new, as evidenced by many older textbook statements; for example, Hyde, so long ago as 1888, said: "It should not be forgotten that a long list of functional disorders of the alimentary canal might be enumerated as of occurrence in the syphilitic

subject which are often due to the toxic influence of the disease (cachexia, etc.)"

Before the discovery of the spirochete and the complement fixation test, the diagnosis of syphilis as a cause of these disorders rested on the history, with its usual denial of infection, on very uncertain physical evidences and finally on the therapeutic test. Since the discovery of these most positive evidences we have been compelled to acknowledge the disease as exceedingly common in all grades of society and very often nonvenereal in the method of its acquirement. Though still "visited as an iniquity of the fathers upon the children," it no longer carries the moral damnation of original sin.

This radical change in mental or moral attitude toward syphilis has put medicine forward a tremendous stride. As matters now stand, the demonstration of the presence of active syphilis depends on obtaining a positive Wassermann reaction on the blood or spinal fluid, and hence the performing of routine tests on all medical cases, especially those with stomach symptoms, becomes most desirable. A few statistics of such examinations from recent literature offer some variable but suggestive results. Horner in 500 cases finds positive 13.8 per cent., Moore in 418 cases finds positive 13.4 per cent., Edsall in 1,696 cases finds positive 9.4 per cent., and forty-six of the latter had gastrointestinal symptoms.

In the discussion of his figures Edsall remarks that "the most striking fact brought out is the much greater frequency of gastro-intestinal manifestations (not gastro-intestinal syphilis) than we have thought till recent years."

The group of vague gastric disorders in which syphilis is believed to be concerned is largely made up of congenital cases lacking the classical picture of the disease and hence unrecognized and untreated; congenital or acquired cases suspected and insufficiently treated; and acquired often nonvenereal syphilis, of a mild type because of a weak strain of infecting organism or unusual resistance of the patient. All of these types were formerly called merely latent syphilis.

Since Warthin finds spirochetes in cardiac muscle as well as in other organs which show no lesion, "which according to the older knowledge would be classed as syphilitic," we may accept his theory for the periods of latency in persons who, though free from symptoms for decades, show abundant organisms in their tissues. He assumes that a symbiotic relation exists between the organisms and the body cells.

This view accords with the conclusions of Nichols and Hough, from experimental data, that "syphilis is not to be thought of as a chronic septicemia extending over years, but rather a complex of local infections which date back to an early septicemia and the character (strain) of spirochete eventually determines the picture of the disease."

This view of latency, as symbiosis, would explain more satisfactorily such phenomena as the late (parasyphilitic) manifestations and the negative complement fixation test which becomes positive after provocative doses of antisyphilitic remedies. As to the exact method by which gastric symptoms are produced in syphilis without demonstrable lesions of the stomach we can at present only speculate. If we exclude from consideration cases with definite lesions of the central nervous system, two ways seem possible, either by the actual localization of spirochetes in the stomach or through absorption and circulation of toxins in the

blood. The latter would seem analogous to the early gastric disorders seen in pulmonary tuberculosis, in which no lesion of the stomach exists.

A vast amount of work must yet be done to clear up the pathology of syphilis and establish the Wassermann, luetin and various spinal fluid tests on an entirely satisfactory basis. But the application of our present knowledge is revolutionizing internal medicine and enabling us to save many syphilitic gastric patients from years of unnecessary suffering, surgical tampering or even worse fates.

Herewith are appended case reports believed to be illustrative of some of the types discussed.

CASE 1.—White, married man, 36 years old, complained that for five weeks he had had "stomach trouble" nearly continuously. From three to four hours after a meal, especially if he had exercised much, he felt a considerable pain in his stomach. This pain remained localized, not radiating, and was relieved on taking any sort of food. He believes the pain was worse after a heavy than after a light meal. He did not vomit, nor did he have heart burn or eructations. The bowels were somewhat constipated. His weight was off from 12 to 15 pounds.

His trouble was diagnosed as syphilitic gastric dyspepsia and progressive *tabes*.

The history shows that this man has had a facial paralysis for nine years and that he had something like syphilis a few weeks preceding its development. The treatment he received was the usual hot springs vacation with very casual dosing for a few weeks with a liquid containing mercury and potassium iodid.

About one year later, or Sept. 25, 1907, he consulted me because of pain and fulness in his stomach, coming on an hour or two after eating. His bowels were regular. He had lost 25 pounds in a year.

Examination then showed right-side facial palsy, negative heart, lungs and abdominal viscera, urine containing a few hyaline and granular casts. The blood was negative to ordinary tests, the Wassermann not being then in vogue.

Examination of stomach contents, which was then very much in vogue, showed after an ordinary Ewald meal total contents 90 c.c., hydrochloric acid 16, total acid 25. From these findings it was thought that no serious stomach disorder was present, in other words, our old friend, "neurosis or purely functional" was chosen for a diagnosis, and the patient was advised to feed up and renew his antisiphilitic treatment and report in ten days. He was not seen again till 1910, three years later, when he was much improved, but still had his facial paralysis.

A few weeks ago he returned complaining that for five weeks he had pain after meals, as already described. The periodicity and general character suggested duodenal ulcer, but there being no demonstrable blood in the stools and no abdominal tenderness, this diagnosis was held in abeyance.

He was found to have delayed right patella reflex and slight Romberg. The Wassermann reaction was three plus positive. Examination of eye grounds and auditory nerves preliminary to giving salvarsan was made and it showed defective hearing in both right and left ears and marked arteriosclerotic optic disk.

In view of these changes and the risk involved in large dosage of arsenic, we decided on slower treatment, and accordingly he was given mercury salicylate intramuscularly with increasing doses of potassium iodid. Following marked improvement in the eye and ear conditions, he was later given arsenobenzol.

No direct attention has been paid to the stomach disorder except for some suggestions as to diet and laxatives. The improvement in the patient has been very marked, the stomach symptoms having entirely cleared up and though he still has a long way to travel, I hope the syphilitic condition may be arrested and further damage to the gastro-intestinal tract and nervous system be averted.

CASE 2.—American woman, married, 33 years old, presented as the principal complaint these facts: For about four or five

months had had severe pain in the stomach region and also in the right thorax. She had a feeling of "rawness and soreness" in the stomach and suffered from nausea and vomiting when the stomach was empty. She had on two occasions vomited blood, which was at one time bright red and at another dark, there being 1 to 2 ounces each time. A week before she had passed some pus and blood in the stool. She had a poor appetite and was constipated. Having lost 20 pounds and much strength, she was bedridden and greatly depressed mentally. Another condition which was thought possibly to have some relation to the stomach trouble was excessive uterine flow at times, both metrorrhagia and menorrhagia, with moderate leukorrhea.

Her case was diagnosed as stomach ulcer, probably gumma.

Some other points of interest in the history are that she had pneumonia followed by pleurisy thirteen years before and mild attacks of pleurisy every winter following. Up to six years before she also had bronchitis every winter. She had one living child and no history of miscarriages. Her husband is in excellent health, having no suspicion of syphilis.

The examination shows a thin anemic woman with signs of old pleurisy at the right base, a very tender resisting area in the left upper abdomen above and to left of the umbilicus, in other words about over the stomach.

She has a moderate secondary anemia with hemoglobin 55, 4,600,000 red cells, 5,500 white, blood pressure 108 and 80 mm. of mercury, urine negative, stool with no occult blood and no ova.

The examination of the uterus showed an enlargement of this organ with an eroded, easily bleeding cervix and a small mass in the posterior cervical lip.

The general picture here presented suggested strongly carcinoma of the uterus with probable metastasis in the gastro-intestinal tract. The patient was seen by Dr. L. H. Watkins, who diagnosed an acute endocervicitis. It was decided to take her to the hospital and examine the cervix further, making a microscopic examination of the tissue, and study further the stomach condition by means of the Roentgen ray.

The Roentgen ray showed both with fluoroscope and plate a definite lesion (probable ulcer) on the lesser curvature immediately beneath the tenderest point on the abdomen. The characteristic incisura in the greater curvature directly opposite was also noted with a stoppage of the bismuth and with a ragged appearance at the point of suspected ulceration.

Further examination of the uterine condition by Dr. Watkins confirmed the diagnosis of endocervicitis, probably of Neisser type. The Wassermann reactions, made by two careful observers independently, were both positive, three plus.

The usual ulcer diet and regimen were instituted and a few days later the patient was given 0.6 gm. of salvarsan. She has since been on mercury by intramuscular injections and potassium iodid. Some little attention has of course been paid to diet, laxatives and medication, but the marked and prompt improvement noted and which is continuing both in the behavior of the stomach and in the general condition, together with a gain of 40 pounds in weight and a clearing up of the anemia, we believe has been largely due to anti-syphilitic treatment.

CASE 3.—An American mechanic, 27 years old, had stomach trouble, weakness and "generally down-and-out feeling for three or four years." He felt so bad that he was unable to work except a day or two a week.

Three years before, after much treatment by different doctors, the inevitable happened, his appendix was removed by a surgeon who told him it was chronically inflamed and was the cause of all his digestive disturbance.

The symptom complained of at that time and which persisted after his separation from his appendix were heaviness in the epigastrium, with much distention with gas, constipation and dizziness. On careful inquiry into the history it was found that he had a definite, typical syphilitic infection in 1907, just eight years before. Following this he took about six months' internal treatment. Again three years before he took salvarsan intravenously. Up to the time of examination there had been no particular change in the gastro-intestinal or general condition.

This patient was sent to the hospital May 24, 1915, for study, and it was found on Roentgen-ray examination that, aside from a redundant sigmoid, there was no pathologic condition present in the alimentary tract, the stomach itself being absolutely normal.

A diagnosis of syphilitic gastric dyspepsia was made.

A Wassermann reaction made on entrance showed moderately positive, two plus. The blood findings aside from this were not striking. The urine, blood pressure and general physical examination were negative. The stool showed no occult blood. No gastric analysis was made.

On May 31, 1915, the patient was given salvarsan and a week later intramuscular injections of mercury were begun, followed in the intervals with potassium iodid. This man has now been under observation more than a year and is quite well of his stomach trouble.

SYPHILIS IN THE SOUTHERN NEGRO*

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The question of the prevalence of syphilis among the negroes of the South has, until recently, been the subject of much discussion and conjecture, but of little scientific investigation.

It is the belief of the majority of physicians working among the negroes in the South that a great percentage of them are syphilitic.¹ On the other hand, it is the belief of other clinicians, working among a better class of negroes, especially in the North, that such an estimate is not correct.² Most of these estimates, however, are based solely on clinical observations and not on systematic and strictly scientific investigations.

The results of the few systematic attempts at the solution of this question regarding the prevalence of syphilis among the negro population of the South have been somewhat contradictory. Hindman³ has reported 16 per cent. of infections as determined by routine Wassermann reactions, among 255 male negroes and the same percentage among 218 female negroes incarcerated in the Georgia Insane Asylum. Ivey⁴ reports 25 per cent. of 357 male insane negroes, and 29 per cent. of 349 female insane at the Mt. Vernon Insane Asylum of Alabama, as having positive Wassermann reactions. Lynch⁵ reports 65 per cent. of negro women, and 53 per cent. of negro men, applying at the outclinics of Charleston, S. C., for treatment, as having positive Wassermann reactions. Unfortunately, however, Lynch's series of tests is limited to only 102 in all. Wilson,⁶ in a series of tests done on seventy-six healthy negro girls in an orphan asylum of Baltimore, found 7.8 per cent. to have a strongly positive Wassermann reaction.

As a result of this very decided variation in the figures of various observers, it has seemed to us that a systematic and more or less extensive series of observations as to the prevalence of syphilis among the negroes would not be out of place.

The work which we are to report was carried out on negroes in the city of Galveston. The majority of the negroes examined were of the laboring class, being for the most part dockworkers, longshoremen, sailors and common laborers, with their wives and families.

The reactions which we have employed in the attempt to detect syphilitic infection were the Wassermann and luetin tests. The Wassermann tests were done after the modification of Noguchi, using liquid reagents, however, instead of paper. The luetin tests were done in the ordinary manner, 0.07 c.c. being given intradermally. All tests were carried out in the medical clinics and laboratories of the University of Texas, Department of Medicine; the blood of each negro admitted to the wards of the John Sealy Hospital, regardless of service to which admitted, being taken as soon after admission as possible and the luetin reaction being given at the time the blood was taken. No Wassermann or luetin reaction was considered positive unless the reaction was an undoubted positive, doubtful reactions being considered negative. Only Wassermann reactions of one plus (50 per cent.) or more fixation were considered positive, the classification of Craig being used.⁷ All tests were done in the same laboratory and interpreted by the same observer.

The series which we have examined in the above manner consists of about 1,200 adult negroes, fifteen years of age or over. On 600 of these negroes both the Wassermann and luetin reactions could be successfully followed, while in the remaining 600, only the Wassermann reaction could be obtained. Among the latter 600 patients, however, are included all those on whom luetin reactions were done, but who disappeared from view before the reaction could be satisfactorily interpreted. Also among these patients are included all those having had potassium iodid in any amount before the interpretation of the luetin test, for there seems to be no doubt, in our experience, that a positive luetin can be produced at will on non-syphilitic individuals, by the previous administration of the iodids in sufficient quantities.

Of the 1,200 negroes examined in this manner, 34 per cent. gave definite positive Wassermann reactions. Of the 600 negroes on whom both Wassermann and luetin reactions were done, 35 per cent. gave definitely positive Wassermanns, and 18 per cent. gave positive luetins, while the total percentage giving positive reactions to one or both of these tests was 42 per cent., 7 per cent. giving positive luetins with negative Wassermanns. Such statistics as these are of comparatively little real value, however, in arriving at a true idea as to the actual prevalence of syphilis among a race of people. It is a well-known fact that the percentage of syphilis among patients applying to clinics for treatment is always much higher than among the healthy working classes, so that, before drawing any conclusions as to the actual prevalence of this disease, as well as its actual relation to sickness and death, it becomes necessary to determine the percentage of healthy and robust negroes who are infected with syphilis.

In order to determine, therefore, the actual prevalence of syphilitic infection in the healthy working negro, we have made an especial study of some 200 such persons. Among these are included all negroes admitted to the surgical wards of the hospital, suffer-

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1. Murrell, Thomas W., discussion on Kingsbury, Jerome, and Brecht, Paul E.: The Intravenous Administration of Mercury in Syphilis, *THE JOURNAL A. M. A.*, Aug. 15, 1914, p. 565. Martin: *South. Med. Jour.*, 1914, vii, 466. Terry: *South. Med. Jour.*, 1914, vii, 458.

2. Hazen, H. H.: Syphilis in the American Negro, *THE JOURNAL A. M. A.*, Aug. 8, 1914, p. 463.

3. Hindman: *Am. Jour. Pub. Health*, 1915, v, 218.

4. Ivey: *Med. Rec.*, New York, 1913, lxxxiv, 712.

5. Lynch: *South. Med. Jour.*, 1915, viii, 450.

6. Wilson: *New York Med. Jour.*, 1916, ciii, 585.

7. Craig: *Am. Jour. Med. Sc.*, 1915, cxlix, 41.

ing from accidental injuries, such as broken legs, cuts, stab wounds, burns, etc. Particular care was taken in selecting these negroes to rule out all who were otherwise diseased or disabled than from their injury. Along with these cases were included, also, a small number of normal obstetric cases. Of these various, apparently normal cases, 24 per cent., approximately, gave positive Wassermann reactions, 12 per cent. gave positive luetin reactions and 28 per cent. gave positive reactions to either the Wassermann or the luetin tests.

In order to determine, moreover, what percentage of syphilis might be hereditary among the negroes and what acquired, we attempted a very limited study of negro children, ranging in age from 1 year to 12 years, in whom it was presumed that any syphilitic infection must be inherited. These children were, however, admitted to the hospital complaining of some ailment, either medical or surgical, so that the figures which we have obtained are probably somewhat higher than would be met with among absolutely healthy negro children. They are sufficient, however, to show that the majority of the cases of syphilis among the negroes are of the acquired type, nature, fortunately, taking care of many of the patients with inherited syphilis by affording them an easy death either before or immediately after birth, as well as by rendering the parents sterile. Of fifty-two such examinations which we have made, we found only five positive Wassermann reactions, giving a percentage of about 9.5. In addition, however, one patient had positive luetin reaction with a negative Wassermann, making the percentage slightly higher.

Of greatest interest to us, as clinicians, was the study and analysis of the incidence of positive Wassermann and luetin reactions among patients suffering from the various common diseases. This subject we hope to take up in more detail in a paper to be read elsewhere, but a brief summary of our findings would, perhaps, not be inappropriate here.

Taking up first the purely medical cases, cases admitted to the medical wards of the hospital, we find that we have some 400 in our series. Of these, about 40 per cent. gave definitely positive Wassermann reactions. Adding to this percentage those cases which gave positive luetin reactions with negative or doubtful Wassermann reactions (twenty-one cases), we have a total of 45 per cent. giving strong laboratory evidence of the existence of syphilis. Analyzing the incidence of positive reactions in the various common diseases, we find that such diseases can be readily grouped into three divisions, from the standpoint of syphilitic infection. First, we have those diseases which seem to have no direct connection with syphilitic infection, since the incidence of positive reactions in these is remarkably constant, ranging always somewhere around that percentage which we have found to be usual in healthy negroes. Next, there is a group of diseases in which the incidence of positive reactions is somewhat higher, suggesting that while perhaps syphilis is not a direct cause of the disease, or at least not the sole cause, nevertheless, syphilitic infection must be a contributing factor toward its occurrence. Finally, we have certain diseases in which we have learned to predict a positive reaction in almost every instance, diseases which are certainly caused by previous syphilitic infection.

Among the first group of diseases, which, apparently, have no connection, either direct or indirect,

with syphilis, and comprising some 200 cases in all, we find the following diseases, all showing an incidence of positive Wassermann reactions of somewhere around 30 per cent.: pulmonary tuberculosis, sixty cases, with 23 per cent. positive Wassermann reactions; typhoid fever, thirteen cases, 22 per cent. positive Wassermann reactions; malaria, seven cases, 12 per cent. positive Wassermann reactions; pneumonia, thirty cases, 30 per cent. positive Wassermann reactions; dysentery, twelve cases, 20 per cent. positive Wassermann reactions; pellagra, twenty-two cases, 13 per cent. positive Wassermann reactions; cancer, 17 cases, 12 per cent. positive Wassermann reactions; chronic interstitial nephritis, four cases, 25 per cent. positive Wassermann reactions, and arteriosclerosis, eighteen cases, 23 per cent. positive Wassermann reactions.

Still other diseases, mentioned above as perhaps indirectly associated with previous syphilitic infection, have shown constantly a rather higher percentage of positive reactions than we have learned to consider normal for the negro. The most striking type of disease of this second class is a form of diffuse nephritis to which the negro of these parts seems peculiarly susceptible. We are, all of us who work in the South, acquainted with the common "dropsy," which is so well known to the darkies themselves. This disease is manifested clinically by a massive anasarca, by dyspnea, by cardiac irregularities, hypertrophy and dilatation. Usually the disease is rather rapid in its course. Pathologically, an acute or subacute diffuse nephritis is usually found, involving as a rule both glomerular and tubular elements of the kidneys. Excluding all cases of pure chronic interstitial nephritis and all cases of renal sclerosis, we have studied sixty cases of this diffuse nephritis. Of these, twenty-five gave negative reactions, twenty-four gave positive reactions, and eleven gave doubtful reactions. Of the latter giving doubtful reactions, five gave positive luetin reactions, making twenty-nine cases in all giving positive reactions to one of these tests, a percentage of 48 per cent. positives as against only 40 per cent. clear-cut negatives.

Still another affection common to the negroes, as all who work among them are aware, is a spastic paralysis or paresis, occurring especially in young or middle-aged negroes, often of one limb or group of muscles, but still more frequently, perhaps, involving more than one group. A certain number of such cases are, of course, purely arteriosclerotic in origin, but that a large percentage of them are syphilitic is shown from the fact that out of thirty-four of such patients studied in this series, 50 per cent. gave positive Wassermann reactions. The majority of those giving positive Wassermann reactions, moreover, gave positive reactions in the spinal fluid also.

Another disease which would seem to be connected with syphilitic infection in some way, although not certainly caused solely by that infection, is myocarditis. From this group we have excluded as far as possible all cases of myocarditis complicated by valvular lesions of an organic nature, also all cases complicated by nephritis. Twenty-one such cases were observed. Of these, eight, or 40 per cent., gave positive Wassermann reactions, three, or about 10 per cent., were doubtful, and 50 per cent. were negative.

Cirrhosis of the liver, usually, among the negroes, consisting of a large, hard and tender liver, would seem to be largely specific in origin, since out of six

cases observed, four gave strongly positive Wassermann reactions.

Of the third type of disease common among the negroes, but which is almost constantly associated with a positive Wassermann reaction, aneurysm of the thoracic aorta is a good example. Of twelve such cases in this series, ten gave definitely positive reactions, one gave a doubtful and one a negative reaction. Three cases of abdominal aneurysm were studied. Only one of these gave a positive Wassermann reaction. Two were negative both to Wassermann and luetin reactions. One carotid aneurysm gave a positive reaction, one femoral a negative, and one iliac a negative reaction.

Twenty cases of aortic insufficiency were observed in this series. Fifteen of these, 75 per cent., gave positive Wassermann reactions and 85 per cent. gave positive reactions to either Wassermann or luetin tests.

One other disease stands out prominently among the medical cases as being commonly associated with positive reactions for syphilis. This is a mild type of bone pain, usually called rheumatism or lumbago by the

ano, perirectal abscess, stricture of the rectum and chondromas. With the exception of those patients suffering from hemorrhoids, nine of whom were examined, with an incidence of positive Wassermann reactions of only 22 per cent., all of the remainder of these rectal troubles would seem to be closely connected with syphilitic infection, since out of thirteen patients with rectal fistula, eight, or 61 per cent., gave positive Wassermann reactions; of four with rectal abscesses, three gave strongly positive reactions and one a doubtful reaction; and of ten with strictures of the rectum, nine gave strongly positive Wassermann reactions. It would seem, therefore, that rectal trouble in the negro is strong presumptive evidence of syphilis.

One other surgical disease standing out prominently in our series as being frequently associated with positive Wassermann reactions is the chronic leg ulcer. Out of eighteen such cases, ten gave positive Wassermann reactions (55 per cent.), and one a doubtful reaction. Finally, of seven cases of periostitis observed, three gave strong positive Wassermann reactions, one a doubtful, and three a negative reaction.

Of 200 gynecologic cases examined, 29 per cent. only gave positive Wassermann reactions. Among the gynecologic cases, no particular disease has been peculiarly associated with positive reactions. Out of thirty-two obstetric cases, ten gave positive Wassermann or luetin reactions, a percentage of 30. Only three miscarriages were observed among these. Two of these miscarriage cases gave positive reactions and one a negative.

In a study such as this one of the prevalence of syphilis in any particular class of individuals dwelling in a community, it is of course important to determine, if possible, the incidence of the same infection among the other classes of the same community. Such a determination among the white patients admitted to the wards of the John Sealy Hospital, in a limited number of cases only, however, has been done. Before reporting the results of this investigation it would perhaps be well to say a few words in explanation of the class of white people on which this work was done. We treat in the wards of the John Sealy Hospital two entirely different classes of persons. On the one hand, many are small shopkeepers, farmers from the surrounding territory, clerks, tradesmen, etc. On the other hand, a large number are of the so-called lower classes, including sailors, longshoremen, common laborers, and, finally, the human derelicts or the dregs of social life.

The incidence of syphilitic infection among the better classes of these patients, taken as a routine on admission, would seem to be considerably lower than that among the negroes, averaging somewhere about 20 per cent. (fifty cases only). On the other hand, the incidence among the latter class of patients, those at the bottom of the social scale, differs very slightly from the incidence found among the negroes of the same class, averaging about 30 per cent. (fifty cases).

Finally, in a series of Wassermann tests done on about fifty healthy medical students, the tests being done in a routine manner, without selection, we have not yet found a definitely positive reaction.

CONCLUSIONS

The conclusions which we feel that we can draw from this work are as follows:

1. The incidence of syphilitic infection among apparently healthy adult negroes in this community varies between 25 per cent and 30 per cent.

OCURRENCE OF SYPHILIS IN THE COMMONER DISEASES,
AS DETERMINED BY POSITIVE WASSERMANN
REACTIONS ON THE NEGRO

Disease	No. Cases	Per Cent. Positive Wassermann
Apparently healthy adult negroes.....	200	24
Negro children	52	9.5
Pulmonary tuberculosis	60	23
Typhoid	13	22
Malaria	7	12
Dysentery (amebic and bacterial).....	12	20
Pneumonia	30	30
Pellagra	22	13
Cancer	17	12
Arteriosclerosis (or senility).....	18	23
Chronic interstitial nephritis.....	4	25
Diffuse nephritis (often subacute or acute)...	60	48
Paralysis	34	50
Myocarditis (uncomplicated by organic valvular lesions or by nephritis).....	21	40
Cirrhosis of liver.....	6	66
Aneurysm of thoracic aorta.....	12	83
Aortic insufficiency	20	75
Syphilitic bone or joint pains.....	30	80
Rectal abscess	4	75
Rectal stricture	10	90
Rectal fistula	13	61
Hemorrhoids	9	22
Chronic leg ulcer.....	18	55

sufferer, characterized clinically by bone or joint pains, without, however, any redness, swelling or deformity. There is usually no rise of temperature. A very characteristic point in the history is the fact that the pains are usually worse at night. Headache is apt to be a complication. Joints are especially apt to be affected, although the long bones are not infrequently involved, as well as the ribs, spine and skull. Local tenderness is not marked as a rule. Such cases are exceedingly common in our clinics, especially in the outclinics. Of thirty such cases studied, twenty-five, or about 80 per cent., gave strongly positive Wassermann reactions, and 84 per cent. gave either positive Wassermann or positive luetin reactions.

A study of Wassermann reactions done on negroes admitted to the surgical wards of the John Sealy Hospital, about 300 cases in all, shows a lower incidence of positive Wassermann reactions than on the medical wards, only 34 per cent. of these giving positive Wassermann or luetin reactions, as distinguished from 45 per cent. of positive reactions obtained on the medical service. Only three diseases stand out prominently among the surgical cases as being especially associated with positive Wassermann reactions. The most striking of these is the well-known "rectal trouble" of the negro. These rectal troubles are found on investigation to be of five kinds, namely, hemorrhoids, fistula in

2. The infection is largely acquired, since it is much lower in incidence among children under the age of puberty.

3. The incidence of syphilitic infection among sick negroes is considerably higher than among the well, averaging between 40 per cent. and 50 per cent.

4. Certain diseases seem to be directly connected with previous syphilitic infection, as shown by extremely high incidence of positive reactions. In other diseases, moreover, syphilis, although apparently not being the direct, or at least the sole cause of the disease, would seem to be connected with its occurrence in some way, chief among these being the characteristic form of acute or subacute diffuse nephritis, which is one of the most common causes of death among the negroes.

5. The occurrence of syphilis among white people of the same social class as the negroes would seem to be about the same as that among the negroes. In the better classes of white people, however, the occurrence is much less, while in the best classes (young and healthy medical students), it is almost nil.

6. Syphilis is undoubtedly one of the chief causes of death and disease among the negro, ranking as high or higher than tuberculosis, Bright's disease and pellagra, which are the three other chief causes of death and disability among that race in this community.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. LULL AND M'NEIL

DR. FRANK SMITHIES, Chicago: The subject of visceral syphilis is in evolution. The earlier pathologic studies are incomplete. Dr. Warthin of Ann Arbor has demonstrated in the pancreas lesions similar to those found in the aorta and myocardium. He also demonstrated spirochetes in the pancreas parenchyma. It would seem that we must cease to regard syphilis as a dermatologic ailment but consider it broadly as a spirochetemia. We cannot state that the syphilitic virus, the spirochete, does not lodge in the wall of the stomach or other hollow viscera. It is extremely likely that it does. Its lodgment there is probably delayed on account of the active motility of the stomach, and added vascular protection. We should not wait for the development of a tumor or malformation before classing lesions as syphilitic. Such are terminal affairs. In all cases of chronic dyspepsia one should make a Wassermann test not only of the blood serum but of the spinal fluid as well. A positive reaction should always be confirmed by a second test. We do not think that the luetin test is a reliable clinical guide as to the presence or absence of syphilis. If one approaches the subject of visceral syphilis from this standpoint he will be surprised at the comparatively large number of cases that come in diagnosed "dyspepsia" which will reveal some venereal history which has been forgotten or hidden and in which positive serum tests are obtained. In some instances the disease may be congenital. In syphilitic cases the clinical manifestations are very similar to those of dyspepsia from other gastric lesions. One should not wait until tumor deforms the stomach before suspecting syphilis. When tumor has developed it indicates the end of the story. Gastritis, ulceration or cirrhosis usually precede tumor formation.

Reports of great improvement following specific treatment of lesions which are considered syphilitic should be considered conservatively. In 80 per cent. of chronic ulceration of the stomach, especially in syphilitic ulcers, there is a history of intermittency or "periodicity." Favorable intervals often occur whether or not treatment is instituted. Out of 33 cases of visceral syphilis in my series only five can at present be considered clinically well. In seven cases there was no improvement.

DR. FENTON B. TURCK, New York: Gumma of the stomach is an unusual lesion and the number of cases of demon-

strable gummas interfering with gastric function is very small. On the other hand, a large number of syphilitics have stomach disorders sometimes of a very distressing sort. In common with other general diseases, syphilis can be manifested by gastric symptoms quite apart from any local syphilitic lesion. Since syphilis is recognized as a spirochetemia, not essentially unlike an invasion of the blood stream by bacteria or plasmodia, the resultant effects are very similar to those of chronic malaria, tuberculosis or low grade systemic infections. Some years ago a physician in Texas made a special report to me on gastric symptoms in chronic malaria. His figures proved the same insufficiency of motility with stasis of stomach contents as is found in tuberculosis and syphilis. The factors responsible for these symptoms are changes in nonstriated muscle as result of direct toxic influence and venous stagnation in splanchnic vessels resulting in an asphyxia of muscle cells and consequent atony. These conditions were found in cases in which no obstruction was demonstrable; the histologic changes were shown in sections from the stomach wall which were taken in attempting operation for relief of gastric symptoms. These microscopic changes were of a hyaline character with a degeneration of muscle cells without infiltration of the gummatous type. Antisyphilitic treatment does not always relieve symptoms secondary to long standing cell poisoning; direct, systematic treatment of the stomach is indicated for reduction of splanchnic congestion and stimulation of gastric motility and secretion.

SURGICAL ASPECTS OF INDUSTRIAL ACCIDENT INSURANCE

ILLUSTRATED FROM CALIFORNIA EXPERIENCE *

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SAN FRANCISCO

Legislation embodying into laws the ideas of employers' liability, workmen's compensation and compulsory industrial accident insurance in its historical development constitutes a sociologic movement of the greatest significance and of the widest application. It affects not only all communities in the states in which it has been adopted, but also all classes in those communities, profoundly influencing the cost of production of a great variety of commodities and in consequence the cost of living and material development.

This latest phase of the never ending struggle between labor and capital has brought forth an entirely new conception of at least certain relations of workman and employer to each other, to industry and to the public.

Because fundamentally this movement has to do with the health and physical welfare of the laboring classes, relations have developed with the medical profession in an altogether special sense. Broadly speaking, the law in its present form is largely designed to afford to the injured workman the best medical and surgical service available, and this is made a matter of social economy, an entirely new sort of enforcement of a principle long recognized as to the duty of surgery to restore the injured workman to his earning capacity at the earliest possible moment. I mean that the law has made it sharply to the pecuniary interest of a large body of men, the employers through the insurance carriers, to provide such surgical service for

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

injured employees as will insure their return to productivity to the greatest degree possible and in the shortest possible time. This cannot fail profoundly to influence medical and surgical practice and medical education.

The problem of providing for the relief of workmen, their families, widows and orphans is a very old one, and attempts at its solution by organization date back even to the guilds of medieval Europe; but until the present movement was inaugurated, attempts at solution of the problem have always been from the standpoint of mutual aid on the part of workmen themselves or else on the basis of charity.

The principle of the state assessing the employer for the cost of medical and surgical aid and monetary compensation of injured workmen, making it a matter of law and right as opposed to charity, is of German socialistic origin, the first important legal expression of the same based on older Prussian laws being the German employers' liability law of 1871.

So revolutionary a principle could not be adopted except on an experimental basis, and therefore it was made applicable only to the more obviously hazardous occupations. It put particularly on mine owners the burden of caring for injured employees, and was based on fault; but the burden of proof of fault bore so heavily on labor that it signally failed of its object and resulted in little more than the engendering of a prodigious number of embittering suits at law. It was an entering wedge, however, and led directly to the compulsory industrial accident insurance laws of 1884.

Following the lead of Germany, yet often basing their practice on different principles and with variation growing out of accommodation to laws and customs already in force and organizations already active in the same direction, all the great powers of Europe and many of the smaller states have adopted laws more or less effectively solving the problems of workmen's compensation, employers' liability and social insurance. Austria in 1887, Hungary in 1891, Norway in 1894, Finland in 1895, France and Italy in 1898, Spain in 1900, Holland in 1901, Russia in 1904, Belgium, Switzerland, Sweden, Denmark, Greece, Serbia, Bulgaria, Peru and others, including even Iceland, have adopted and are enforcing such laws.

England passed the employers' liability act in 1880 and the workmen's compensation act in 1897, which provided that compensation should be made by the employer to the injured workman irrespective of negligence or contributory negligence and was made to apply to most industries. In 1900 the law was extended to agriculture and in 1906 to practically all persons in service. Moreover, certain industrial diseases were interpreted as "accidents" within the meaning of the law. The British colonies of New Zealand and those of Australia, Canada and South Africa followed suit.

Beginning with Maryland in 1902, one state of the Union after another, and the federal government have enacted laws for workmen's compensation. The original law in Maryland was declared unconstitutional, as have laws on this subject in other states; but by a process of experimentation and amendment, laws more or less satisfactory in solving the problems of workmen's compensation have been evolved and are now in force in thirty-one of the forty-eight states, while some others have the matter seriously under discussion and in the hands of commissions for investigation. The federal law of 1907-1908 was far in advance of

any state law in force at the time of its enactment. It is still in force and extended by amendment till it is now applicable to employees of the government on the Panama Canal and on the Alaskan Railroad and employees of corporations engaged in interstate commerce. It is, however, based on fault.

In 1910, New York took the lead in enacting a liability law of general application which has been followed by a great number of states in its essentials, though modified to meet local requirements and legislative ideas.

For the purposes of the present paper it is important to note that in nine states, California, Colorado, Maryland, Michigan, Montana, New York, Pennsylvania, Ohio and West Virginia, there is maintained a state insurance fund. In the seven states first mentioned the state fund actively competes with private insurance companies.

Nearly all the countries of Europe now include compulsory insurance of the working people against illness. "The cost of insurance is usually distributed between the worker and the employer, and in some countries the government also contributes a share. By this device the employer is compelled to bear some portion of the cost of sickness among his employees, and the worker receives larger benefits than he could purchase unaided."

Notwithstanding the dismay of the medical profession in England when this law of compulsory insurance of workmen against illness was first promulgated (1911) which was marked by a veritable strike of the British Medical Association, the law is being enforced and the fears of loss of income which actuated the medical men have not materialized, being more than neutralized by the realization of the previously inadequate medical care the laboring classes received and the consequent increase of volume of professional service provided under the new law. The fact is that the incomes of a great body of medical men in Great Britain have increased as a result of enforcement of the law, and more adequate medical and surgical service has been rendered the working classes, although the quality thereof is criticized as not having improved in proportion.

It is not possible to foresee the limits to which this movement may continue in this country, but it is only a short step from industrial accident insurance now effective in thirty-one states to compulsory insurance of workmen against accident and illness in all of the states. There is much difference of opinion as to whether the whole matter should not be taken over by the federal government and the law made uniform throughout the country and be enforced by a government bureau. Against this view is the practical fact that in thirty-one of the forty-eight states there is already provided most of the machinery required for the economical enforcement of such laws, machinery which is more attuned to local conditions than a federal bureau is likely to be. On the other hand, the general government would be less likely to go to the extremes of socialism which many foresee as the logical conclusion of present tendencies in state legislation.

A movement so widespread over the world is not to be checked; it must continue to spread and to develop, and must be reckoned with as a permanent sociologic institution in which the medical profession is deeply concerned.

Some conception of the effort the laboring classes have made by mutual insurance schemes against sick-

ness and other risks may be obtained from a study of the so-called friendly societies historically traceable to the guilds.

Naturally in such schemes insurance against sickness took a prominent place, and until with the development of modern methods in manufacture, the use of steam and electric power, the use of complicated and often fast running machinery, of explosives, etc., sickness was a greater risk than industrial accident.

In the latter part of the nineteenth century, friendly societies increased greatly in numbers all over Europe. In England alone a few years ago there were 25,000 such societies with a membership of about 6,000,000. They insured against a great number and variety of risks—sickness, accident, old age, decrepitude from other causes, loss of employment, death, loss of a workman's tools, additions to the family, funeral expenses and in some cases even wedding outfits.

The great increase in such societies was an effort to meet the changing conditions of modern employment, and was in effect a protest against the inadequacy of the law in protecting wage earners and people of small means against losses which were often the cause of the complete submergence of these people in abject poverty.

Such organizations, having little capital back of them, were often not financially sound, and hence were not altogether reliable in affording relief. In Germany in many instances it was made a matter of contract and later of law that the employer contribute a certain proportion of the funds.

REDRESS UNDER THE COMMON LAW

In England, previously to 1880, the date of the passage of the employer's liability act, aside from the benefits to be derived from membership in the friendly societies, the injured workman could seek redress from his employer only under the common law, and the same was true in this country, whose fundamental law is based on the English common law, and is still true in some states.

Under the common law an injured employee could claim compensation from his employer only when the accident could be shown to be due to the fault of the employer, against which contributory negligence, common employment and contractual assumption of risk successively became valid defense.

As long, however, as industries were carried on on a small scale, the employer of a few men, working generally alongside of his employees, the common law rules were comparatively satisfactory, but with the development of industries on a large scale, especially under control of great corporations, the relations became so complex that liability based on fault was most difficult to establish, and the defense of contributory negligence and common employment became so effective as to work an intolerable hardship on injured employees, who not only had to bear practically all the risk of physical injury but most of the monetary risk as well, although they were least able to do so.

Under the common law, medical and surgical service to injured and sick employees was on an even worse basis. Men with incomes under \$1,000 a year had little margin from which to provide premiums for life or other insurance, and little to pay for medical and hospital service, especially when, as was too often the case, the bread winner was the one sick or injured. They were forced to take advantage of free

clinics and charity hospitals with the attendant humiliation, the distaste for which would often lead a self-respecting man to consult a physician, pay what he could and then run up a doctor's bill of such size as to make the honest workman the debtor of the doctor for the rest of his natural life. Or, finding himself unable to pay, he would let the bill run on till written off the doctor's books. Again he would join a lodge or a "hospital association," or, which is not much worse, make his own diagnosis and fill his stomach with "patent medicines" and his closet shelves with the empty bottles.

Medical and surgical fee bills established by local medical societies in various communities based on the average incomes of the so-called better or at least more prosperous classes in those communities provide charges altogether out of reach of such workmen; and while most medical men do a great deal of work without monetary compensation, and many permit patients with small incomes to pay what they can, only too frequently is the reverse the case, and charges made which are altogether impossible of payment without serious sacrifice on the part of the patient.

Under the common law system, large employers of labor often find it advantageous to employ on a basis of contract one or more physicians or surgeons to care for their employees, the expense in most instances being paid out of the funds created by withholding from the wages of each employee a small sum each month, generally \$1, out of which also is paid the cost of hospital maintenance. Such positions of contract physician are often sought after by young medical men because thereby they are insured a living and have opportunity of adding to their incomes by doing more or less private practice in the vicinity.

This form of medical and surgical relief of workingmen answers well or poorly according to the quality of the medical man employed. Often the salary paid is too small to attract a competent man, and, again, the "company doctor" is sometimes appointed because of social favoritism rather than fitness. In general he is a sort of agent of the company whose business is the corraling of evidence which might be produced in court in defense of any action for damages the injured employee might later inaugurate, services which are apt to be looked on at company headquarters as being quite as important as the purely professional duty of attending to the patient and alleviating his suffering. He is expected to neutralize as far as possible the pernicious activities of the "ambulance chasing lawyer."

Under this system, there being no provision for the payment of indemnity for the disablement of an injured employee, the company is interested only in providing first aid and surgical and hospital care during the acute stages of illness. Except as a matter of charity it is not interested in end-results. And yet end-results are the particular things with which the injured individual and the industry as a whole are vitally concerned. A man maimed is lost to the industry and becomes a burden on the community. Moreover, it is estimated that the average cost of breaking in a new hand is \$35.

Although industrial accident insurance has been in force in California only two years and a half, it has done much to lessen the evils of contract practice, and many concerns have already ceased the practice of employing physicians on contract.

The friendly societies or fraternal organizations or lodges which, as said above, have increased so prolifically during the last fifty years, are organized largely to afford medical and surgical services at such cost as to be within the reach of the laboring classes, the monthly dues providing the means for the employment of community physicians. Many such, however, extend their membership to include people in much more comfortable circumstances, who join for the purpose of securing cheap medical and surgical service.

The medical profession, therefore, finds itself opposed to what it considers exploitation of the profession. While from the standpoint of cheapness this scheme works well enough for the members of the societies, it often — in fact generally — fails to secure to the patient competent medical service. Investigation has shown that in these societies the payment to the doctor is far less than \$1 a visit on the average, and in some cases as low as 25 cents. The members paying monthly dues and not so much per visit run to this doctor on the most trivial excuse, thereby unduly multiplying the number of visits. Some of these lodge doctors see forty patients a day, receiving therefor from \$100 to \$150 a month. It is no wonder, then, that the medical work done is, as a rule, of the most perfunctory sort. This fact is appreciated by the members of the societies, for often when fearing severe illness they will forsake their lodge doctor and consult some physician in whom they have greater confidence, feeling instinctively that the lodge doctor's service is worth what they pay for it. The outrageously poor quality of medical service, more than the cutting of prices, is the ground for the medical profession's discountenancing lodge practice.

Under workmen's compensation and compulsory industrial accident insurance, practically the whole of traumatic surgery is taken from the lodges; and if insurance against illness of workmen becomes a fact in this country, as it has in England and Germany, the *raison d'être* of most of these associations will have disappeared. England and Germany, however, instead of destroying these societies, have utilized those of them which are financially sound, and have in fact commissioned them to take care of accident and illness of members, but under strict governmental supervision.

Of late, in most of the large cities of America, people of small means have been exploited by lay organizers or promoters of so-called hospital associations. By cleverly worded advertisements promising first class medical and surgical service and hospital care often in a hospital chosen by the patient, memberships into the thousands have been built up. Since a large proportion of the dues collected is retained by the promoter as compensation for his labors in effecting the organization and for other reasons, the members of the medical profession of high standing and ideals are not attracted and the quality of medical and surgical service provided is necessarily poor. These so-called hospital societies or associations are considered by the better men in the medical profession as distinctly pernicious. Clinical records, if kept at all, are utterly inadequate. These hospital associations are at bottom little more than money-making schemes for the benefit of the promoters, and the laboring classes furnish a great majority of the victims.

Another evil foisted on the people of small means is the so-called Great American Fraud — the "patent medicine" evil. The victims are drawn mostly from

the class of wage earners who buy the medicines not so much because of greater faith in such medicines than in the prescriptions of reputable physicians, but largely as a matter of the saving of doctors' bills. It is human nature to be more willing to pay for medicines which are things tangible than for professional advice.

Compulsory industrial accident insurance when properly administered will go far toward supplanting these organizations in the good they do. It will do it better and will be freer of harmful influence. If applied to sickness as well as accident, it will be a most potent check to the evils of "contract practice," "lodge practice," "hospital association practice," and the "patent medicine" evil, and will put a premium on better quality of medical and surgical practice.

THE CALIFORNIA LAW

The compulsory industrial accident insurance law of the state of California is known as the Workmen's Compensation, Insurance and Safety Act, passed in 1913 and effective Jan. 1, 1914, amended in 1915. The chief amendment of medical interest is in substituting for industrial accident the idea of injury in employment, whether accidental or not, and including industrial diseases.

It applies to all employees except in farm, ranch or dairy labor, domestic service and casual employment. It provides for an industrial accident commission of three who are charged with the enforcement of the law, and establishes a state compensation insurance fund administered by the commission. The proceedings of the commission are public records, and their hearings have the force of courts of law, but with a far less formal procedure. While their simplicity of procedure is scarcely to be approved by the lawyers, it is a boon to doctors who have suffered as witnesses from the law's delays and from hostile cross examination, from misunderstanding and misrepresentation.

The law requires full medical and surgical attention for injured wage earners for the first ninety days, and makes it obligatory on the insurance carrier to furnish such medical, surgical and hospital treatment, including nursing, medical and surgical supplies, crutches and apparatus, as may reasonably be required at the time of the injury and within ninety days thereafter, and longer at the option of the commission.

In most of the states the power of these commissions is very great, there being no appeal from their decisions except to the state supreme courts, and this is time consuming and expensive and hence not often worth while. Under such circumstances it is all important that the commissions should be constituted of broad minded men of unimpeachable integrity: men strong enough to be just in the face of criticism and free from political control.

California has been fortunate in the personnel of its first commission, which has been in office long enough to have established precedents which will be difficult later to neutralize. Its attitude toward the medical profession is that of high appreciation, as is attested by its selection for medical director of a prominent physician who has the confidence and respect of the entire profession.

The following paragraphs from reports of the California Industrial Accident Commission, for the fiscal year ending June 30, 1915, indicate the excellent relations of the commission and the physicians of the state, and it is interesting to note the appreciation on

the part of the commission of the possibilities as to the improvement in surgery that may be expected to result from the administration of the law.¹

The commission has obtained the services of ninety physicians prominent in their several specialties, in different parts of the state. To these (medical referees) it looks for assistance in arriving at a just estimate of the medical aspect of cases. The interest manifested by these men is most gratifying. They are cooperating perfectly with the commission.

No small part of the success of the law is due to this cooperation.

The industrial commission is forming its standard of surgical results required of the medical profession of California, principally upon the opinions of the medical referees. These standards are very high. The effect will be better surgery through the state, diminished permanent disabilities, and decreased indemnities. Mediocre and careless surgical work can no longer pass in industrial accident cases. The commission is always at hand closely to scrutinize each case.

It has been found by bitter experience that all physicians qualified by the laws of the state to practice surgery are not necessarily surgeons.

The commission is gathering an x-ray museum, in which, from present indications, there will shortly be a complete series of examples of all bone injuries. This, with the mass of literature accompanying the cases involved, will eventually be of inestimable value for research, for treatment and for decisions of the commission. A medical library of reference and a museum of many interesting specimens procured from accident cases are in progress of development.

Through the state, the attitude of the medical profession toward the Workmen's Compensation Insurance and Safety Act, and the Industrial Accident Commission has shown a very noticeable and gratifying improvement. It may be said that understanding and cooperation are now universal. The profession realizes that while the act is doing good to the working people it also does good to the whole state. It realizes that the medical profession likewise shares in its benefits.

Of the many influences at work at the present time tending to improve the quality of surgical practice in this country, the most important and most fundamentally effective is, of course, the general betterment of medical education resulting from the development of medical schools on a university basis and under university control. Workmen's compensation and industrial insurance, however, is not to be despised in this regard. It must inevitably exert a powerful influence for better surgery over the whole country.

Already in California the insurance carriers are beginning to realize that it is poor economy to employ physicians and surgeons merely because they happen to be cheap. They are beginning to realize that true economy lies in the policy of employing such men as will insure a high quality of service. The poorly equipped and poorly prepared surgeon is in a fair way to being eliminated or, at least, to be relegated to the practice of surgery among the well-to-do who have to look out for themselves.

Except through public opinion, which is a very lenient critic, slow of action, short of memory, and prone to be hoodwinked by the plausible, and through the hated malpractice suit, which, in a great majority of cases, is entirely pernicious, the work of the surgeon is seldom subject to review. Industrial accident insurance, by making it to the pecuniary interest of those responsible for the choice of a surgeon in accident cases to provide the best available surgical services, will furnish a practical incentive for following up the work of the surgeon and inquiring into the

causes of poor results. The purse of the insurance carrier will be sensitive to a continued harvest of avoidable deformity and continued disability.

As a rule, the men who are doing good clinical work welcome such review and naturally those who do poor clinical work may be expected to resent it.

Moreover, it cannot be otherwise than that the industrial accident commission would be interested in learning from which men in a given community continues to emanate the larger stream of poor surgical results.

When it sends a case the rounds of the referees for determination of the nature of the original injury and the causes of the persistence of disability, the commission is apt to be impressed with the fact, too often evident, that the records of the earlier examinations are so imperfect as to make the determination of the original injury impossible. The medical director of the California commission is looking into the possibility of requiring records to be taken on prescribed forms. Through the state compensation fund, which the commission administers, the commission has it quite within its power to insist on such records being kept, and this will have a decidedly stimulating effect in favor of practitioners keeping intelligible records. Records to be intelligible must, of course, be based on careful examination of clinical phenomena. The commission has already practically insisted on roentgenograms being taken in the early stages of all cases presenting any suspicion of fracture or joint injury. It ought, likewise, to insist on a temperature chart being kept of all cases with inflammatory complications, as well as blood count and examination of the urine. The insurance carriers are so much impressed with the prevalence of syphilis that they have inaugurated a veritable boom in Wassermann reactions. They are eager to show that syphilis, if present, is to blame rather than the accident. The attitude of the commission is that if an accident has occurred in a syphilitic the case is compensable to the degree in which the syphilitic lesion is aggravated by the accident — or where syphilitic complications follow an injury and extend the period of disability very greatly beyond what would be normal with such person in the absence of such syphilitic condition, the case is not compensable for such extended disability. These points are not always easy of determination. Moreover, it is recognized that the Wassermann reaction is not infallible.

Diagnosis or mere expression of opinion unsupported by clear description of clinical findings on which diagnosis is based is not sufficient for the purposes of the commission, and the insurance carrier cannot afford to employ in important cases surgeons who do not keep reasonably clear records.

In the beginning of this movement of industrial accident insurance in this country, insurance adjusters anxious to make records of economy commonly employed men as surgeons on the basis of cheapness, instead of quality; and it would seem that the margin of profit must be pretty large in the great numbers of minor cases when one considers the heavy indemnities many of the companies have had to pay in consequence of poor surgical work in cases of severe injury. An encouraging sign in this direction is that a number of companies engaged in this sort of business in California have been forced to retire from the field partly because of the enthusiasm of their adjusters for cheap surgery. It thus happens that the industrial accident

1. Annual report, 1914-1915, p. 24.

insurance fund in California is doing a larger business than any other insurance carrier, although the scale of premiums is the same. It is more liberal with the medical practitioners, and through its medical director it keeps sharp watch on the quality of surgical work done in its cases and makes quality the criterion of future employment. It is learning very rapidly which men in all parts of the state are doing the good work in these cases, and which are doing the poor work.

It is difficult to arrive at an accurate estimate of the amount of money paid the medical profession for services in industrial accident cases, but the commission estimates that in 1914 there were 62,211 industrial accidents in California necessitating medical treatment. Compensation was paid injured employees in the amount of \$1,131,630, and for medical services (including hospital charges) \$730,178. In other words, of the total money paid out by employers and insurance carriers on account of industrial accident, excluding expenses of administration, 60 per cent. was paid to the injured workmen and 40 per cent. for surgical and hospital services; but figures are not available permitting the separation of the surgical from the hospital charges.

The California commission, in cooperation with the insurance carriers, has established a fee bill for surgical services based on the average earning power of the employees but is confessedly a tentative arrangement. In general, it provides a fee of \$1.50 for a visit at house or hospital, and 1 dollar for an office visit, with a scale for typical operations, varying from \$5 to \$75, assisting at operations from \$5 to \$10, administering a general anesthetic \$5, and testimony before the commission as to fact of injury \$10. Nothing is more difficult equitably to adjust than a professional fee bill under any circumstances, and such a fee bill based on a set fee for a visit is apt to be taken advantage of in unduly increasing the number of visits; yet, on the other hand, it conduces to insuring that the visits will be made and thereby possible neglect of the patient avoided. At times, however, it goes too far for decency, as in a case of fracture of the patella by direct violence with little displacement, in which the surgeon made two visits a day for weeks, and one visit a day for six months, his itemized bill reaching from ceiling to floor. In such cases and in case of dispute, all medical and hospital bills are passed on by the medical director of the accident commission, and finally by the commission itself. On the other hand, when an overenthusiastic insurance adjuster shows a tendency to browbeat a medical man into accepting a ridiculously small fee for competent work, the physician can have the matter reviewed by the medical director of the commission, who will see to it that an equitable adjustment is made; for example, the fee bill provides a fee of \$10 for nonoperative first dressing of a fractured patella. In one case the adjuster tried to make a physician who had successfully performed a necessary open operation on a complicated comminuted fracture of the patella accept a fee of \$15. The facts being made known, the medical director saw to it that the insurance carrier paid several times that fee, reckoning it as a major operation.

While the foregoing fee schedule is low, it was consciously adopted as a minimum schedule applicable to average cases. The commission has established the practice of approving bills for larger amounts for

cases presenting features of unusual gravity or requiring unusual skill.

For example, the schedule fee for setting a fractured femur or humerus is \$25. The commission has approved a bill for transplantation of bone for non-union in the amount of \$150 for the operation alone. For fractured tibia the fee of \$10 is increased to \$30 if operation of plating is done. The fee for operative refracture of bone for malunion has been approved at four times that provided in the schedule for the primary setting of the fracture.

The fear expressed by medical men when asked to accept this schedule, that if accepted it would be used in courts of law as a precedent and applied to cases in private practice, seems not to have materialized.

In most of the states the state industrial accident commission or board has no jurisdiction over the employees of corporations engaged in interstate commerce except in some states where, if the distinction between interstate and intrastate commerce can be clearly made out, the commission has jurisdiction over the employees of such corporations who are shown to have been engaged in intrastate commerce when injured. These corporations, nearly all large employers of labor, are keen to take advantage of this exemption for the reason that thereby they avoid paying compensation to injured or maimed employees. It is estimated (Pillsbury) that not more than 12 or 15 per cent. of employees of railroads engaged in interstate commerce come under the jurisdiction of the state industrial accident commission, and that at most only 25 per cent. receive compensation at all comparable to that received by all other workmen in the state, except in agriculture and domestic service, which are specifically exempted in the law. In other words, 75 per cent. of injured railroad employees receive no compensation for temporary or permanent disability beyond medical and hospital care. In case of accident to a railroad employee, it is often difficult to determine whether the man was at the time employed on interstate or intrastate commerce—his duties might change in this regard within an hour. In fact, in most cases it can be determined only by an actual trial with hearing of witnesses, etc.

Employees engaged in interstate commerce are under the federal law of 1907-1908 (extended by amendment), which is based on fault, and receive no compensation for disability except where negligence can be proved. On the other hand, railroads commonly continue the wages of their employees during temporary disability, and maintain a system of pensions for continuous service. They also exercise the opportunity afforded by the diversity of employments required by their business of placing maimed employees in position in which their deformities are not disabling.

These corporations, as a rule, maintain their own hospitals and corps of surgeons, in some instances making generous contribution to the funds contributed by the employees, and giving the employees a voice in the election of the surgical staff. The surgical service, however, is not subject to review, as is the case with workmen under state industrial accident insurance; but railway surgeons have the great advantage of being able to take their serious cases to central hospitals where efficient service may be given.

Osteopathy has not been recognized by the industrial accident commission of California except under certain circumstances. At the present time, the law

of California provides for representation of osteopathy on the state board of medical examiners, but osteopaths are not permitted to perform major operations, or to give anesthetics.

The common law right of an injured employee to sue his employer in the civil courts is abrogated by the compensation law in most of the states except in case of the grossest negligence. This results practically in barring suits for damages; but the publicity given unfortunate results by the practice of the commission and the insurance carriers of sending the patient from one surgeon to another in the hope of finding some one who can remove the deformity and disability and thereby lessen the indemnity, entailing as it does necessarily criticism of the incompetent surgical work which may have been the cause of the failure to prevent deformity and disability, is very apt to engender malpractice suits. Again, the commission sometimes asks a surgeon witness whether if proper competent surgical attention had been given in the beginning of a case the disability might have been avoided. Occasionally this question must be answered in the affirmative, and record is made of the question and answer.

Thus far, I believe, only three suits for malpractice have occurred in industrial accident cases in California in the two years and a half since the law went into effect, and I am informed that all these cases are without merit and are not based on criticism of the attending surgeon made by medical referees or in the office of the commission. In fact, the commission in California deprecates malpractice suits and does all in its power to forestall them.

In event of suit, however, against a surgeon whose professional fee for service rendered in an industrial accident case paid by the insurance carrier, it is not to be expected that the insurance carrier will assume the defense of the surgeon except in the unusual case in which the surgeon has a contract with the insurance carrier covering the point; for the surgeon who is requested to take charge of a case surgically is otherwise an independent contractor.

A most important judicial decision in the matter of malpractice suits in industrial accident cases was made by the Washington Supreme Court (No. 12747) so recently as February last, in *Ross vs. Erickson Construction Company*, in which the adverse decision of the trial court was reversed and the case remanded with instructions to dismiss on the ground that the legislature in passing the industrial accident insurance law had removed the physician as well as the employer from the litigious class, provided that the physician is regularly licensed to practice, but this decision is based on the peculiar provision of the Washington statute by which industrial accident insurance is substituted for all other forms of redress in such cases. On the other hand, in recent decisions in Minnesota, Wisconsin and Kansas the court has held that the physician is liable for malpractice in cases under industrial accident insurance as in other cases.

The attitude of organized labor to industrial accident insurance is difficult to understand. In fact, it has not yet taken shape and been finally formulated. I am informed by men close to leaders of labor organizations that organized labor is not altogether pleased with the law of California. A fundamental objection is made that the law is in effect paternalistic, and there is nothing which labor leaders take greater exception to than government paternalism. They feel that the individual workman should have the choice

of his physician and surgeon, as if the freedom of choice were a more precious possession than a well qualified surgeon. In final analysis this freedom of choice of surgeon is apt to take the form of a labor union electing its own surgeon who is employed on contract and paid so much per capita of the membership or on salary. In either event he is elected by the union and will therefore be chosen rather as a compliment to his political acumen than to his professional attainment.

It is the idea and practice of the lodge doctor over again, and in no real sense does it establish the principle of free choice of the individual.

On other grounds it is very doubtful if free choice of physician or surgeon on the part of the injured individual would be a wise thing to provide. The principle is in force in Switzerland, to be sure, but when tried in France it was found that through collusion or what not the cost of professional services unduly increased and the amount paid in indemnities trebled.

The industrial accident commission of California maintains a small but active force of safety engineers through which, and by other means, it has done much to lessen the number of accidents and notably the number of deaths from accident. In 1915, there were more than 60,000 workmen injured and 533 killed in industrial accidents, a reduction in number of deaths of 22 per cent. of the number reported in 1914, because of better conditions of labor, safety appliances and safety methods. The largest percentage reduction was in transportation and public utilities, while in service (employees of men in the professions, in hotel service, restaurants, domestic servants, amusement employees, etc.), where, because of diversity of employments, safety appliances and methods cannot so readily be applied and which have not come under jurisdiction of the safety engineers, there has been a slight relative increase.

The laws of the various states are not perfect; they are not even uniform. They will have to be modified in numerous particulars, and it behooves the medical profession to study into the question individually and in committee in order intelligently to influence legislation to the end that the real interests of the laboring people be served from the standpoint of quality of surgical service provided, and that no injustice be done the medical profession.

There are many practical questions to be decided, among others the adjustment of the relations of hospitals and dispensaries to the movement. By taking the great mass of laboring people out of the category of the recipients of charity, a great burden will be lifted from many struggling hospitals and dispensaries.

On the other hand, just as private cases often may be best worked out by groups of associated physicians, so these industrial accident cases and, when health insurance comes, cases of illness in the laboring classes may be economically and efficiently handled by dispensaries, of which the better clinics maintained by medical schools may be taken as the type. It would be greatly to the advantage of the patients to be utilized for teaching purposes, and practically few of them would seriously object, for it is widely known that in teaching hospitals and clinics the patients receive the most thorough study.

Endowed hospitals and dispensaries caring for industrial accident cases will derive a considerable income from them, and the disposition of funds so created may become matters of controversy. It would

appear that the surplus of such funds should be devoted to the betterment of the hospital or dispensary service concerned, including payment of something in the way of salaries to the professional personnel.

Taking these cases out of the category of charity patients will tend to the creation of private dispensaries and even hospitals, as has occurred in California. There is no fundamental objection to hospitals and dispensaries being established for the purpose of caring for these cases if they are under the supervision and regulation of the accident or health commission in such wise as to guarantee a high quality of professional service.

CONCLUSION

I would repeat that social insurance against industrial accident constitutes a great world movement. Already in force in thirty-one states in America, it is sure to be adopted in the remaining seventeen and to be followed by insurance of the working classes against illness. The idea has come to stay and must be seriously reckoned with by the medical profession. If the medical profession accepts it in a proper spirit and accommodates itself to it, there is sure to result not only immeasurable good to the working classes, but also much good in the direction of improvement in the practice of surgery and in the practice of medicine as well.

HEALTH INSURANCE IN ITS RELATION TO PUBLIC HEALTH *

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It is not an easy matter to condense within a fifteen minute paper the entire comprehensive subject of compulsory health insurance, but perhaps such an effort is at present unnecessary. So much has been said and written on the subject within the last few months that some familiarity with the subject may be expected from members of the medical profession. The valuable work done within the last year or two by the Public Health Service and the splendid reports of your Judicial Council, of which the first was presented about a year ago and the second one is to be made available to the medical profession in the very near future, have paved the way at least for a general understanding of the problem by American physicians. It seems sufficient, therefore, to present the entire subject at this time in a concise and somewhat schematic manner, bringing forth for special emphasis three or four specific problems somewhat less understood.

Insurance is primarily a process of distribution and not of production. In the language of a technical definition, "Insurance is a provision made by a group of persons, each singly in danger of some loss, the incidence of which cannot be foreseen, that when such loss shall occur to any of them it shall be distributed over the whole group." The decisive feature of insurance is, therefore, a financial one—the restitution of the losses to the individual, the spreading of the losses over a group.

Health insurance, to use the term which has become popular during the last six months, or sickness insurance, as it is perhaps somewhat more logically known on the European continent, deals with the economic

losses incurred because of disease. These losses, at least as they are apparent on the surface, are twofold. First, the loss of earnings due to disability produced by sickness, and second, additional expenses incurred through sickness, which are largely expenses for the purpose of achieving recovery, such as the cost of medical or surgical aid, drugs or special supplies, hospital attendance, special care and nursing. It is generally known that health insurance, like many other forms of insurance, may be bought from commercial insurance companies in the open market, or obtained through membership in a large variety of mutual benefit organizations.

The type of health insurance actively discussed throughout the country at present is known as "social health insurance." The term "social insurance" introduces a somewhat abstract concert concerning which there is as yet no absolute agreement as to definition and content. It is interpreted by many as equivalent to state insurance, but this is not justified by European experience if state insurance is to mean what the term seems to indicate—an insurance mechanism created and administered entirely by the state authority through its own officers and backed up by state funds. Rather does the term "social" describe a certain attitude of organized society to the proposed system, an attitude of cooperation, control, financial and administrative assistance and perhaps compulsion.

The need for social insurance in this country has already been indicated in several chapters of my book on "Social Insurance" published about three years ago. Specifically the need of health insurance in this country has been treated very completely and with a great wealth of detail in a recent bulletin of the Public Health Service, prepared by Dr. B. S. Warren and Mr. Sydenstricker. It will be noticed, even by the casual reader of this report, that special emphasis is laid on the need of the wageworking class. The argument must necessarily be built on certain distinct features in the economic status of the wage worker:

1. That the working class is, in the point of earnings, on the lowest rung of the economic ladder.
2. That the working class shows a very much larger rate of sickness than other social groups, both as a result of general conditions of living as well as in consequence of specific hazards to health which every kind of wage work creates. And both these are factors with which no one group of society is more familiar than the medical profession.

Of course, neither of these conditions is absolutely limited to the wage working class. There are other social groups whose general economic conditions are not much more favorable, as for instance the lower strata of the farming class, especially in the Southern states, and there are many thousands of self employed persons in industry as well as commerce whose need of health insurance is equally great. From the point of view of need, therefore, the limitation of social insurance to the wage worker cannot be justified. The very fact that the older term "workingmen's insurance" has given way to the broader, more comprehensive, even though more abstract term "social insurance" is an indication that, at least theoretically, such a limitation is not desirable. It is for another reason that, notwithstanding this change in terminology, social insurance remains largely workingmen's insurance. Thirty years of practical experience in Europe have proved that the field of usefulness of social insurance must remain very limited until the element of compulsion is introduced, and compulsion is extremely

* Read before the Section on Preventive Medicine and Public Health at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

difficult to apply to the economically unattached individual. The wage or salary contract offers a very convenient method for exercising compulsion, not only on the wage worker himself, but, what is equally important, on his employer. While compulsory health insurance for these reasons must necessarily be limited to wage workers or salaried persons, voluntary health insurance may be encouraged with advantage among other social groups.

That an immense amount of good must come from the payment of cash benefits to men unable to work because of sickness should be self-evident to the medical profession. Charity workers and other social workers are almost unanimous in their assertion that sickness is responsible for the greatest proportion of destitution with which they are called on to deal professionally. Collectively, physicians see even a larger amount of human distress caused by illness since their observation is not limited to the more extreme cases which become objects of charitable relief; for the average respectable workingman's family will go a long way, depriving itself of everything above the barest necessities, before applying for charitable aid.

And yet, if this relief of distress through money benefits constituted the entire purpose of health insurance, as it does with most commercial insurance, it would not be a matter in which the medical profession, as a profession, would be very directly concerned. For it cannot be said that the solution of the economic problems devolves upon it. The proper organization of medical aid, however, is a problem for the physician because of the possible effect of health insurance on the health of those insured, and through them on the health of the community at large. Even the duty of the individual physician to his patient is not yet fully complied with when the diagnosis is made and the necessary course of treatment outlined. The physician cannot complacently close his eyes to the conditions under which his patient lives and the extent to which he is physically able to comply with the advice given. The development of medical social service is an indication that the medical profession is gradually learning to appreciate its broader duties in this matter. But still broader are the obligations of the collective medical profession to the nation at large in the matter of preservation of public health. If the advocates of health and other forms of social insurance feel at liberty to call on the busy medical profession for their cooperation and support, it is only because of the conviction that every comprehensive social measure for improvement of the general health conditions and prevention of unnecessary suffering and disease will find a ready response in the American medical profession. The existence of this section of public health is one of the many evidences to that effect.

What basis is there for the claim that compulsory health insurance is going to have the effect of preventing sickness and generally improving health conditions? Often by enthusiastic proselytes it is taken for granted, or at least a convincing precedent is found in accident compensation. It is pointed out that the "safety first" movement resulting from compensation legislation must be paralleled by a "health first" movement in consequence of health insurance laws. Yet catchy slogans, though often useful in a way, do not result in substantial changes of social conditions. It is argued that all these desirable results will be accomplished by the economic motive to reduce the cost of health insurance, as the "safety first" movement was

stimulated by the cost of compensation. That undoubtedly is a substantial force, but its strength may be exaggerated. The cost of compensation for industrial accidents was felt in various European countries for ten, twenty or thirty years, but the number of industrial accidents shows little tendency to abate. It is true that in Germany and Great Britain the number of fatal and serious accidents is showing a substantial decrease and that in this country, while sufficient time has not yet elapsed to judge of the result, a very energetic safety campaign has been inaugurated which should, as far as we can foresee, produce some effect.

But it is important to remember that the preventive effect of the economic motive does not work itself out automatically. The prevention of industrial accidents requires very painstaking efforts of the safety engineer. The prevention of excessive illness will more than anything tax the expert in industrial and public hygiene. Let us review more or less systematically the various ways in which health insurance may accomplish its preventive work. In this way the best conditions for realizing the preventive effect may be determined and the medical profession may render a service of great value in insisting that such conditions shall be established:

1. The health preserving effect of the money benefit. The effect of the money benefit is evidently not limited to relieving misery and destitution for the time being. It is even more important in giving a better chance for recovery. It needs no demonstration that recovery from any illness must be seriously interfered with by insufficient food or fuel or by the mental worry over financial difficulties. It is an aspect of the problem with which every physician practicing among the poor must be thoroughly familiar, and it is unnecessary to dwell on it at length. But in order that this effect shall be fully realized, the benefit must be substantial. A small amount, perhaps uniform for all (as for instance the bare \$5 a week given by most trade union funds at present out of which even medical care must be purchased) will not be sufficient. The medical profession, therefore, as the warden of the public health, has a direct interest in seeing that these benefits be made substantial so as to cover the cost of the necessities at least.

2. Equally important for its curative effect and the prevention of relapses is the opportunity gained to stay away from work when in the physician's opinion rest is necessary. This may be largely nullified by too rigid an interpretation of the concept "inability to work." A careful study of the workings of the British health insurance system, made by the Special Departmental Committee on Sickness Benefit Claims, disclosed a very serious problem in this respect. The friendly societies too often assume that the right to the benefits accrues only as a result of absolute "inability to perform any work." Even waving aside the somewhat facetious criticism that a woman sick in bed might still be knitting and therefore not be totally incapable of work, it still remains true that a large proportion of ill persons are not physically incapable of working, who, in accordance with reasonable requirements of medical science, should not work. Hundreds of illustrations might be cited, but before a professional audience they seem to be altogether unnecessary. The administrative officers of societies violently object to granting sick benefits simply because, in the opinion of the physician, the insured employee would profit by a prolonged rest. That there is room

there for abuse and malingering may be readily admitted, but nevertheless the ever present possibilities of abuse must not stand in the way of social legislation. The preventive effect of health insurance cannot fully be realized until it is understood that not merely physical disability but medical inadvisability, certified by a responsible medical officer, and subject to rule of reason and review, should be the basis of the sick benefit. It has been charged against British practitioners under the law, for instance, that they have improperly certified a large number of female employees simply for anemia and debility. Such liberality is found dangerous because the British system is based on an iron-clad level of premiums and the cost must be kept within the level; but from a point of view of public health it is very much more important that thousands of young women, the mothers of the future generation, suffering from anemia and debility, which in the final analysis means nothing but overwork and underfeeding, should be given a chance to recover even if the cost of insurance may be slightly increased thereby.

It is the failure to understand this difference between "disability" and "inadvisability to work" that causes many superficial critics to deny the preventive feature of sickness insurance in Germany. It is pointed out, for instance, that the health conditions of the workmen in Germany could not have improved because the average amount of sickness disability has increased. Thus in 1887 there were 778 sick days per hundred members of the Leipzig fund, and in 1913, 1,134 days. As a matter of fact, this simply indicates an increase in the days of inadvisability to work, or in other words, a very much improved care of the sick. Very much more significant is the decline in mortality among the insured members from 9.38 per thousand from 1889 to 1893, to 7.66 per thousand from 1909 to 1913, or a decline of nearly 20 per cent. in twenty years.

3. It is quite obvious that the greatest possibility for prevention, or at least for health conservation, lies in the proper organization of medical aid. The two terms "sickness prevention" and "health conservation" are not necessarily synonymous. Barring the stamping out of certain infectious diseases, the time is indeed far distant when people will cease taking sick; but once having fallen sick they can and should recover much sooner and more thoroughly than they do now. Even in industrial accidents, thirty years of preventive work in Germany were much more efficient in shortening the periods of disability, and reducing fatalities and grave injuries, than in reducing the total number of accidental injuries.

But the effectiveness of medical aid depends very largely on the thoroughness of provisions concerning it. From a purely financial or insurance point of view, the reimbursement of the additional cost required for medical advice, or the saving of expense by furnishing the same quality of medical aid which the sick workman would have purchased, is all that is necessary. Applying the same reasons, nothing need be done in cases in which the patient could have received medical aid free or in which he would not have been likely to call for medical aid, because in insurance practice where there has been no financial loss there should be no compensation.

From the point of view of public health, such a narrow interpretation would have been most unfortunate. If the medical profession is the guardian of

the public health, it must be vitally interested in the proper organization of medical aid under the health insurance law. It is obvious that since such a law undertakes to furnish medical aid to millions of people, a new wholesale purchaser of medical services appears in the place of many individual purchasers and that this must profoundly influence the economic and social status of the medical profession. This is an important problem of itself, and the Social Insurance Committee of the American Medical Association, which I have the honor to represent, has been organized for the explicit purpose of studying it; but I do not want to assume for a moment that the medical profession of the United States will approach the problems of medical aid under health insurance simply from the point of view of their own financial interest. Leaving these financial problems aside at present, I want to discuss at this time the broad problem of the social possibility of proper organization of medical aid.

It is well known that a good deal of sickness among the wage workers at present remains unattended in this country. The conclusions of the Rochester sickness survey made by the Metropolitan Health Insurance Company point at some 40 per cent. The profession undoubtedly knows that the medical aid available to the work is not only quantitatively insufficient but also qualitatively inefficient. As Dr. Lambert tersely puts it, a great deal more team work is needed than is at present within the reach of the working man.

A system of medical aid which fails to provide for such team work, which interferes with any degree of medical organization, either because of considerations of economy or because of conservative clinging to old standards; in other words, a system which leaves the quality of medical aid where it has been before the introduction of health insurance, will utterly fail to make health insurance a powerful fulcrum for lifting general health conditions. This is just what happened in England, as compared with a much more effective system of medical aid in Germany and other countries. Whether medical aid under health insurance will accomplish all that it is capable of depends on such details as availability of consultant and specialist; arrangements for hospital care; additional care for convalescents, and a liberal provision for drugs, appliances, etc.

Even the financial arrangements for remuneration of physicians may have a grave influence for evil or good. I think it may be frankly admitted, whatever the economic interests of the medical profession may be, that a capitation system of payment, so much per head per annum, no matter whether small or large, has in it inherent tendencies for slipshod careless medical work, and neglect of those patients who need medical aid more frequently.

4. The broader content of the term "social insurance" as compared with "workingmen's insurance" has already been referred to, and several interpretations have been given. Within the working class itself, such an extension of the concept is possible when, in addition to the wage worker himself, his wife and children are included. This question has already been raised in New York. The American Association for Labor Legislation, through its Social Insurance Committee, has recommended this extension of health insurance, and I take a particular pride in having helped to bring this about. But later, when the Mills

Bill, or its equivalent, was introduced in several legislatures, this feature was excluded for fear that the employers would object to any effort to saddle on industry part of the cost of medical aid to the members of the workingman's family. Whatever the economic validity of this objection—and this is no place to go into a detailed discussion of theories of wages—from a point of view of public health it is a very unfortunate limitation of the efficiency of health insurance. The permanent improvement in health conditions of our people must largely come through organized care for the health of the children and the mothers of those children, present and prospective. If both the mothers and children be disregarded, no amount of medical care for the man alone can accomplish any far-reaching result. No one is in a better position to insist on the necessity of extending medical aid to the members of the family than is the medical profession.

5. There is another disputed aspect or branch of health insurance to which objections are raised on various economic considerations and which finds its main support in its effect on public health, and that is maternity insurance. Though the problem of the wage working mother is not as grave in this country as it is in Europe, it is a real and growing one; and even though the circumstances under which women of our wage working class exercise their highest social function of motherhood are not as horrible as those described in a recent English book as typical of the English working women, nevertheless there is much room for improvement, as physicians well know, in maternity care and care of new-born infants. The same abstract consideration is advanced against maternity insurance, that it might encourage the flux of woman into wage labor; but against this there are the very real facts that 100,000 infants die annually in this country under the age of 1 and a good many of them in the very early months of life, because of lack of efficient medical aid and mother's care. There is also the real fact that annually 15,000 women lose their lives in childbirth, largely as a result of inefficient obstetric aid. And as to how much chronic illness of the working woman is due to failure to take the necessary rest after childbirth, only guesses are possible. The medical profession can render an inestimable service by drawing attention to the great necessity of liberal maternity benefits from the point of view of public health.

6. It is a trite observation that before an evil can be officially combated its extent must at least approximately be known. Mortality statistics are the first necessary prerequisite to any scientific effort to reduce mortality. Sickness statistics are equally necessary in any systematic plan to improve health conditions. It is almost futile to secure satisfactory sickness statistics without sickness or health insurance, just as there is not a single country on record which developed satisfactory accident statistics before the advent of compensation. A striking illustration which recently came to my notice may here be quoted. The welfare officer of a very large corporation in the Middle West employing over 15,000 people consulted me in regard to the excessive sickness in their plant. Though any serious trade hazard was absent, the plant showed from 800 to 1,000 absentees a day on account of sickness, though the normal amount should not have exceeded 350. The point of the story is that this abnormal condition was never observed until the cor-

poration had taken out a blanket health insurance policy with a private insurance company covering all its employees; and before three months had expired that company began to object to excessive losses under the policy.

Yet good sickness statistics are not an automatic result of health insurance. England has not yet produced them any more than it has produced any useful accident statistics after twenty years of compensation, nor will sickness statistics ever be perfected without the willing cooperation of the medical profession.

7. The various possible bearings of health insurance on public health have been enumerated here in order to dispel the idea that the preventive feature is automatic and inevitable. The indirect stimulus given by the economic motive to reduce cost need not be exaggerated, but it is real nevertheless. In compensation the entire cost is placed on the employer. It is the employer who feels the new economic pressure and is largely responsible for the "safety first" campaign. Under a proper health insurance scheme the burden of cost is distributed among employer, employee and the state. The economic force is therefore somewhat diffused. In order to retain its effect, democratic and local administration is absolutely necessary, notwithstanding the charges which recently became so popular that democratic administration spells administrative inefficiency. To revert to the illustration just given of the large corporation in the Middle West, further inquiry brought out the information that occupational hazards to health were few; that the plan was a model one, and the employers were deeply concerned in the welfare of their employees. But the excessive sickness was due to epidemics of typhoid, scarlet fever, measles and even mumps, due to conditions of the city sanitation over which the employer had little direct control. The remedy evidently lay in an improvement of general health conditions to be brought about through a political overthrow of the rotten political machine which ran the city. It was stated that it was difficult to wake up the wage workers, who constitute a majority of the voters, to the gravity of the situation. Were there a local health insurance fund in the city which would immediately feel the burden of excessive contributions because of the unusual amount of sickness, then the economic force would have been equally felt by both employers and employees, and it is reasonable to believe that the political problem would have been very much simplified.

Undoubtedly there are a good many other points of contact between the system of health insurance and the problem of public health. But enough perhaps has been said to indicate how carefully the interests of public hygiene must be safeguarded in the health insurance law, if those salutary and far reaching, but less obvious preventive results are to be accomplished. There is no social group that will contribute so much to this end, both through its expert knowledge and the weight of its authority, as the medical profession, for American society never refuses to listen to the collective voice of its medical profession on matters of public health.

It serves no useful purpose to close one's eyes to the real difficulties and take everything desirable for granted. The American wage working class has not yet been educated to the necessity of compulsory health insurance, and even those that have seen the light view it largely from the narrow point of view

of immediate financial aid. It is on the intelligent and willing cooperation of the medical profession, the natural warden of the health of the nation, that the achievement of these far reaching, if more remote, results very largely depends.

HEALTH INSURANCE

ITS RELATION TO THE NATIONAL HEALTH *

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The people of the United States are beginning to wake up to the fact that health is no longer a matter for individual concern alone, but is one for collective action on the part of all persons or groups of persons responsible for conditions affecting health. When this idea of the necessity for collective action is thoroughly understood, and it is realized that instead of weakening individual endeavor it will make the individual stronger by making him more economically independent, the American people are going to demand that the responsibility for disease-causing conditions be fixed and that this matter of sickness be provided for in a business-like way and no longer left to haphazard methods.

It was not so long ago that the matter of public schools was opposed on the grounds that the idea was too paternalistic in character and too antagonistic to American ideals and principles. Now the richest and highest in the social scale are sending their children to the public schools. The question of health is more a matter of public concern than the question of education.

Relation of the Federal Government to Health.—Health is not only a matter for state concern but one for federal consideration as well. It is not only a federal question under the "general welfare clauses" of the constitution, but also one under the "interstate commerce clause," since disease is not confined by state lines. The position of the federal government in matters of health is very generally recognized, as shown by the many statutes on the subject. The act approved Aug. 14, 1912, was most sweeping in character. It changed the name of the United States Public Health and Marine Hospital Service and gave it authority to study and investigate the diseases of man and conditions influencing their propagation and spread.

Health Insurance, the Next Step in Welfare Legislation.—The next step in social legislation will be a measure for intelligent relief and prevention of disease. All investigations into conditions influencing the propagation and spread of disease go to show that there are three principal groups mainly responsible for these conditions: 1. The individual, with the greatest share of responsibility. 2. The property owner and employer, with a somewhat less degree of responsibility. 3. The public, with a community responsibility. There are others who may be responsible; for example, the physician in his employment as family physician or company physician; but on the whole the three groups named are the ones which have by far the greatest financial responsibility. Health insurance should by all means include in its operation the respon-

sible groups and properly coordinate the efforts of all agencies at work in this field.

At present those interested in remedial proposals are confining their effort to health insurance for industrial workers, and there are many reasons for believing that this will be the next big step in this field and that the day of this achievement is near at hand. Such expectation is encouraged by the fact that thirty-four states and territories have enacted workmen's compensation laws within the last few years, that measures for health insurance have been introduced into three state legislatures, that two states have created a commission to study social insurance, and that measures to create such commissions are pending in Congress and one state legislature.

The time is therefore at hand when all health agencies and health officials should study this subject of health insurance.

OUTLINE DESCRIPTION OF HEALTH INSURANCE

As stated above, the measures proposed include only insurance for industrial workers, and in this connection the groups with a financial interest are limited to the employee, employer and the public. As operated under governmental systems, the following provisions are usually made:

Membership.—All employed persons in certain occupations, and all persons in other occupations earning less than a specified annual income, shall be entitled in case of illness to certain benefits.

Benefits.—The benefits ordinarily provided are:

(a) Cash payment for a limited period (usually twenty-six weeks in any twelve months) of a proportion of the wage, or of a fixed sum, to employees, when disabled by sickness or nonindustrial accident (industrial accidents are provided for under workmen's compensation laws).

(b) Medical benefits, which include adequate medical and surgical care, medicines and appliances in home, hospital, sanatorium, or physician's office, to employees disabled on account of sickness or nonindustrial accident during a limited period (twenty-six weeks in any twelve months).

(c) Maternity benefits, which include cash payment of a small sum in case of confinements of employees or wives of employees.

(d) Cash payment for deaths of insured persons due to sickness or nonindustrial accidents of an amount calculated to cover funeral expenses.

Funds.—The funds are usually provided by payments from employees, employers and government appropriations. In Germany the employee pays two thirds, employer one third, and the government pays for certain expenses of supervision. Under the English national insurance act the employee pays four ninths, the employer three ninths, and Parliament appropriates two ninths. In the case of women and persons employed at certain low levels of wages, the payment of employer and Parliament are increased and the proportion paid by employee is decreased.

Administration.—The administration, both central and local, is usually according to some form of representative government. In the local government, in addition to governmental bodies created for the purpose, unions, industrial establishments and certain societies are utilized for purposes of the local administration of the funds.¹

It would seem feasible under our form of government that such a system could be provided for interstate employees by federal law and for intrastate employees by state law.

To be adequate as a public health measure, a health insurance system should provide for:

* Read before the Section on Preventive Medicine and Public Health at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. This description is taken from the report of the Standing Committee of the Conference of State and Territorial Health Officers with the United States Public Health Service.

1. Adequate cash and medical benefits to all wage earners in times of sickness and death.

2. The distribution of the cost of sickness among the groups responsible for conditions causing disease, viz., the employer, the employee and the public.

3. The stimulation of the cooperative efforts for disease prevention on the part of the responsible groups named above and the linking of their efforts with existing health agencies.

4. The correlation of the work of all agencies working for the relief and prevention of disease.

Such a law, if enacted by the federal and state legislative bodies, would have two distinct relations to the national health.

As a Relief Measure.—By providing relief for all cases of sickness in this group it would have a decided effect in improving the health of the people.

As a Preventive Measure.—By fixing a definite price for each day lost on account of sickness and by providing a financial incentive to those paying this price to save it by preventing sickness, it would start a movement for preventing disease, just as certainly as the workmen's compensation laws have brought about the nation wide "safety first" movement. And properly coordinated with existing health agencies, the machinery would be already at hand for advising and directing this movement with respect to disease prevention.

RELATION TO HEALTH AS A RELIEF MEASURE

As a relief measure, adequate cash and medical benefits would be provided for all. It has been tentatively estimated that an assessment of 50 cents per employee per week would be ample to provide \$1 per day cash benefits, \$1 per day for medical benefits and for other necessary expenditures. An equitable division of this assessment would not require the worker to pay more than 25 cents per week. Such a small sum would place these benefits within the means of even the lowest paid workers. The fact is, a very considerable proportion are already paying more than this for what amounts to burial expenses. The law should provide that this amount be deducted from the pay roll each week so that the employee would always be in good standing and not suspended for non-payment of dues, as often happens under voluntary systems. In this connection it should be remembered that the lowest paid workers are the very ones who are sick the most often and stand in greatest need of the system, and that if not deducted from the pay roll they are the ones least likely to keep their dues paid.

The cash benefit must be sufficient to enable the worker to stop work in order to avail himself of the medical benefits before his health is seriously impaired. At present, even in places where free medical service may be had, the worker, who is just earning a living, cannot afford to stop work for if he does, his wife and children would have to go hungry. Health insurance would tend to break this vicious circle of poverty causing disease and disease causing poverty.

Adequate Medical and Surgical Service.—Adequate medical and surgical relief would bring a service to all which is now only within the reach of the rich or of those who are willing to accept it as charity or as patients in teaching institutions. Furthermore, it is only in the larger centers that these facilities are usually found. Under adequate organization of a health insurance system not only would every workman be entitled to treatment in his home by the physician of his own choice, but hospital and dispensary

units would be contracted with or otherwise procured in which scientific treatment of the highest character would be available. The insured persons would soon learn to use this improved medical service.

When, to this provision, the local administrations of the funds are so well perfected that a sufficient number of visiting nurses are provided and committees composed of insured persons are visiting every sick member, the effect on the sick rate will be such that we will wonder that we ever countenanced present methods.

RELATION TO HEALTH AS A PREVENTIVE MEASURE

As a preventive measure the health insurance system should bring to its aid all health authorities, national, state and local, and all volunteer agencies for the relief and prevention of disease.

Funds for Health Work.—It is worth while to outline here a plan which it is believed will make such a scheme possible. Before doing this one must realize that money is the one thing needed by all organizations and individuals engaged in efforts for the relief and prevention of sickness. Without money, or with money available only in small and varying amounts and coming at irregular intervals, the work is spasmodic and oftentimes discontinued for longer or shorter intervals. Furthermore, much of the time of the workers in this field is taken up with a hunt for contributions or lobbying for appropriations. Bearing this fact in mind and remembering that all of the money contributed by employee, employer and state is for the relief and prevention of sickness, some estimate may be made of the amount which will be paid into health insurance funds. There were approximately 30,000,000 wage earners in the United States in 1910 according to the census report of that year. At a rate of 50 cents per week for each one of these, the health insurance fund would amount to over three quarters of a billion dollars annually. Such a sum should eliminate the question of money from the problem and guarantee continuity to any reasonable plan of action.

Without going into all of the details of a health insurance system, it is only necessary to know that most plans provide that the employee pay from two fifths to two thirds of the funds, that the employer pay one third to one half of the funds, and that the state pay expenses of supervision or in some plans as much as one fifth of the funds.

Administration of Medical Benefits a Connecting Link with Other Health Agencies.—The administration as usually provided is central and local, with provision often made for federation of the local bodies. The central body is usually a commission made up of representatives of the groups contributing to the funds. This commission promulgates regulations, supervises local administration, and decides appeals.

The local administration as a rule utilizes business establishments, trade unions, fraternal societies and the like for local administrative purposes, but the exception is ordinarily made that there be at least one local body created of representatives of employees and employers. The latter body is usually called the "local fund," and accepts all workers to membership who are not members of some special fund. The provision is also usually made that no special fund be recognized until the solvency of at least one "local fund" is guaranteed.

In Germany these local bodies are called "carriers," and under the law administer all benefits. In England

these local bodies are called "approved societies," and administer all except the medical benefits. Under the English act the medical benefits are administered in each county or county borough by a governmental body or insurance committee composed of representatives of the approved societies, the community and the physician. The English law provides for free choice of physician by beneficiaries; the German law does not.

It is through the administration of the medical benefits that it is proposed to link up the systems with organizations for the relief and prevention of sickness.

It is believed that this can be done along three lines: (1) by providing efficient staffs of medical officers in the federal and state health departments to carry into effect the regulations issued by the central governing boards or commissions; (2) by providing a fair and sufficient incentive for the active cooperation of the medical profession, and (3) by providing for a close cooperation of the health insurance system with state, municipal and local health departments and boards.

Corps of Full Time Medical Officers.—In view of the experience in both Europe and America, it would seem best to place the administration of the medical benefits directly under governmental agencies, and to insert a provision that no cash benefits be paid except on the certificate of medical officers of the national or state health departments acting as medical referees under the regulations of the central governing board or commission. Such medical officers should be selected according to civil service methods. Since these officers are the representatives of the health departments in the funds, their selection and appointment should also be based on their knowledge of preventive as well as of clinical medicine. After a probationary period of service satisfactory to the health administration, they should be given permanent appointments, subject to removal only for inefficiency or immoral conduct. One of their duties should be to examine each disabled beneficiary and keep themselves informed as to the progress of his recovery. It is needless to say that the referees should not be permitted to engage in private practice.

Free Choice of Registered Physicians.—With such a check on the payment of cash benefits, the medical and surgical treatment provided for beneficiaries could safely be left to the physician of the patient's choice, and payment made on a capitation basis regardless of whether the patient was sick or well, after the manner of the English national insurance act. This method of selection and payment of physicians for the medical and surgical relief would offer every incentive to them to keep their patients well and to endeavor to please by rendering their most efficient service.

Hospitals and Dispensaries.—In addition to the provision for home treatment by the physician of the patient's choice, provision should be made for hospital and dispensary treatment; and to this end, hospital and dispensary units should be established or contracted with, where the very best medical and surgical service would be available for all insured persons.

Value of Such Plan in Disease Prevention.—The greatest value of such a system of administration of the medical benefits would be in the splendid opportunity it would offer for preventing disease among the insured persons and their families, by the organized corps of medical officers, and the improved medical and surgical treatment. It would be through the corps of full time medical officers of the health department

acting as referees that the health insurance system would be linked up with other health agencies. It is not necessary to relate here the advantages which would arise from the visits of such specially trained men into the homes of all sick persons, nor is it necessary to tell how these officers, acting as health officers, could further lower the sick rate. The objection could not be raised that such a corps would be too expensive. It would not require more than one such medical officer to approximately every 4,000 insured persons, and at that rate they could more than save their salaries by relieving insurance funds from paying unjust claims. Furthermore, while an estimate cannot be made of the amount to be saved by their efforts in the way of lowering the sick rate, it is safe to say that it would amount to many times more than the sum of their salaries.²

With such a system, funds would be provided and every existing health agency and newly created agencies could be utilized and fitted into their proper places and all work together without duplication of effort. Above all there would be a financial incentive given to each interested group to prevent sickness.

The employer who found that he was contributing more per employee per year than his competitor would doubtless inquire into the cause of the difference.

The employee who learned that his neighbor working in the same kind of trade was paying less dues than himself would also be very likely to inquire into the cause of the difference.

The doctor who found his patients were sick so much that he was not able to attend as many insured persons as his brother doctor would have a financial incentive to look into the cause of the difference and remove it.

The city or town which found that a neighboring city or town was providing adequate hospital and dispensary treatment for its insured persons, and not only obtaining more efficient diagnosis and treatment but obtaining it at a less cost, would doubtless establish similar institutions.

The state which found from the returns that its tax rate for sickness was in excess of a neighboring state would have reason for making this an issue in the next election.

The United States Public Health Service, when the reports, for example, showed a marked difference in the sick rate of an iron and steel town in Pennsylvania as compared with such a town in Alabama, would be very likely to order the responsible officers to Washington to explain the differences.

The final result would be that health would be placed on a competitive basis in the political and business worlds: this, too, after providing for the cooperation of all interested groups through the health insurance administration, so that all the agencies for the promotion of health would work in harmony, forming one complete health machine.

To provide a "health insurance system" simply as a relief measure without adequate preventive features would be a blunder; but enacted together with a comprehensive plan for the prevention of disease, there is every reason to believe that it would prove to be a measure of extraordinary value in improving the health and efficiency of the 30,000,000 wage earners in the United States.

2. This description of plan for administration of medical benefits is taken from the report of the Standing Committee of the Conference of State and Territorial Health Officers with the United States Public Health Service.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. RUBINOW AND WARREN

DR. ALEXANDER LAMBERT, New York: Make state officials the referees. The referee is then not considered as one of the medical corps. Because, just as soon as you make the man who decides whether a patient is sick also decide whether or not he shall go to work, you increase the expenses and put a possibility of undue influence between the patient and the physician which is human and cannot be ruled out. In England the panel doctor shoulders the burden of the decision as to whether or not a man shall go back to work, hence the law does not work without friction. In Germany nearly 31 to 41 per cent. of the questions that are sent to the referee either never come up to him for decision at all, for the patient goes to work, or else he sends them to work immediately.

How is the medical profession to be remunerated? All our medical service is a contract. The form of contract which is condemned is that which exploits the service of the physician by forcing him for inadequate pay to give neglectful, hurried service to his patients. Capitation has been the usual method of remuneration under these contracts.

In England there is not sufficient care for the seriously sick; there is not adequate provision for hospital care, and there is no proper provision for a second opinion from some person in consultation. Germany takes from 3 to 4 per cent. of the wages from the employee, and from the state whatever it costs to give adequate service. The English will not give eye-glasses or trusses to the sick when the price of either is not as much as the weekly wage they pay a man when he is on the sick funds. Germany, on the other hand, would spend \$20 or \$30 for an artificial limb to get a man back to work. Another form of capitation is pool capitation. Each service rendered is charged against a lump sum of money. At the end of the quarter the total number of points of service are divided into the total sum of money. The point is invariably less the more work you do; the less work you do the more you are paid.

Another method of capitation is to divide the total sum of money into (1) a special fund, which pays first for consultations and extra services, and (2) a regular fund to be paid out by regular capitation. Another method is to pay by attendance. The patients like it best because they get the best service that way. However, it does cost more and you cannot estimate the expense in advance so accurately as you can by capitation. There are three antagonistic groups in your health insurance law—the interests of the carrier, the workman, and the physician. The carriers must give a fair return to the physicians and justice and fairness to the wage earner in the matter of his sick claims. They, on the other hand, have a right to demand that the physicians shall give honest service, a willing and an adequate service up to any limit that medicine knows. Physicians, on the other hand, must agree that they will help the administration to blot out malingering and valetudinarianism. They must give a willing and an adequate service, or they must accept the inevitable control of the layman, who will force them to do it.

DR. EDEN V. DELPHEY, New York: There is no crying demand for compulsory health insurance by masses of the wage earners; in reality they are opposed to any such plan. Nor is the rank and file of the medical profession certain that they wish to merge their individuality into a part of a great machine—changing from an individualist to a socialist. The health insurance bills introduced into the legislatures of New York, New Jersey and Massachusetts are identical, word for word, and they have all failed of passage. At present in New York State the state fund is insuring employees under the workmen's compensation law at a much lower rate than are the casualty insurance companies.

In order to be acceptable to the medical profession every health insurance law should contain provisions arranging for: 1. Adequate representation on all boards having to do with medical matters. By adequate representation is meant an equal representation with the other parties to the contract; the representative should be a physician who has been in the habit of attending sick wage earners. 2. The

formation of lists or panels containing the name of every legally qualified medical practitioner. 3. The sick insured wage earner shall have the right to choose a panel physician from any panel, subject only to the acceptance of the patient by the physician. 4. The insurance carrier shall make all contracts for medical attendance and treatment only with organizations composed of one or more panels in the insurance districts, to which organization or association every panel physician in that district must belong.

This prevents the insurance carrier from getting poor and needy physicians to compete unfairly with each other for these cases.

Other points to be observed are:

1. Impartial referees, appointed and paid by the state. The decisions of the referees may be appealed from to the council and commission.

2. Determination of the maximum number of patients which any one physician can properly attend and treat.

3. When less than all the persons earning under the specified amount per year are insured, the payment for medical services shall be by capitation. When less than the entire number of sick persons are to be insured, the insurance carriers will try to make the medical fee low on the ground that it is at least sure of collection.

4. Arrangement for treatment of the sick insured wage earners by specialists.

5. Determination of the status and relation of the panel physicians to the hospitals caring for the sick wage earners, whether they are to be created or now exist. We must consider it as purely a business proposition, and instead of trying to be purely altruistic, we must take care that the medical profession is properly compensated.

DR. BENJAMIN S. WARREN, Washington, D. C.: I believe that the medical referee will solve many of the problems of administration of medical benefits and bring together the medical profession, link them up with the health insurance system, and with the health departments. I want to emphasize the part health departments should play in a health insurance system. They should be called on to provide the disease-prevention machinery. I do not believe they realize the opportunity which a system of this kind offers to them. I understand health departments may be weak in some states and may be opposed by the health insurance system, and meet with a strong opposition in this regard, but that is no reason why they should be eliminated from the scheme. They have a definite place in this scheme and the corps of medical referees is the link which should coordinate health departments with health insurance systems. A medical referee will be a better referee if he represents an impartial body which has no financial interest in his decisions. If he represents the insurance fund, he would be employed by the funds, and would naturally have some leaning that way. Even if he should not have such a bias, the employee, or the claimant would presume he had. The fact is he could not be a referee if he represented one of the interested parties. I believe I am right in that. He should be employed by the state and the state should, in this instance, be the state health department. As to the capitation system of payment of physicians or the visit system payment, provision should be made for free choice of physicians. With the referee system as a check the medical treatment can safely be left to a physician chosen by the patient and payment made on a capitation basis without regard to whether the insured person was sick or well. Such a system of selection and payment would be an incentive to the doctor to please his patient and keep him well. Furthermore, the medical practitioner will be a check on the medical referee. This plan will avoid the defects found in the German and English systems. It might be of benefit to limit the number of patients who can select the same doctor. This has been proposed in the last draft of the model bill drawn by the Committee of the American Association for Labor Legislation. As to the attitude of labor on this question, I will admit that the president of the American Federation of Labor opposed the idea of compulsory health insurance, but he does not oppose the idea of voluntary health insurance at all. Furthermore, the Commission on Industrial Relations got out a report which four of its members signed: Mr. Garretson of

the Brotherhood of Railway Conductors; Mr. O'Connell and Mr. Lennon of the American Federation of Labor and the chairman, Mr. Walsh. The report recommended a health insurance system for all interstate employees. As to the effect on the individual, it is far from being socialistic. It is more like the public schools; it encourages individual effort and it promotes individual success by making the individual more economically independent and able to take care of other necessities of life. Furthermore, the workman will own these funds, they will be part his; he will be running them and their management will be democratic. The workman will be entitled to the benefits which will be in no way a charity.

DR. I. M. RUBINOW, New York: Dr. Delphey makes certain definite statements, as, for instance, that neither workmen, employers nor physicians want this thing.

As far as the relation of organized labor to health insurance is concerned, Dr. Warren has already answered it. I would also like to inform Dr. Delphey that after Mr. Holland, the chairman of the New York Federation of Labor, had opposed a bill at Albany on March 14, he was reprimanded very severely by the New York Central Labor Union for his attitude in the matter.

As to the attitude of employers, the National Association of Manufacturers a few weeks ago came out very strongly in favor of compulsory health insurance applied to all wage workers. And as far as the medical profession is concerned, the statement of President Blue yesterday, and official statements by the House of Delegates, place the medical profession, or at least that part of it represented in the American Medical Association, on record.

SOME BACTERIOLOGIC OBSERVATIONS ON EPIDEMIC POLIOMYELITIS

PRELIMINARY REPORT *

GEORGE MATHERS, M.D.

CHICAGO

During the past months poliomyelitis has been mildly epidemic in Chicago, and the relatively large number of fatal cases indicates that the current infection is highly virulent. In the work discussed briefly here the brain and cord were removed under sterile conditions as soon after death as possible, and cultures made immediately. Small pieces of tissue, which had been washed thoroughly, were macerated in sterile normal salt solution and the emulsion inoculated into various mediums, as, for example, ascites fluid and ascites dextrose agar containing a small piece of sterile rabbit kidney,¹ ascites dextrose broth, and coagulated normal horse serum, both aerobically and anaerobically. The cultures were incubated at 35 C. for from one to seven days.

In seven of the eight cases examined thus far bacterial growth developed in the aerobic ascites dextrose broth and agar cultures after eighteen hours, while in the anaerobic cultures a definite growth usually did not appear until after from three to seven days, and then often very scantily. In six of the seven instances a pure culture of a gram-positive micrococcus was obtained. In one instance the cultures gave also a gram-negative bacillus.

The coccus grows rapidly in aerobic ascites dextrose broth as a granular material along the side of the tube, gradually settling to the bottom as a white flocculent sediment. In the anaerobic cultures made according to the technic of Flexner and Noguchi growth is very slow; after from three to seven days there is a very small amount of sediment and some turbidity in the medium around the tissue. Morphologically the organ-

ism varies with the medium on which it is grown. In ascites dextrose broth it is gram-positive, arranged in pairs and short chains. In anaerobic culture it is variable in size, usually very small, gram-positive, arranged in pairs, clumps and chains, with an occasional large form among the minute bodies. On blood-agar plates the organism grows in small dry colonies, which produce a faint green halo and a slight degree of hemolysis. Cultures from the heart blood and from the cerebrospinal fluid after death thus far have not yielded this micrococcus but it has been obtained from the mesenteric lymph nodes.

The organism is of low virulence for rabbits but when injected intravenously in large doses lesions of the central nervous system are produced, with paralysis which may resemble that of infantile paralysis, especially as it affects the extremities. Intracerebral injection of the organism soon after isolation has produced paralysis in the monkey. The affinity for the central system in rabbits seems to disappear after the third or fourth transplant on artificial mediums. Subcultures from a single colony of the coccus have produced paralysis in rabbits within three days after intravenous injection.

Questions that arise, the filterability of the organism when grown in various mediums, immune reactions, and other cultural characteristics, are under investigation.

In view of the accepted facts in regard to the virus of epidemic poliomyelitis it would seem most reasonable to regard the micrococcus described as a secondary invader, but further work is necessary before its significance can be fully understood. The great interest in poliomyelitis at this time and the much greater amount of material now available for the study of the disease in many places other than Chicago are the reasons for this preliminary report.

A Simple Device for Locating Foreign Bodies in Fingers.

—Location in a busy clothing manufacturing district gave rise to the necessity for a simple method of determining the presence and location of foreign bodies, such as needles and splinters, in fingers. A piece of black woolen cloth 8 inches square was fastened to a piece of adhesive plaster of equal size, and in the center an oval opening was made measuring five-eighths by one-half inch. By placing this over an electric light supplied with a reflector and placing the finger over the hole, excellent transillumination is obtained, and by making pressure with a pointed instrument over the suspected area, the object can be brought out more clearly. If the field is rendered bloodless while operating, the finger may be placed over the opening and the object can be again accurately located. This device is simple, inexpensive and indestructible. It is more easily adapted than pocket flashlights, etc., to the finger, and reduces to a minimum the number of cases requiring roentgenograms. Daily use for the past six months by several workers in the accident room has proved its efficiency.—ROSCOE C. WEBB, A.B., M.D., Assistant House Surgeon, New York Hospital, New York.

Double Impalement.—The *Medicina Contemporanea* of Lisbon reports that a man in a quarry was tamping the charge in a hole he had just drilled when a premature explosion drove the long wooden rod through his neck. As he was flung up in the air, the rod broke and the other half transfixed him also, through the chest. The hemorrhage was slight and there was no subcutaneous emphysema or appreciable disturbances with breathing; the arms showed no signs of vascular or nervous trouble, and in three months the man was dismissed from the hospital. The wood was sawed off close to the skin and the rods were pulled out from the front.

* From the Memorial Institute for Infectious Diseases, Chicago.

1. Flexner and Noguchi, Jour. Exper. Med., 1913, xviii, 461.

Therapeutics

THE TREATMENT OF DIABETES

DEFINITION

Diabetes has been defined as a "specific deficiency of the power of assimilating food."¹ The generally accepted view, based on experimental evidence, refers the deficiency to a diminished functional capacity of the pancreatic islets. A person with a normally functioning pancreas may ingest a quantity of food considerably in excess of his energy requirement and completely assimilate all that is digested and absorbed, even though the greater part of the food may be carbohydrate. An average adult, performing light work, will ingest and metabolize from 300 to 500 gm. of carbohydrate a day. With impaired pancreatic function, the organism becomes incapable of assimilating even such quantities of carbohydrate as are contained in a general mixed diet, that is to say, a diet sufficient to cover the energy requirement in which from one half to two thirds of the total caloric intake is in the form of carbohydrate.

When there is a deficiency of the power to assimilate carbohydrates, glucose accumulates in the blood; and when the concentration reaches a certain limit, the excess of glucose overflows through the kidneys. Thus, *glycosuria constantly occurring in an individual, whose food intake is within the limits mentioned above, is evidence of diminished pancreatic function of the specific type here considered—it is evidence of diabetes.*²

If the food intake of a diabetic is diminished so as to come within his assimilative capacity, sugar excretion ceases. Absence of glycosuria is, therefore, not to be taken as evidence that diabetes is not present, unless the individual is on a full, mixed diet.³

In diabetes, there is a lowered functional capacity, not only for the assimilation of carbohydrate, but also for protein, since the latter food may yield a considerable amount of carbohydrate in the course of its metabolism.

When fat is added to the diet of a diabetic, glycosuria may occasionally occur, although it is very doubtful if fat itself is actually converted into carbohydrate. The glycosuria is to be considered rather as a result of stimulation of the metabolism. In diabetes the metabolism of fats is affected since, as Naunyn has expressed it, "fats burn in the fire of carbohydrates." With failure to assimilate carbohydrates the "fire" may be but a smoldering one, so that fats are incompletely burned with the formation of acetone, acetoacetic acid, and beta-oxybutyric acid. The latter two substances being acids, may, if produced in sufficient amounts, lead to a serious disturbance of the acid base

equilibrium of the body known as *acidosis*. It is acidosis that is presumably the cause of diabetic coma.

OBJECT OF TREATMENT

The object of the treatment of diabetes is to supply a diet that can be metabolized and that will not overtax the weakened pancreatic function. Allen has aptly compared the functionally weak pancreas to a "weak" stomach. If the latter, with frequent rests, is supplied with food of such quality and such quantity as can be readily digested, it may functionate satisfactorily, and may even be able to digest larger and larger amounts of food, although it will never become a "strong" stomach. Continued dietary insults, on the other hand, would further weaken the organ. The same holds true for the functionally weakened pancreas; it may be able to provide for the assimilation of a certain amount of food, but if overwhelmed with an amount in excess of its capacity, a progressive diminution in capacity results. A weak stomach if overtaxed usually gives warning in discomfort; an overtaxed pancreas gives no such warning.

THE ALLEN TREATMENT

The diabetic who constantly indulges in food in excess of his assimilative capacity invariably becomes progressively worse; hence the conception has arisen that diabetes is characterized by an inherent downward tendency. As a matter of fact, practically every diabetic has some tolerance for food, and the tolerance is usually sufficient to allow for a great enough food intake to cover the basal energy requirements. With proper treatment, it is possible to maintain or even to increase this tolerance. This is the underlying principle of the modern treatment of diabetes as formulated by Dr. Frederick M. Allen.⁴ On the basis of animal experiments and carefully controlled clinical observations, he has recently proposed a system for the treatment of diabetes that incorporates those features of the older methods that are of proved value, but introduces, in addition, a number of features, some of which are in direct opposition to the older teachings.

This treatment may be briefly outlined as follows:

1. A preliminary fast is taken until the urine is free from sugar.

2. Following the fast, carbohydrate food is gradually added, at first in the form of green vegetables.

3. Coincident with the addition of carbohydrate, or in place of it, if the carbohydrate tolerance is very low, protein is added to the diet in small but gradually increasing amounts until glycosuria occurs, or a sufficient amount of protein is taken to cover the basal requirement.

4. Fats are added in small amounts during the time of addition of carbohydrates and protein. Subsequently, a sufficient amount of fat is added to make up the fuel requirements of the body, provided this amount can be tolerated without the appearance of glycosuria or acidosis.

5. Frequent urine examinations are made, either by the medical attendant or by the patient himself, and the appearance of glucose is taken as an indication for a fast of sufficient length to cause a cessation of the glycosuria. Feeding is subsequently begun with not

1. Allen, F. M.: Investigative and Scientific Phases of the Diabetic Question, THE JOURNAL A. M. A., May 13, 1916, p. 1531.

2. Strictly speaking, this statement requires some modification, for there are certain persons who pass sugar in the urine when the blood sugar concentration is normal or even below normal. The glycosuria in such cases seems to be due to an increased permeability of the kidney for glucose. This condition of "renal diabetes" is of infrequent occurrence; it is unaccompanied by the characteristic symptoms of diabetes, such as polyuria, polydipsia and polyphagia; the amounts of sugar excreted in the urine are seldom large, and bear but little relation to the carbohydrate intake. A positive diagnosis of the condition can be made only by demonstrating a normal or low blood sugar content coincident with glycosuria.

3. For the detection of glucose in the urine a very satisfactory reagent is Benedict's (Jour. Biol. Chem., 1909, v, 485), modification of Fehling's solution, since it is very sensitive to glucose, but, unlike the original Fehling's solution, does not react with a number of normal and accidental urinary constituents. The reduction test, if slight, should be confirmed by the fermentation test.

4. Allen, F. M.: Studies Concerning Diabetes, THE JOURNAL A. M. A., Sept. 12, 1914, p. 939; Boston Med. and Surg. Jour., 1915, clxxii, 241; Am. Jour. Med. Sc., 1915, cl, 480; New York State Jour. Med., September, 1915.

more than one half of the carbohydrate contained in the diet at the time of the appearance of glycosuria. Subsequent carbohydrate increase is made very gradually.

6. At intervals, the patient is fasted for a day or else takes a greatly restricted diet.

7. Body fat is reduced to a minimum and the adult diabetic is not allowed to gain weight; children may gain, but the gain must not be adipose tissue.

8. Active daily exercise carried to the point of healthy fatigue is advocated.

THE PRELIMINARY FAST

The object of the preliminary fast is to remove from the body the excess of unassimilated carbohydrates and to allow for a rest of the overtaxed pancreatic function. As a result of the fast, and, indeed, during the fasting period, a proportionately larger amount of carbohydrate may be metabolized. Paradoxical as this may appear at first sight, it has been definitely proved by calorimetric observations on severe diabetics. With the removal of the unassimilated excess, the organism is better able to assimilate an amount of carbohydrate which it was previously unable to utilize.

During the fast, in the majority of instances, there is a decreased production of the potentially harmful aceto-acetic and beta-oxybutyric acids. This, presumably, is the result of the relative increase in carbohydrate assimilation.

The length of fast required before the urine becomes sugar free is usually less than five days; exceptionally, it may be as long as eight or ten days. Water is allowed *ad libitum*, and tea or coffee in moderate amount if desired. No sugar or cream is allowed, though saccharin may be used for sweetening. A reasonable amount of clear meat broth may be taken after the second day of fasting.

Alcohol, in the form of whisky, may be administered, since it does not increase glycosuria, and in certain cases seems to inhibit the production of the acetone bodies. The amount of whisky given may be 1 ounce three times daily. It may be given in black coffee. Alcohol is not an essential in the treatment, and should not be administered to patients in whom it produces such symptoms as burning in the throat, headache and nausea.

During the fasting period weak patients should be in bed. More vigorous ones should exercise as far as practicable, since by exercise the duration of the fast may be shortened.

DURATION OF FAST

The great majority of diabetics may be fasted until the urine is sugar free, without the development of any untoward symptoms or complications. Exceptionally marked prostration, nausea, increasing drowsiness and deep breathing (acyanotic hyperpnea) may occur. These are symptoms referable to acidosis, and occur coincidentally with alterations in the composition of the blood, alveolar air and urine. With the appearance of a severe and progressive acidosis, the fast must be terminated for the time being, and treatment directed against the acidosis. (This phase of the subject will be discussed under the head of Acidosis.) After a period of restricted diet a subsequent fast usually results in a sugar-free urine without the development of acidosis.

(To be continued)

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLE HAS BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

CHLORAZENE.—Sodium Para-Toluenesulphochloramine.
— $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{Na}:\text{NCl}+3\text{H}_2\text{O}$.

Action and Uses.—Chlorazene is claimed to be an active germicide acting much like hypochlorites, but being less irritating. Like the hypochlorites it has the advantage over mercuric chloride, zinc chloride, etc., that it does not coagulate or precipitate proteins, such as blood serum. Chlorazene is reported to be practically non-toxic; it is decomposed by the gastric juice, however, and hence should not be administered internally.

Chlorazene has been used with success in the treatment of infected wounds, particularly where a powerful yet non-irritating germicide is wanted. It has been used as an antiseptic mouthwash, for the irrigation of the bladder and uterus and as a urethral irrigant.

Dosage.—Chlorazene is used in 0.5 to 4 per cent. aqueous solution. The wounds, after being cleaned, may be lightly packed with gauze and a rubber tube having previously been inserted, the wound is irrigated at intervals with the chlorazene solution.

Manufactured by the Abbott Laboratories, Chicago. No U. S. patent. U. S. trademark applied for.

Sodium para-toluenesulphochloramine was introduced in medicine by Dakin (H. D. Dakin: *Brit. Med. Jour.*, Aug. 25, 1915; H. D. Dakin, J. B. Cohen and J. Kenyon: *Brit. Med. Jour.*, Jan. 29, 1916, p. 160) who proposed the names chloramine (which, however, had been previously applied to the substance NH_2Cl) and chloramine-T.

Sodium para-toluenesulphochloramine was first made by Chattaway (*Trans. Chem. Soc.*, 1905, lxxxvii, 153) by the action of sodium hydroxide on para-toluenesulphodichloramide. It may also be made by dissolving para-toluenesulphonamide (1 molecule) in a 5 per cent. cold alkaline solution of sodium hypochlorite (1.2 molecule), warming, if necessary, filtering and adding one and one-half volumes saturated sodium chloride solution. The crystals of sodium para-toluenesulphochloramine are collected, washed with sodium chloride solution and dried in the air.

Chlorazene is a white, crystalline powder, having a chlorous odor. It may be rendered anhydrous without decomposition by drying at 100-102 C.

When a small amount of chlorazene is heated, it melts at 160-175 C. (with decomposition).

In neutral solutions chlorazene liberates iodine from iodides, but not bromine from bromides; when acidified with hydrochloric acid, the bromine will then be liberated.

Hydrochloric acid added to a solution of chlorazene produces a white turbidity; on heating chlorine is liberated. Chlorazene is incompatible with many substances, acids (even boric), alcohol and hydrogen peroxide, for instance.

If about 0.1 Gm. of chlorazene be treated with a few drops of sulphuric acid, chlorine is evolved but no blackening occurs (absence of readily carbonizable matter).

If 1 Gm. of chlorazene is dried at 100-102 C. for 2 hours, it loses not less than 17 per cent., nor more than 20 per cent. (water of hydration).

If about 0.5 Gm. (accurately weighed) is dissolved in 50 Cc. of water, 10 Cc. of potassium iodid (10%), and 5 Cc. of acetic acid (36%) added and titrated with tenth-normal sodium thiosulphate, the available chlorine should not be higher than 12.6% or lower than 11.5%. Each Cc. of tenth-normal thiosulphate solution is equivalent to 0.0177 Gm. of chlorine.

Training Schools for Maimed Soldiers in France.—The *Paris Médical* lists the accommodations and the specialties taught at each of the thirty-three professional training schools and business colleges that have been organized for wounded soldiers at as many different points in France, besides the eighteen agricultural schools or model farm schools. Two of the latter are devoted entirely to cheese making, another to osiericulture (growing willows for wickerwork), and the others to training in the care of sheep, cattle, vineyards, etc. The card of each applicant must state the residence town before the war, and the origin and nature of the crippling wounds and also the school or profession he is most interested in.

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SATURDAY, SEPTEMBER 30, 1916

THE BASIS OF ANAPHYLACTIC SPECIFICITY

In their pioneer investigation on the phenomena of anaphylaxis Rosenau and Anderson pointed out that the reaction is "quantitatively" specific, injections of horse serum sensitizing to horse serum only. Later they¹ demonstrated further that an animal could be rendered sensitive at one and the same time to blood serum, egg white, and milk, acting specifically to each on second injection. In the earlier work in this field it seemed likely that the specificity, as a rule, is one of species. The protein of any animal was regarded as specific for the proteins of its particular species generally, there being definitely similar characteristics in the body proteins of animals of like species which, though chemically indefinable, are nevertheless delicately determinable by biologic reactions.

The question was accordingly early raised as to whether the specificity of the anaphylactic action depends primarily on the chemical structure of the protein used or on its biologic origin. What is the real nature of biologic specificity? Does it imply identity of chemical constitution? A decided step in advance in this field of inquiry was taken when Wells and Osborne began the study of the anaphylactic responses to vegetable proteins of widely varying origin and diverse physical and chemical properties. The plants afford a much wider opportunity for the prosecution of researches of this nature inasmuch as their proteins can be isolated with somewhat greater ease and in a state of greater purity. The omnipresent distribution of blood proteins in organs of animals greatly complicates the study of anaphylaxis with proteins derived from such tissues.

Experiments with the vegetable proteins have clearly shown that preparations of unlike properties but derived from the same plant by no means always react anaphylactically to each other. Biologically related proteins may thus fail to respond to each other. On the other hand, it has become evident that typical and severe anaphylaxis reactions may sometimes be obtained when proteins isolated from seeds of different genera are employed for the sensitizing

and intoxicating doses in the same animal. In nearly every case such reactions have been developed only by preparations of proteins so nearly alike that differences between them have not been detected by physical or chemical means, or the differences found have been so slight that it seems highly probable that the proteins concerned are very similar in chemical constitution. In a few cases, however, positive reactions have been obtained between proteins which chemical tests indicated have distinct differences in their constitution. Such reactions can be attributed to the existence of common reactive groups in these different compounds.²

As the result of their most recent studies in this field Wells and Osborne³ have still further fortified the biochemical basis of the specificity of anaphylactic reactions. As chemically similar proteins from seeds of different genera react anaphylactically with one another, while chemically dissimilar proteins from the same seed in many cases fail to do so, they conclude that the specificity of the anaphylaxis reaction depends on the chemical structure of the protein molecule. Whether the specificity which is revealed by the anaphylactic reaction implies identity of chemical constitution, or the presence of identical groups, or radicals, in the molecules of the proteins inducing this reaction cannot be definitely settled, Wells and Osborne tell us, until some method is discovered by which the chemical individuality of protein preparations can be positively demonstrated.

THE REAL MEANING OF FRESH AIR

Somehow the veil of mystery always casts a peculiar influence on most persons belonging to modern society. There is a subtle charm and potency in many unexplained manifestations of nature or traditional mysterious prejudices. Something of this sort, though beneficial rather than baneful to mankind, still seems to attach itself to the current impressions about "fresh air." Frederic S. Lee¹ writes:

In these days, we hear much of "fresh" air and its merits. We have fresh-air funds, fresh-air schools, and fresh-air babies. All are commendable; but while giving to our funds, opening our schools, and putting our babies out of doors, let us clearly understand what constitutes fresh air. The freshness of so-called "fresh" air lies, not in more oxygen, less carbon dioxide, less organic matter of respiratory origin, and the hypothetical presence of a hypothetically stimulating ozone, but rather in a low temperature, a low humidity, and motion. So far as fresh air itself is concerned, there seems to be nothing more mysterious about it than this.

2. Wells, H. G., and Osborne, T. B.: Is the Specificity of the Anaphylaxis Reaction Dependent on the Chemical Constitution of the Proteins or on Their Biological Relations? *Jour. Infect. Dis.*, 1913, xii, 341.

3. Wells, H. G., and Osborne, T. B.: Anaphylaxis Reactions Between Proteins from Seeds of Different Genera of Plants, *Jour. Infect. Dis.*, 1916, xix, 183.

1. Lee, F. S.: Recent Progress in Our Knowledge of the Physiological Action of Atmospheric Conditions, read before the American Pediatric Society, Washington, D. C., May 8, 1916; *Science*, Aug. 11, 1916, p. 183.

1. Rosenau, M. J., and Anderson, J. F.: *Jour. Infect. Dis.*, 1907, iv.

What, then, are the specific consequences of a vitiated atmosphere, or, as one may more properly express it in the light of present day knowledge, of objectionably high temperatures and humidity? This is the natural formulation of the inquiry on the part of a medical man; for the interest of the thoughtful physician is perhaps more often centered in the causes and manifestation of disease or malaise than in the explanation of beneficial procedures or remedial agents. Some of the aspects of the modern problems of ventilation and the physiologic action of atmospheric conditions, particularly the work of the New York State Commission on Ventilation,² have been discussed in *THE JOURNAL*.³ Hot, humid, still air is harmful in various ways. It affects the circulatory system, the rate of the heart beat being increased in warm, humid air, and decreased in cool, dry air. Eastman and Lee have seen the pulse rate increase by 39—from 67 to 106—as the temperature of the air surrounding the subject rose from 23.3 to 43.3 C. (74 to 110 F.), and the humidity from 58 to 90 per cent. Observations on the response of the vasomotor mechanism indicate that a distinct vascular benefit follows from exposing the body to cool, dry air. The influence of the atmospheric conditions on the respiratory system are varied in character. A moderate degree of heat and humidity seems to be without effect on the rate of respiration; but more extreme conditions cause a quickening of the breathing, and this is probably accompanied by more shallow respirations. We have previously³ referred to the evidence presented by Miller and Cocks showing that exposure to heat increases swelling, redness and secretion in the nasal mucosa, and these effects are more marked when the humidity of the air is high. Exposure to cold reverses these effects. It is not unlikely that some of the extreme conditions produced render the membranes favorable for the development of infectious micro-organisms. At any rate, there can be little question that the mucous membrane of the respiratory tract is markedly affected by atmospheric conditions.

Furthermore, the investigations of Lee and Scott⁴ at Columbia University have indicated that the distaste for physical labor which is felt on a hot and humid day has a deeper basis than mere inclination—the muscles themselves are actually incapable of performing as much work. These observers state that there is evidently correlation between the decreased muscular power and decreased blood sugar, the muscle fuel. This suggests the existence of a physiologic adaptation such that “when it is physiologically fitting that

the animal reduce muscular exertion to a minimum, in order that the output of heat may be as low as possible, as in a hot and humid environment, the supply of fuel will be correspondingly lowered.”

It is customary to speak of the body temperature as constant, though diurnal fluctuations are known to exist under conditions which are in every respect normal. Lee¹ has called attention to recent findings of the New York commission with respect to an apparent relationship between the body temperature of man and the temperature of his environment, even under the ordinary conditions of living. Unsuspected, for example, was the fact that during summer months the rectal temperature of its subjects at 8 a. m., living in their own homes, was conditioned by the average atmospheric temperature of the preceding night. If the temperature had been warm, the body temperature in the morning was high; if cool, the body temperature was low. The variation was about 0.55 degree C. (1 degree F.) for 20 degrees of atmospheric temperature. In any event, the body temperature was lowered by confinement in an atmosphere of 20 C. (68 F.) and 50 per cent. relative humidity, and raised by confinement at 23.9 C. (75 F.) with the same humidity, or still more by 30 C. (86 F.) with 80 per cent. humidity. The actual average body temperatures found at these stages, respectively, were: 36.7, 36.9, 37.4 C. (98, 98.5, 99.3 F.).

In extreme atmospheric conditions, greater elevations of temperature are known to arise.⁵ A stay of about three hours in an atmosphere averaging 40.4 C. (104.7 F.) in temperature and 95 per cent. relative humidity may produce a rise of several degrees in the body temperature of a normal adult man. These suggestive facts raise the question as to the possible control of body temperature in febrile diseases by regulation of the temperature of the surrounding air.

YEAST NUTRIMENTS IN BREAD-MAKING

A few years ago one of the large American baking companies noticed that when identical raw materials (except the water) were used in the manufacture of their bread in different cities, it was necessary to change the quantity of yeast as well as the fermentation period in order to produce a standard product. On investigation by a group of workers at the Mellon Institute,¹ it was found that the activity of the yeast was affected by the mineral salts in the natural waters, which content, of course, was different in the various localities. These workers therefore studied in detail the action of various salts in bread-making. They report that the salts of mineral acids, such as chlorids, nitrates, nitrites and sulphates, exert practically

2. For a general presentation of some of the results of the commission, including C. E. A. Winslow, D. D. Kimball, F. S. Lee, J. A. Miller, E. B. Phelps, E. L. Thorndike and G. T. Palmer, see *Am. Jour. Pub. Health*, 1915, v, 85.

3. Ventilation, editorial, *THE JOURNAL* A. M. A., Nov. 7, 1914, p. 1672; Heat, Humidity and Working Power, Jan. 30, 1915, p. 444; Atmospheric Temperature and Immunity Reactions, May 13, 1916, p. 1553.

4. Lee, F. S., and Scott, E. L.: *Am. Jour. Physiol.*, 1916, xl, 486.

5. Haldane, J. S.: *Jour. Hyg.*, 1905, v, 494.

1. Kohman, Henry A.; Hoffman, Charles; Godfrey, Truman M.; Asche, Lawrence H., and Blake, Alfred E.: On the Use of Certain Yeast Nutriments in Bread-Making, *Jour. Ind. and Eng. Chem.*, September, 1916, p. 781.

no influence, except when combined with a cation which in itself has an effect. The presence of carbonates particularly are detrimental, as they neutralize the acids in the dough and thus interfere with the progress of fermentation. Surprisingly, neither phosphates nor the ordinary potassium salts exerted any appreciable influence. The common occurrence of the alkali-earth salts — especially of calcium — in natural waters prompted their exhaustive investigation. It was demonstrated that the chlorid, bimalate, sulphate, nitrate and soluble phosphates of calcium each gave a decided increase in the volume of the loaves and the gas production when incorporated in the bread by the use of water containing a small amount of the salt, and employing the usual quantity of yeast. The texture, flavor and general appearance of the bread were improved. In case of the chlorid of calcium the volume of the loaf was increased a greater amount, due to its action on the gluten of the dough as well as the yeast. The accelerating effect of the calcium salt — or any other yeast nutriment — can be taken advantage of by reducing the amount of yeast used and still having available the same volume of evolved gas as in the ordinary procedure of more yeast but no nutriment salt.

In connection with the water research, the utilization of stale bread offered an important problem. One utilization method investigated was such that glutamic acid was formed in relatively large amounts. The effect of the glutamic acid on the bread was beneficial, increasing the gas production of the yeast. This nutrient action on the yeast was found to be due to the nitrogen content of the glutamic acid. Subsequently the common mineral salts of ammonium were used, and the results were similar to those in the case of the calcium salts. The authors next worked with a mixture of calcium chlorid and ammonium sulphate. One gram of calcium chlorid plus one-half gram of ammonium sulphate to one kilogram of flour caused a saving of approximately 50 per cent. of yeast.

There are two distinct objects to be accomplished in the fermentation of bread: (1) the aeration of the bread — by means of the evolved gases; (2) the maturing or aging of the bread — a secondary action of the yeast. The Mellon Institute investigators found that as small an amount as 0.015 gm. of potassium bromate (used in the water) per 1,000 gm. of flour will age the dough and decrease the necessary amount of yeast by about 15 per cent. After many experiments the authors conclude that *50 to 60 per cent. of the yeast may be saved* by using in the water a mixture of 0.015 gm. of potassium bromate, 1.2 gm. of calcium chlorid and 0.5 gm. of ammonium sulphate; that the proper use of the nutrient salts maintains more uniform bread and better quality, flavor, texture and "bloom"; that the initial fermentation is slowed, which has an interesting significance

in that about *2 per cent. of the sugar (calculated on the entire flour content)* is kept from being converted into needless carbon dioxide and alcohol. In the state of Kansas alone it is estimated this would cause a saving of 80,000,000 pounds of sugar a year.

However, the mere addition of these minerals is of considerable importance from a medical point of view. In our modern methods of milling the greater part of the mineral constituents of wheat is lost in the preparation of white flour. As shown by Teller,² seven-eighths of the phosphoric and eleven-fourteenths of the potash and lime contents are found in stock feed — a discarded portion of the wheat in flour-making. Hence a partial restoration of these salts is highly desirable. This latest research on bread seems to indicate that if the public would cast away the aesthetic requirements for white flour and use whole wheat flour instead, the result would be better bread, at less expense, and above all a more healthful product.

THE INFECTIVITY OF THE MOSQUITO IN MALARIA

The potentialities for harm which human warfare harbors appear to be greater and greater in harmony with the progressive evolution of human knowledge. The arrow and the spear were replaced by the rifle; and this in turn has assumed a minor rôle in competition with the rapid-fire machine gun, which finds a thousand marks where formerly a single hit was recorded. Somewhat similarly in the warfare of our insect enemies on mankind their potency for hurling the shafts of infectious disease is becoming more and more formidable as our appreciation of their ways and means of attack is enhanced. When Ronald Ross discovered at Calcutta, July, 1898, that the spores of malarial parasites were concentrated, not in the intestine, as he and Manson had supposed, but in what proved to be the salivary gland of the mosquito, the stronghold of an enemy of mankind was located. In his own words:

The exact route of infection of this great disease, which annually slays its millions of human beings and keeps whole continents in darkness, was revealed. These minute spores enter the salivary gland of the mosquito, and pass with its poisonous saliva directly into the blood of men. Never in our dreams had we imagined so wonderful a tale as this.¹

Today these interesting facts no longer satisfy the needs of the defender in the warfare against malaria. The whole question of the importance of the mosquito as a vector of malaria, writes an expert in the Public Health Service, resolves itself into a consideration of numerical potentialities. How many mosquitoes succeed in obtaining a blood meal, and of these what percentage succeeds in developing the malarial cycle? Ronald Ross estimates that only one out of twenty-four anophelines manages to bite a human being, and

2. Ark. Agri. Expt. Station, Bull. 42.

1. Ross, R.: Jour. Roy. Army Med. Corps, London, 1905, iv, 572.

this proportion is greatly reduced, economically measured, because less than 25 per cent. succeed in the rôle of carriers. Roughly considered, then, we may look on one out of every 100 female anophelines in a malarial country as a possible infecting agent. This one mosquito, regarded as a health disturber, must be evaluated in terms of certain biologic factors in order to appreciate the potency and extent of its parasitism in the conveyance of malaria.²

It is now positively known that the bite of a single *Anopheles* can cause malarial fever. Whether the same insect, which may be able to bite several persons, can convey infection repeatedly without again obtaining blood from an original source of infection is evidently a question of considerable moment, for with the chances of disease transmission enormously increased by the possibility of successive infectibility the necessity for the intensive elimination of the mosquito becomes emphasized more prominently than ever. The individual insect becomes a veritable machine gun in point of danger. In precisely such problems the knowledge of the habits of our insect enemies has become of great importance to man. The crux of the situation has been outlined as follows:

A mosquito which, ticklike, satisfies its food demands by a prolonged, uninterrupted aspiration of blood and resumes its normal function as regards procreation without a second blood meal, does not play a rôle which need attract the attention of the sanitarian. Opposed to this form, however, a mosquito like the plasmodia-bearing *Anopheles* shows its evil possibilities at the outset by its insatiable food requirements. It may demand three complete meals of blood before providing for one of several egg layings. It may be in the habit of taking a short meal and, interrupting itself automatically, leave one host in order to rest or to attack another host. Although it has been found that an anopheline mosquito may survive for a period of sixty-seven days without partaking of blood, a typical member of the genus requires a blood meal approximately every three days in order to thrive and perpetuate its kind. When a full meal is not taken, due to an interruption on the part of mosquito or host, it is necessary to consummate its purpose in a further attack on the same or a different host. In this way the anopheline mosquito becomes an important factor from the point of view of disease transmission. Bearing this in mind, the sanitarian must then determine to what extent a mosquito which has already contaminated its gustatory parts in biting a malaria-diseased human being becomes a menace to the public health.²

The U. S. Public Health Service² has recently conducted a series of *Anopheles* infectivity experiments on human subjects. They show in no less than eleven experiments that short exposure to bites, where the mosquitoes are interrupted in their feeding, is sufficient to cause successful transmission of the disease. It merely serves to corroborate a now classic story to report that in seventeen of the experiments in which human beings were employed to test the infectibility of *Anopheles punctipennis* with *Plasmodium vivax*, fourteen cases of malarial fever resulted. Statistics

like this approach the degree of perfection that is found in quantitative chemical experiment in the laboratory. The sporozoites in the mosquitoes used developed from ten to twenty-two days after the definite hosts were given an opportunity to bite a patient harboring a scanty number of mature tertian gametocytes.

In an attempt to infect several persons with a single specimen of *Anopheles punctipennis*, one mosquito proved to be the sole infective agent in one experiment and one proved to be the sole infective agent in three experiments. These two specimens when applied to the same person transmitted the infection in five cases, while one of them used with a third mosquito succeeded in infecting four persons. In these experimental inoculations it was demonstrated that in nine instances in which two mosquitoes succeeded in transmitting malaria at least one of the pair was proved to be capable of causing the disease when used singly. In all of the successful inoculations only tertian infection was reproduced.

There is no proof that the mosquito is in any way deleteriously affected by the malarial parasite; but the ability of an infected insect to strike repeated blows before its power for harm has been lost can scarcely be doubted. The experiments to which we have referred recall the unheralded heroism of the persons, including many physicians, who have offered themselves for inoculation in the cause of the advancement of knowledge. These newest contributions from the government service are among the last which received the guidance of the late Surg. R. H. von Ezdorf, U. S. P. H. S.,³ an esteemed expert on yellow fever and malaria, whose untimely death was a distinct loss to the Public Health Service and to sanitary science.

Current Comment

THE SUPRARENALS AND THE THYROIDS

Suggestions of possible interrelations among the ductless glands have not been lacking in recent years. Various functional changes in the body have been explained by assumptions of more or less complex pluriglandular activities resulting in the promotion or the retardation of the performance in question in accord with the relative participation of the different endocrine structures concerned in the hypotheses. Attention was recently directed to the accumulated evidence pointing toward a definite influence of sympathetic impulses over thyroid activity.¹ It is known that the internal secretion of the suprarenal glands, or epinephrin, will have the same effect in the body as sympathetic impulses. Cannon and Cattell² have

3. An obituary notice appeared in THE JOURNAL A. M. A., Sept. 16, 1916, p. 893.

1. The Innervation of the Thyroid Gland, editorial, THE JOURNAL A. M. A., Sept. 23, 1916, p. 954.

2. Mitzmain, M. B.: *Anopheles* Infectivity Experiments. An Attempt to Determine the Number of Persons One Mosquito Can Infect with Malaria, Pub. Health Rep., 1916, xxxi, 2325.

2. Cannon, W. B., and Cattell, McKeen: Studies on the Conditions of Activity in Endocrine Glands, III, The Influence of the Adrenal Secretion on the Thyroid, Am. Jour. Physiol., 1916, xli, 74. Cannon, W. B.: Studies of Ductless Glands by the Electrical Method, Proc. Nat. Acad. Sc., 1916, ii, 319.

recently demonstrated that injection of a small dose of epinephrin evokes a marked action current in the thyroid gland. This is taken by them, in harmony with observations on the behavior of glands when tested by the electrical method, as a sign of glandular functioning.¹ Stimulation of the nerve to the suprarenal gland so as to cause its secretion to be poured forth into the blood stream will also evoke a characteristic electrical change in the thyroid. This electrical change does not occur if the return of blood from the abdomen is prevented, but takes place promptly when the pent blood is released. Furthermore, it fails to appear after stimulation of the nerves if the suprarenal glands have been removed previously. An influence of suprarenal secretion on thyroid activity seems thus to be definitely established. Cannon and Cattell point out that apparently the amount of suprarenal secretion liberated by the splanchnic stimulation is sufficient to excite the thyroid gland in a manner similar to its excitation by sympathetic impulses and by epinephrin injections. They add that obviously the efficiency of sympathetic impulses in provoking activity of the thyroid might be greatly augmented by the simultaneous secretion of the suprarenal glands. It is regarded as significant that both the thyroids and the suprarenals would be stimulated simultaneously by the diffusely distributed impulses of sympathetic neurons. Attention has been called to the emergency function of the suprarenal glands in times of emotional stress, as distinguished from a purely routine function.³ There is doubtless what may be called a routine performance of the thyroid which serves to keep metabolism normal in some of its aspects. But because this gland is subject to sympathetic impulses and because it is now demonstrated to respond to such stimulation with great promptness,¹ Cannon ventures the belief that it also has an emergency function—one that is exercised particularly in emotional crises. That this behavior is an exaggerated form of the routine activity of the gland is at present, of course, purely a speculation.

THE AURICULAR CONTRACTIONS OF THE HEART

The discovery by His of a distinct band of muscular fibers passing from the auricles to the ventricles—the auriculoventricular bundle—furnished an anatomic basis for the physiologic behavior of the heart. This bundle forms the only continuous muscular tissue between the auricles and ventricles; its destruction results in complete abolition of the normal sequence of beat between these two sets of chambers in the heart. Such information, together with what were at first purely experimental studies, has contributed largely to the present widespread interest in the cardiac arrhythmias and the manifestations of heart block which only a few years ago were rarely spoken of in clinical medicine. The discovery of the “pace-maker” of the heart in the mass of Purkinje tissue commonly designated the sino-auricular node has furnished further information of a specific character. Here at each beat

the contractions start, spreading along the auricular muscle in all directions. When the sino-auricular node is put out of action the rhythmic sequence of the heart beat may still be continued, its function being taken up by the auriculoventricular node. According to the preponderance of opinion each beat of the heart begins by a simultaneous contraction of both auricles, associated with a retraction of the auricular appendages. The contraction, which is followed by that of the ventricles, lasts about a tenth of a second. Bachmann¹ has recently pointed out, however, that if the rate of propagation of the excitatory process through auricular muscle is the same throughout, it may be expected that parts at a sufficiently greater distance from the sino-auricular node than nearby parts, would show an appreciable time difference in the onset of their contraction. Thus the left auricle, though in direct and common muscular connection with the right auricle, may be expected to contract later than the right. It is generally taught that the contractions of the two auricles are synchronous. Bachmann has submitted the question anew to experimental investigation in the physiologic laboratory at the Emory University School of Medicine in Atlanta, Ga. He has found that the time of onset of right and left auricular contraction, contrary to general belief, is not synchronous. The excitatory wave originating in the sino-auricular node reaches the right auricle sooner than the left; hence the right auricle contracts an appreciable time before the left. The time difference averages 0.013 second. The most important path of conduction between the two auricles appears to be the interauricular band. Its special importance is demonstrated by the effects of crushing the band, the conduction being delayed from 3 to 4.6 times the normal average. The interauricular band has not the same importance relatively to the auricles that is possessed by the auriculoventricular band, as crushing does not cause a complete block. Its importance lies in the circumstance that its fibers form the most direct interauricular path and that the rate of conduction is highest along this path.

1. Bachmann, G.: The Inter-Auricular Time Interval, *Am. Jour. Physiol.*, 1916, xli, 309.

Hospital-Home for Children with Inherited Syphilis.—It was Professor Welander of Stockholm who first organized a special asylum for children with congenital syphilis, where they could be kept for three or four years and given thorough treatment. His *Lilla Hemmet* was opened in 1900 with accommodations for five children. In 1910 another was opened, equipped for fifty or sixty children. The institutions have proved extremely successful, not only in improving the lot of the children by thorough treatment in a hygienic environment, but by preventing their infecting others. A similar “home” was organized at Copenhagen in 1905, with places for ten children; one in Christiania, equipped for fifteen, and in 1909 a similar institution was opened at Berlin. In 1913, under the initiative of Professor Ehlers, it was decided to organize a larger home of the kind at Copenhagen, and seventy committees throughout the land collected funds for it and the opening occurred recently. It is arranged to care for fifty-two children at a time and represents an expenditure of 3,000 kroner (\$804) per bed, the grounds having been donated by the city. In his opening address, Ehlers made a plea for the state to assume the support at the “Welanderhemmet” of children unable to pay their way.

3. Cannon, W. B.: *Am. Jour. Physiol.*, 1914, xxxiii, 356. Newer Views of the Functions of the Adrenals, editorial, *THE JOURNAL A. M. A.*, July 25, 1914, p. 322.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

DISTRICT OF COLUMBIA

"Patent Medicine" Advertising Improves.—A special committee of the Retail Merchants' Association on "patent medicines" and their advertisement has recently reported that the newspapers of Washington have as a whole made more progress in purging their columns of objectionable advertisements of quack medicines than an equal number of newspapers in any other city of the same size in the United States. That there is still room for improvement is shown by the committee's appeal to all daily papers to refuse to print false medical advertisements. Dr. Lyman F. Kebler of the department of agriculture was on the committee to represent the interests of the public in the matter, and acted as chairman. The association unanimously adopted the report.

A Municipal Dairy Urged by Milk Producers.—After an exhaustive investigation into prevailing local methods of producing and distributing milk, in the hope of finding some way by which the distributor might pay the producer a better price for his milk without increasing the price charged the consumer, the Maryland and Virginia Milk Producers' Association has come out flatly in favor of a municipal dairy. The project which the association has formulated and is prepared to back calls for the establishment of a municipal dairy, to be provided by the district government, to handle, pasteurize, inspect, grade and bottle all milk, and it is suggested that in connection with this projected dairy it would be feasible and would ultimately result in great economy to create also a single cooperative or even publicly owned and controlled distribution service.

ILLINOIS

Smallpox Closes Schools.—The discovery of seven cases of smallpox in West Kankakee, September 22, resulted in the issuance of an order by Dr. Charles E. Crawford of the state board of health to close the Central and Longfellow schools and St. Joseph's Seminary for two weeks.

Psychiatric Institute Transferred.—The State Psychiatric Research Hospital, Kankakee, has been closed by order of the state board of administration, and its offices have been transferred to the Cook County Psychiatric Hospital, Chicago. The institution is to be under the charge of Dr. H. Douglas Singer, Hospital.

Typhoid Fever.—Up to date there have been fourteen deaths from typhoid fever in the Elgin epidemic. Steps have been taken to protect the milk supply of Chicago, a large amount of which is obtained from the territory around Elgin. At present there are said to be 180 cases of the disease, and nurses have been called from Chicago and surrounding towns to assist in the care of the sick.—At Lincoln there are said to be about thirty cases of typhoid fever, with three deaths, at the State School and Colony.

Chicago

Personal.—Dr. John Clarence Webster is ill with cholecystitis in the Royal Victoria Hospital at Montreal, and will probably not return to work in Chicago this fall.—Dr. Frederic A. Besley has been appointed professor of surgery in Northwestern University Medical School and a member of the attending surgical staff at Mercy Hospital.—Prof. Clarence D. Blachley, formerly superintendent of the Bureau of Social Surveys in the Chicago Department of Public Welfare, has been appointed professor of social science at Goucher College, Baltimore.—Dr. Sidney D. Jones has been placed in charge of the Fort Dodge (Iowa) Clinical and Roentgen-Ray Laboratory, succeeding Dr. Thomas H. Glenn.

Insanity Survey.—A comprehensive survey of the facilities for dealing with mental diseases and mental deficiency in Cook County is to be begun at once by Herman M. Adler, Boston, assistant professor of psychiatry in Harvard University, under the auspices of the National Committee for Mental Hygiene. The purposes of the inquiry is to obtain a report based on scientific facts as to the care mentally ill persons are receiving in the county institutions and whether proper steps are being taken to lessen the number of such

cases by the application of approved modern treatment. The committee on local and state charities of the Chicago City Club and Illinois Society for Mental Hygiene are cooperating in this work.

MARYLAND

Personal.—Dr. J. Hubert Wade, Boonsboro, has been appointed a member of the Penal Board of Maryland by the governor. This board has control of the House of Correction and the Maryland Penitentiary.—Dr. Henry Lee Smith of the Medical Reserve Corps, United States Army, who has been on duty as medical examiner in the mobilization camp at Mt. Gretna, Pa., since July, has been appointed camp surgeon.—Dr. James J. Mills, instructor in eye surgery at the Johns Hopkins Hospital, has finished a special assignment for the French government at Biarritz and will return to this country within a few weeks. He has spent the past six weeks treating the wounded eyes of French soldiers.—Dr. Alfred W. Brown, medical supervisor of the Public Athletic League, Baltimore, has resigned and will enter the practice of medicine in British Columbia.

Typhoid Fever Situation Improved.—An improvement in the typhoid fever situation in Baltimore has been reported by Dr. William T. Howard, Jr., assistant commissioner of health. Thirty-three cases have been reported since last Saturday and there have been two deaths. There were forty-eight cases and three deaths for the week ending September 15. Dr. John D. Blake considers the situation very encouraging, since September is in the typhoid season. Dr. C. Hampson Jones of the state department of health declared that there is less typhoid in the counties than during last year. That human carriers are largely responsible for the spread of typhoid fever is a statement made by the health department in a recent *Bulletin*. A number of rules were also laid down by the department in the *Bulletin* as a guide to families in which typhoid fever occurs. These rules will be strictly enforced by the department.

Infantile Paralysis Situation in Maryland.—Several new cases of infantile paralysis have been reported during the past week, but on Friday the records at the city health department were clear for the first time in five weeks, no cases having been reported that day. On account of one case in Brunswick, children under 13 years of age have been forbidden to attend moving picture theaters.—The city health department permitted children in the higher grades to attend school on Monday, September 25, but children in the kindergarten, primary department and grades up to the sixth will be kept at home until there is no longer any danger of the spread of infantile paralysis. Dr. C. Hampson Jones, Baltimore, head of the department of communicable diseases of the state board of health, is in favor of the county schools opening at once.—Dr. Warren H. Hoak, acting assistant surgeon of the United States Public Health Service, has joined P. A. Surg. James R. Hurley in Baltimore and is assigned to night duty at Union Station.

NEW YORK

Westchester Must Purify Sewage.—A notice has been served on the members of the Westchester County Board of Supervisors and Manager John J. Brown of the Bronx Valley Trunk Sewer Commission to the effect that the United States government would bring suit to force the removal of the sewage pipes from the Hudson River at Yonkers unless the county built a filtration plant. A similar action was brought in 1912 but was dismissed on the signing of a stipulation that the commission would purify the sewage before it reached the Hudson River.

New York City

Personal.—Dr. Herbert R. Brown, assistant director of the Massachusetts State Department of Health, Boston, has accepted the position of pathologist to the Rochester Homeopathic Hospital, Rochester, N. Y.—Dr. Fred H. Albee has arrived home from the war zone.

Hospital in Need.—The New York Ophthalmic Hospital announces that it has experienced a lack of funds and a falling off in subscriptions since the beginning of the war, and that unless it receives financial aid it will be compelled to close its doors. Two of the free clinics for children have already been closed.

Start Cooperative Charity Campaign.—The Federation for Support of Jewish Philanthropic Societies, which has recently been organized for the purpose of collecting and receiving donations for member societies or for equitable distribution among them, has begun, under the leadership of Felix M.

Warburg, a campaign to increase the yearly total of Jewish benefactions to \$2,000,000. It is believed that philanthropies will be much benefited by a polling of their interests, and that the distribution of benefits will be much more business-like.

The Infantile Paralysis Epidemic.—During the week ending September 23, the number of new cases of infantile paralysis has shown a considerable decrease. Whereas during the previous week the number of new cases reported daily ranged between thirty and forty, during the week just passed they averaged below thirty. September 22, there were only twenty cases reported, with six deaths. The total number of cases to date is 8,861, with 2,226 deaths. The number of cases in the state outside the city of New York has shown a similar decrease.—A conference was held in the office of the mayor between Dr. Haven Emerson, commissioner of health, and William G. Wilcox, president of the board of education, for the purpose of reaching a final decision as to the advisability of opening the schools on September 25, in view of the fact that the parents' association had made a vigorous protest against this step during the week. It was decided that the children would not be exposed to danger in coming together in the schoolroom. No children or teachers from infected houses will be permitted to enter the schools.—The brace fund has reached about \$40,000 and the goal now set is \$50,000. It is said that this will be none too much, as there will be about 5,000 cripples to be cared for.

The Communicability of Poliomyelitis.—A recent *Bulletin* of the department of health publishes a preliminary study of 7,000 cases of infantile paralysis with reference to the number of cases of the disease occurring in a family. There was only one case in a family in 6,521 instances; there were two cases in a family in 205 instances; three cases in twenty families, four cases in one family and five cases in one family. It is pointed out that this does not answer the question as to the communicability of the disease, for it might be possible that in a large percentage of the families included in this study there was only one child. It is hoped that further study will throw more light on this subject by including in the figures the number of children exposed in a family. Another group of figures which takes into consideration 7,496 cases of infantile paralysis shows that 751, or 10 per cent., were found among children under 1 year of age; 5,662, or 15.5 per cent., among children between 1 and 5 years of age; 812, or 10.8 per cent., among children between the ages of 6 and 10 years; 142, or 1.9 per cent., among children between the ages of 11 and 15 years, while 129, or 1.7 per cent., occurred among persons more than 16 years of age. Children between the ages of 2 and 3 years were most often the victims; there were 1,714 of these. Of children between 1 and 2 years old, 1,541 were victims, while those from 3 to 4 years numbered 1,278; from 4 to 5 years the number was only 618.

OREGON

State Society Meeting.—The forty-second annual meeting of the Oregon State Medical Association was held at the German House, Portland, September 13 to 16, under the presidency of Dr. William Kuykendall, Eugene, and the following officers were elected: president, Dr. Robert C. Yenney, Portland; vice presidents, Drs. Leo W. Chilton, Canyon City; Everett Mingus, Marshfield, and William J. Johnson, Corvallis; secretary, Dr. Clarence J. McCusker, Portland, and treasurer, Dr. Katherine C. Manion, Portland.

Personal.—Dr. Grover C. Bellinger, Salem, was reelected assistant secretary-treasurer of the Oregon Association for the Prevention of Tuberculosis at its first annual meeting in Portland, September 13.—William T. Foster, president of Reed College, Portland, was elected president of the Oregon Social Hygiene Society at the annual meeting held in Portland, September 8.—Dr. Luther H. Hamilton, Portland, has been elected president; Dr. Herbert S. Nichols, Portland, secretary, and Dr. Urling C. Coe, Bend, treasurer of the Oregon State Board of Medical Examiners.

PENNSYLVANIA

Personal.—Dr. Claude D. Roop, superintendent of the Lancaster County Hospital and Insane Asylum, has resigned to become assistant physician to the Norristown Insane Hospital.

Infantile Paralysis.—From July 1 to September 16, 1,278 cases of infantile paralysis have been reported to the state department of health, with 307 deaths. Of these cases, 719 were reported from Philadelphia and 559 from other parts of the state. The state commissioner of health announces the

opening at Rosemont of a new hospital for the treatment of acute cases of infantile paralysis.

Coroners Elect Officers.—At the annual meeting of the Pennsylvania State Coroners' Association held in Harrisburg, September 13, the following officers were elected: Dr. Charles L. Ashley, Plymouth, president; S. C. Jamison, Allegheny, and James T. Heffran, Washington, vice presidents; and G. H. Moore, Washington, secretary-treasurer. The association adopted resolutions declaring that all coroners should be physicians. Wilkes-Barre was selected as the next place of meeting.

New State Officers.—At the sixty-sixth annual meeting of the Medical Society of the State of Pennsylvania held in Scranton, September 18 to 21, a program was adopted which contemplates demanding: the amplification of the Harrison Narcotic Law so that the state may protect itself in holding physicians, druggists and dispensers responsible not only for the distribution of drugs, but also of alcohol; amendments to the compensation law increasing the remuneration allowed for medical attention to injured employees in the event of the necessity of a major operation, extending this limit from \$75 to \$200, and prolonging the treatment period without compensation to the disabled employee from thirteen to forty days; a milk hygiene law which will safeguard the milk supply at the source by state inspection of dairy farms at places where milk and milk products are shipped. The following officers were elected: president, Dr. Charles A. E. Codman, Philadelphia; president elect, Dr. Samuel G. Dixon, Harrisburg; vice presidents, Drs. John B. Corser, Scranton; Joseph W. Albright, Muncy; J. Treichler Butz, Allentown, and Herbert B. Gibby, Wilkes-Barre; secretary, Dr. Cyrus Lee Stevens, Athens (reelected); assistant secretary, Dr. Clarence P. Franklin, Philadelphia (reelected); treasurer, Dr. George W. Wagoner, Johnstown (reelected); manager of sessions and exhibits, Dr. William H. Cameron, Pittsburgh (reelected), and trustees for three years, Drs. Theodore B. Appel, Lancaster (reelected); Horatio W. Gass, Sunbury (reelected), and William W. Lazarus, Tunkhannock. The next meeting is to be held Sept. 24 to 27, 1917, at Pittsburgh.

Philadelphia

Urge Dairies to Use Paper Milk Bottles.—Sanitary paper milk bottles will soon follow the sanitary paper drinking cup into public favor, if plans to amend the law governing the delivery of milk in glass bottles are successful.

Memorial Laboratory to be Established.—A memorial research laboratory to the memory of Dr. Earl C. Peck, first assistant resident physician at the Philadelphia Hospital for Contagious Diseases, who died recently from anterior poliomyelitis, is urged by Dr. John B. Carrell, Hatboro, as a fitting memorial to Dr. Peck.

Medico-Chirurgical College Transfers Realty.—One of the final transactions of the merger of the Medical School of the University of Pennsylvania, the Medico-Chirurgical College, and Jefferson Medical College was consummated, September 21, when the real estate holdings of the trustees of the university. The college buildings, assessed at \$375,550, and two four-story houses, assessed at a total of \$54,000, were conveyed for a nominal consideration. These will eventually be conveyed to the city by the university and the buildings demolished, as they are in the line of the new parkway.

RHODE ISLAND

Books Donated for Library.—The directors of the Redwood Library and Atheneum, Newport, at a meeting, September 19, received the report of the committee regarding the recent donation of books from the medical library of the late Dr. Rufus E. Darrah, and after thanking Mrs. Darrah for the gift, recommended that the report be formally adopted by the directors and that copies thereof be communicated to Mrs. Darrah and to the lay and medical press.

Health Survey.—P. A. Surg. Paul Preble, U. S. P. H. S., with the assistance of Sanitary Engineers John K. Hoskins and Harry R. Crohurst, with the cooperation of the state board of health, began a general survey of the streams and harbors, food and drinking supplies and general health aspect of Rhode Island with especial reference to the prevalence of typhoid fever.

SOUTH CAROLINA

Hospital Notes.—The Clinton Hospital was incorporated, August 14, with a capital stock of \$15,000. Dr. L. St. Clair Hays will be in charge of the institution. The medical board

is composed of Drs. Thomas L. W. Bailey, James W. Davis, J. Lee Young and L. St. Clair Hays.—The cornerstone of the new Pryor Hospital, Chester, was laid with Masonic ceremonies recently. The building is four stories in height, with basement, fireproof throughout, will cost \$60,000, and is expected to be ready for occupancy this fall.

Sanatorium Needs Funds.—The Hopewell Sanatorium, which is operating under the direction of the Greenville County Antituberculosis Society, has made an appeal for funds for its maintenance, and asks for annual dollar subscriptions for the support of the institution.

UTAH

New State Association Officers.—At the twenty-second annual meeting of the Utah State Medical Association held in Salt Lake City, September 12 and 13, under the presidency of Dr. Eugene W. Whitney, Salt Lake City, the following officers were elected: president, Dr. Samuel C. Baldwin, Salt Lake City; vice presidents, Drs. Joseph R. Morrell, Ogden; Philemon M. Kelly, American Fork, and David C. Budge, Logan, and treasurer, Dr. Thomas A. Flood, Salt Lake City. Dr. W. Brown, Ewing, holds over as secretary, and councilor from the third district, Dr. Horace G. Merrill, Provo. The next meeting is to be held in Salt Lake City.

CANADA

Sanatorium Acquired.—The Rocky Mountain Sanatorium, Frank, Alta., has been acquired from the French-Canadian Collieries Company by the Dominion Hospitals Commission as a sanatorium for the treatment of soldiers affected with tuberculosis and who belong to the western provinces of Canada. It contains sixty rooms. In conjunction with the Nunnette Institution in Manitoba and the Transquille Sanatorium near Kamloops, B. C., the new sanatorium will provide for all those afflicted with the disease west of the Great Lakes.

Personal.—Surg.-Gen. Guy Carleton Jones, Ottawa, Ont., director of the Canadian Medical Services, has had conferred on him the insignia of the Legion of Honor by the president of France in recognition of valuable services.—Dr. Norman E. McKay, Halifax, N. S., has been elected president of the Provincial Medical Board of Nova Scotia, in succession to Dr. John Stewart, Halifax, who is abroad at the front with Dalhousie University Hospital Unit. Dr. McKay and Dr. Willis B. Moore, Kentville, N. S., will represent the board on the Medical Council of Canada.—Dr. Deloss E. Bell, Brockville, has been appointed physician to the Board of the Workmen's Compensation Act of Ontario.—The Distinguished Conduct Medal has been awarded to Hon. Lieut.-Quartermaster W. G. Ruswell, C. A. M. C., for untiring work during many days in directing the evacuation of wounded.—Dr. Edward S. Hasell, who has been medical superintendent of the Provincial Royal Jubilee Hospital, Victoria, B. C., since 1897, has been appointed chief medical superintendent of Military District No. 11. He has also received the appointment of medical superintendent of the military hospitals in British Columbia. He will be assisted by an advisory board composed of Drs. Roderick L. Fraser and Oswald M. Jones, Victoria, B. C.—Dr. Herbert S. White, McBain, Mich., has joined the Canadian Army Medical Corps.

GENERAL

Southwestern Physicians to Meet.—The tenth annual session of the Medical Association of the Southwest will be held in Fort Smith, Ark., October 2 to 4. The first of these days will be devoted to clinics at the various hospitals.

United States Census Bureau Gets New Chief Statistician.—Dr. William H. Davis, Boston, has been appointed chief statistician, division of vital statistics, United States Bureau of the Census. Mr. R. C. Lappin, who has filled the office since the resignation of Dr. Cressy L. Wilbur, Albany, N. Y., several years ago, has been assigned to other duty. Dr. Davis has been the vital statistician of the Boston Health Department for some years, and was appointed to his present office on the basis of civil service examination.

Virginia Will Bar Children from Infected States.—All Pennsylvania Railroad trains carrying children under 16 years of age from New York, Pennsylvania and New Jersey into the state of Virginia are liable to be quarantined as a result of a conference in Philadelphia, September 16, between the officials of the railroads and Dr. Roy K. Flannagan, assistant state health commissioner of the state of Virginia. Dr. Flannagan visited Philadelphia to determine why New York,

Philadelphia and Norfolk trains carry children in violation of the rules placed in effect, August 25. He stated that 50 per cent. of the cases of infantile paralysis in Virginia today came from the North, some from New York and some from Philadelphia.

Bequests and Donations.—The following bequests and donations have recently been announced:

Social Workers Tuberculosis Sanatorium, Milwaukee, \$1,750, the proceeds of Tag Day, September 4.

Fund to buy braces for children crippled by infantile paralysis, New York, a donation of \$2,000, from Mrs. Pembroke Jones, Newport, R. I. Hospitals of Monmouth County, N. J., a donation of \$2,500, from President Wilson.

St. Joseph's and St. Elizabeth's hospitals, Chicago, each \$5,000, by the will of Mary J. McLaughlin.

Ward for infantile paralysis in Surgical Wing of the University of Pennsylvania Hospital, Philadelphia, a donation of \$1,000, from State Health Commissioner Samuel G. Dixon, conditional on the raising of \$4,000 additional.

To found the John Graves Forbe Memorial Hospital, Georgetown, Ky., a donation of \$1,000, by Archer M. Huntington, New York.

Health Experts to Meet.—The forty-fourth annual meeting of the American Public Health Association will be held at Cincinnati, October 24 to 27, under the presidency of Dr. John F. Anderson, New Brunswick, N. J. On the first afternoon there will be a symposium on mental hygiene. The address of welcome and the president's address will be delivered on the same evening, and there will be a symposium on public health nursing on the second morning. Outside of the general session the work of the convention will be divided into public health administration; laboratory; vital statistics; sanitary engineering; sociology and industrial hygiene.

Instructors at Army Medical School.—The following officers of the Medical Corps have been ordered to duty in the faculty of the Army Medical School, Washington, D. C., for the session beginning October 16: Col. William O. Owen, professor of medical department administration; Lieut.-Col. Champe C. McCulloch, Jr., professor of military hygiene; Maj. Carl R. Darnall, professor of sanitary chemistry; Maj. William H. Moncrief, professor of operative surgery, and Capt. Philip W. Huntington, professor of roentgenology. The Army Medical School, for many years located at 721 Thirteenth Street, N. W., was recently transferred to the building formerly occupied by the district commissioners, at 462 Louisiana Avenue.

Sectional Conferences on Tuberculosis.—The National Association for the Study and Prevention on Tuberculosis announces that in October five conferences on tuberculosis will be held in various parts of the country. The Mississippi Valley Conference will meet at Louisville, Ky., October 4 to 6; the New England Conference in New Haven, Conn., October 12 and 13; the Southern States Conference at Albuquerque, N. M., October 12 and 13; the North Atlantic Conference in Newark, N. J., October 20 and 21, and the Southern Conference at Jackson, Miss., October 30 and 31. A feature of the programs of all these conferences will be informal round-table discussions led by experts in various lines. These discussions will make the conferences virtually institutes in instruction on methods and programs of antituberculosis work.

Wellcome Prizes.—The Henry S. Wellcome Prizes, offered through the Association of Military Surgeons, viz., first prize, a gold medal and \$300, and second prize, a silver medal and \$200, are open for competition to all present and former medical officers of the army, navy, Public Health Service, Organized Militia, U. S. Volunteers, Medical Reserve Corps of the army, navy and of the officers reserve corps of the U. S. Army. These prizes will not be awarded until after Dec. 15, 1916, the council of the association having voted to extend the time of entry of competing essays to that date, because so large a number of the members are now with the troops on the border. Several essays have already been received and a large additional number are expected to be entered for such honorable and valuable prizes. The subject for the first prize is "The Most Practicable Plan for the Organization, Training and Utilization of the Medical Officers of the Medical Reserve Corps, U. S. Army and Navy and of the Medical Officers of the Officers Reserve Corps, U. S. Army, in Peace and War." The subject of the second prize is "The Influence of the European War on the Transmission of the Infections of Diseases, with Special Reference to its Effect on Disease Conditions of the United States." Essays (five copies signed by *nom de plume*) not to exceed 20,000 words, exclusive of tables, must be addressed to the Secretary of the Association of Military Surgeons, U. S. Army Medical Museum, Washington, D. C.

OUR TROOPS ON THE BORDER

Writing Materials for Our Troops.—The American Red Cross has shipped to the Mexican border, for free distribution among the American soldiers, 80,000 sheets of writing paper, a like number of envelopes and 50,000 postal cards.

Red Cross Nurses Sent to Mexican Border.—To reinforce the Army Nurse Corps on the Mexican border the war department has obtained from the American Red Cross 125 graduate Red Cross enrolled nurses for assignment to camp and base hospitals distributed along the frontier from Nogales, Ariz., to Brownsville, Texas. Fifteen of these 125 are representatives of civil hospitals in which American Red Cross base hospital units have been organized. The nurses were selected by Miss Jane A. Delano, chairman of the National Committee on Red Cross Nursing Service, whose department has over 7,000 enrolled graduate nurses. While Colonel Kean has organized twenty-five base hospitals, only eight of these will be represented in this detail of 125 nurses.

FOREIGN

The American-Scandinavian Foundation.—Dr. Christen Lundsgaard left Copenhagen, September 21, for New York. He is the first Danish physician to receive an allowance from the Niels Poulsen American-Scandinavian Foundation. He will study at the Rockefeller Institute and later will travel and pursue research work at other institutions in the United States.

Death in the Profession Abroad.—Sir Thomas Lauder Brunton, M.B., C.M., Edinburgh, 1866; M.D., Edinburgh, 1868; M.R.C.P., London, 1870; F.R.C.P., London, 1876; aged 72; consulting physician to St. Bartholomew's Hospital, London; widely known as a writer and teacher of medicine; who was knighted in 1900 and made a baronet eight years later; a member of many scientific societies in Great Britain and on the continent, and the recipient of a number of honorary degrees; Gulstonian lecturer in 1877, and Croonian lecturer in 1889; died at his home, September 18.

WAR NOTES

Gifts for War Relief.—The New Year Book of the Carnegie Endowment for International Peace states that the United States has given to the sixty principal war relief societies \$28,896,277, or about one twentieth of the amount spent by the allies alone for specific war munitions.

Ambulance Service in the Balkans.—The American Ambulance Field Service announces the formation of an ambulance section to serve with the allied army in the Balkans. The section will include thirty ambulances, together with a repair car, kitchen car, tents and other accessories.

American Red Cross Readmitted to Austria-Hungary.—It is announced that Austria-Hungary has decided to grant permission for the reestablishment of American Red Cross units in the dual monarchy which were withdrawn several months ago because of lack of funds for their maintenance.

Surgeon Wanted for Service in Serbia.—The Franco-Serbian Field Hospital of America, whose office is at 17 West Thirtieth Street, New York, expects to send a field hospital unit to Serbia this month. The unit will be established close to the front and will be practically a first aid dressing station. At present an equipment of twenty cots is planned, but this will be enlarged in the near future. A competent young surgeon is desired to take charge of this unit. He would be expected to make a contract for at least six months, and will receive a salary of \$100 a month and traveling expenses.

Physicians for War Zone.—A large number of practitioners of Indianapolis, Lafayette, Richmond and Terre Haute, Ind., have endorsed the plan of the American Physicians' Expeditionary Society to send American physicians to care for the sick and wounded in the base hospitals of the warring countries, and also approve the plan to send a unit of physicians and nurses from Indiana. In connection with this plan a committee has been appointed to raise \$16,000 to meet the expenses of organizing, equipping and maintaining for six months an Indiana unit to be selected by the society to care for the sick and wounded in base hospitals of Germany and Austria.—A unit of twelve physicians is expected to be ready to leave Philadelphia next month for the war front under the Physicians' Expeditionary Committee.—A unit of fifty physicians is being organized for war service with the entente allies in Europe.—A Red Cross unit has been organized in New York by Dr. Earl B. Downer, which will sail to Christiana, Norway, and then will proceed to Petrograd and to Caucasus.

LONDON LETTER

LONDON, Sept. 11, 1916.

The War

DEATH FROM SUBSTITUTES FOR SALVARSAN

Substitutes for salvarsan have been produced in this country since the war cut off the supply of the drug from Germany, as stated in a previous letter to THE JOURNAL. These substitutes have been carefully investigated by experiments on animals, and have been pronounced equal to salvarsan in safety by a Committee of Investigation appointed under the National Insurance Act. There seems no reason to doubt this conclusion, but unfortunately many fatalities have shown that salvarsan is not a safe drug. The following case shows that the same applies to its substitutes: A verdict of death from misadventure was returned at an inquest on a man aged 40, who died in Guy's Hospital. After a Wassermann test an injection of kharsivan, which is supposed to be identical with salvarsan, was given. When he was having the second injection he became excited, complained of headache, and subsequently became unconscious. Dr. Spilsbury, the pathologist, said that death was caused by coma, due to a cerebral affection, and accelerated by the injection of kharsivan, which, in his view, was as good as salvarsan. Opinions differed, however, as to whether neo-kharsivan was not better still. This new preparation which is coming onto the market contains a smaller percentage of arsenic. The coroner said this was the third case he had had in a period of over two years. The importance of this fact will be realized when one considers that his district is only a portion of London.

Anthrax in Shaving Brushes

A short time ago I reported in THE JOURNAL a number of cases of anthrax due to shaving brushes, the infection being traced to a cheap kind of brush on sale in a certain shop. The disease has again been caused by an infected shaving brush—this time, at Newcastle. Investigation of the case which occurred in that city incriminated a cheap horsehair shaving brush, one of a large consignment newly arrived from Japan. Immediate steps were taken by the health authorities to trace the infected brushes, and it is believed that practically all of them have been recovered. These brushes are described as having black japanned wooden handles and a thin brush of white hair. (They sell for about 4 cents each.) A large proportion of those confiscated showed the presence of anthrax germs. It was found that parcels of the brushes had been sent to various parts of the country, some fifty gross going to Newcastle. A warning was at once sent by the Local Government Board to the health officers in each of the towns that had received them.

The Organization of the Nursing Profession

As long ago as 1887 the desirability of state registration of trained nurses was brought forward by the late Sir Andrew Clark, physician to the London Hospital. In 1895 the subject was taken up by the British Medical Association which unanimously adopted a resolution in favor of the project. This was endorsed by the Association in 1904 and again in 1906. In 1905 a Committee of the House of Commons reported in its favor. In 1907 a bill was passed in the House of Lords; but on account of opposition failed to pass in the House of Commons. After further struggles, a bill was introduced in the House of Commons in March, 1914, by a majority of 311 against 82. This bill provided for the appointment of a general council to form a register of nurses whose course of training and examinations it would regulate and supervise. The council would appoint examiners and inspectors, publish an annual register, and take proceedings against persons guilty of offenses under the act. It would also decide on the suspension or removal from the register of the name of any nurse for any breach of the rules, or for disgraceful conduct. It would have power to recognize hospitals or institutions as approved training schools for nurses. Besides the general register of women nurses, there was to be a supplementary register of asylum nurses. The bill also provided for the admission to the register of persons holding certificates of training from institutions approved by the council, or under the Local Government Board, or from the Admiralty or the Royal Army Medical Corps. Persons producing evidence satisfactory to the council of training or who had been three years in bona fide practice as a nurse or employed as a nurse in a naval or military hospital would also be eligible. The council was to consist of twenty-one persons; three appointed by the Privy

Council (one a woman), three physicians appointed by the Local Government Board (one for each division of the Kingdom), three physicians appointed by the British Medical Association (one resident in England, one in Scotland, and one in Ireland); one physician appointed by the Medico-Psychological Association, one physician appointed by the fever hospitals recognized as training schools, eight registered women nurses (to be elected as direct representatives by the nurses on the register), one registered physician or registered male nurse (to be elected as a direct representative of the registered male nurses), one registered mental nurse (to be elected as a direct representative of the registered mental nurses). The title of "registered nurse" would be protected, the bill providing penalties for its improper use. An early passage of the bill seemed assured. Then war broke out and all controversies attending the bill had to be dropped. However, this war has increased the demand for nurses tremendously and has rendered the question of organization more urgent. A scheme for voluntary organization has therefore been brought forward by the leaders of the nursing profession and by leading persons interested in the profession which has resulted in the founding of the College of Nursing in March of the present year. Its objects are to maintain a register of trained nurses, to establish a uniform curriculum of training, and to raise the standard of training. The college is managed by a council of not less than fifteen or more than thirty persons, two thirds of whom must be trained nurses.

PARIS LETTER

PARIS, Aug. 31, 1916.

The War

THE WAR AND CLINICAL THERMOMETERS

As a result of the report on the inexactitude of clinical thermometers, read by Mr. Woog at the sitting, June 27, the Académie de médecine appointed a commission to study the question. Mr. Grimbert, the reporter of this commission, believes that it is necessary to prohibit the sale of all thermometers the precision of which is not guaranteed by official control. The war having suppressed the importation from Germany, France depends for her supply on Switzerland, England and the United States, and there has been a considerable rise of price without a corresponding guarantee of precision. According to Mr. Woog, the central pharmacy of the army has been obliged to refuse as much as 80 per cent. of the shipments offered. The French manufacturers have assured the commission that they will soon be in a position to supply clinical thermometers at the same price as those obtained from Germany before the war, and that they are prepared to submit to official control. Furthermore, the director of tests at the Conservatoire des arts et métiers believes that it is feasible to reduce considerably the fee paid for testing thermometers.

THE BELGIAN SCHOOL FOR THE MUTILATED

Like France, Belgium considers it her duty to do what may be possible to permit war cripples to reoccupy a social position worthy of them. Thanks to the generosity of Baron Bacyens, his estate of Notre Dame de-la-Mer, situated at Port-Villeg, department of Eure, 7 kilometers from Vernon, has been placed at the disposition of Mr. de Broqueville for this purpose. In this way, the Belgian effort has not, like ours, been dispersed over a number of small schools, but concentrated in one adequate central institution. Situated on a plateau 150 meters above the valley of the Seine, the Belgian institute for the reeducation of professional cripples is composed of eighty separate constructions, built with double walls, like the English field hospitals. The buildings extend over an area of 17,000 square meters and shelter dormitories, administration buildings and workshops. At present 1,200 cripples are in residence. On their arrival, they are carefully examined and a record is drawn up stating their previous occupations and present functional abilities. An attempt is made to establish what particular kind of work suits them best. In order to learn one of the forty-eight trades taught in the institute, the pupils enter the workshops, which are twenty-five in number. They have electric and internal combustion engines and a perfect supply of tools. The whole system is organized on an industrial basis. Although it has only been established one year, the value of its production is 950,000 francs (\$183,350). In addition to the workshops, there is an agricultural area for training purposes. The agricultural lands amount to 30 hectares. The standing crops at the present moment represent a value of

40,000 francs (\$7,720), and the school has already taken such fruits and vegetables as are necessary for its own use. The poultry farming section has produced, since last March, 3,000 chicks. There is an apiary of more than thirty hives. Rabbit rearing is also followed with excellent results. Finally, the gardens which surround this little colony, serve for the teaching of horticulture.

NEW OCCUPATIONS FOR THE WOUNDED

The first session of the Auch-Beaulieu center for agricultural reeducation, founded by the general council of the department of Gers and the ministry of agriculture, has just come to its close. The object of this center is to readapt to rural life those who have been seriously wounded in the war and the results obtained have been entirely satisfactory. Each pupil, according to his physical and intellectual ability, has been trained for an agricultural specialty such as steward, farmer, gardener, dairyman, poultry farmer, bee farmer, repairer of agricultural machines, etc. Already the majority of pupils have obtained situations in accordance with their ability, which, in certain cases, are superior to those held before the war. A complete course of professional photography under the auspices of the syndicated photographers of France has just been established at the special school for cripples. Before the war the corporation of photographers was invaded by foreigners. At present there are a great many vacant posts in every district. This profession, which requires more taste than strength, is particularly adapted to cripples. The apprenticeship is comparatively short, which is an advantage for the wounded, who are anxious to be able to gain their own living.

Marriages

JAMES FRANCIS LAWLER, M.D., Beverly, Mass., to Miss Mary Gertrude Creedon, formerly of Southbridge, Mass., at Methuen, Mass., September 7.

JAMES SALMON WILKINSON, M.D., Germantown, Philadelphia, to Miss Gwendolyn M. Devoll of Philadelphia at Branchtown, September 11.

WASHINGTON MERSCHER, M.D., Germantown, Philadelphia, to Miss Theda S. Dengler of Germantown in Lebanon, Pa., September 2.

ARROL V. BRUMBAUGH, M.D., to Miss Edna Alice Mason, both of Milwaukee, Wis., at Beaver Dam, Wis., September 4.

PERCY BETTERMAN BATTEY, M.D., Independence, Iowa, to Miss Sara H. Hillary, at Council Bluffs, Iowa, September 7.

LEANDER ERNEST TREVETHAN, M.D., Vale, Tenn., to Miss Ada Lee Duncan of Hollow Rock, Tenn., September 10.

JOHN THEODORE KING, JR., M.D., Baltimore, to Miss Charlotte Markell Baker of Frederick, Md., September 14.

CARL DAVIS RENDER, M.D., to Miss Dorothy June Antis, both of Oak Park, Ill., in Milwaukee, November 1.

JAMES PENDLETON ERSKINE, M.D., New York, to Miss Jennie F. Brower of Utica, N. Y., September 14.

THOMAS GOODELL CHARLES, M.D., Beardstown, Ill., to Miss Nita Robertson of Virginia, Ill., September 12.

LOUIE JOHN BEYER, M.D., Little River, Kan., to Miss Gwendolyn Markle of Lyons, Kan., August 16.

RUDOLPH FREDERICK DECKER, M.D., Byron, Neb., to Miss Theodora Prohl of Mendota, Ill., September 20.

ABRAM SAMUEL TEPPER, M.D., to Miss Esther Nebenzahl, both of Far Rockaway, N. Y., September 11.

ANGELINE MILDRED LEMON, M.D., Cleveland, to Mr. Harold Faunce Dumbleton of Detroit, September 5.

BERNARD O. BENDEXSON, M.D., Beachwood, Wis., to Miss Olive Stoupe of Milwaukee, Wis., recently.

LAWRENCE D. ALEXANDER, JR., M.D., to Miss Lita Berry Lindey, both of New York, September 9.

ARTHUR CALDWELL GILLAM, M.D., to Miss Anna Suzanna Maurer, both of Chicago, September 14.

IRA THURMAN MANN, M.D., High Point, N. C., to Miss Bessie Marguerite Pitts, September 26.

CHARLES A. REED, M.D., to Mrs. June C. Dickey, both of Minneapolis, September 13.

JAMES R. LEWIS, M.D., Grinnell, Iowa, to Miss Harriet Kemp, at Denver, recently.

JOSEPH FRAENKEL, M.D., New York, to Mme. Ganna Walska, September 7.

Deaths

Henry Clay Baum, M.D., Syracuse, N. Y.; University of Michigan, Ann Arbor, 1883; aged 57; a Fellow of the American Medical Association; professor of dermatology and syphilology in the College of Medicine of Syracuse University; consulting dermatologist to the Onondaga Orphan Asylum; dermatologist and syphilologist to the Syracuse Hospital for Women and Children, St. Vincent's Orphan Asylum, House of Providence and Syracuse Free Dispensary; dermatologist to St. Joseph's Hospital; formerly major surgeon of the Second Infantry, N. G., N. Y.; died at his home in August.

Richard Mott Moore, M.D., Rochester, N. Y.; University of Buffalo, N. Y., 1878; aged 59; a Fellow of the American Medical Association; one of the foremost practitioners of Rochester; a member of the board of health of Rochester in 1893; for several years chairman of the Monroe County Milk Commission and once president of the Rochester Academy of Medicine; who had been ill for five years with a disease of the circulatory system which necessitated several operations, and finally amputation of the leg above the knee; died at his home, September 13, from angina pectoris.

William Keller, M.D., Princeton, Ill.; St. Louis College of Physicians and Surgeons, 1884; aged 73; formerly a Fellow of the American Medical Association; a member of the Illinois State Medical Society; a graduate of medicine in the University of Tübingen, Germany, about 1865; surgeon in the Prussian army during war between Germany and Austria; died at his home, September 7, from septic pneumonia, following a carbuncle of the leg.

Elijah Miller Reed, M.D., Baltimore; University of Maryland, Baltimore, 1864; aged 72; formerly a member of the Medical and Chirurgical Faculty of Maryland and professor of nervous diseases and medical jurisprudence in Maryland Medical College, Baltimore; at one time an officer of the Medical Corps of the army; died at his home, September 12, from cerebral hemorrhage.

William A. Brown, M.D., Monticello, Ark.; University of Tenn., 1869; aged 73; formerly a Fellow of the American Medical Association; a member and once vice president of the Arkansas Medical Society; president in 1914 of the Arkansas Fourth Councilor District Medical Society; a Confederate veteran; died at his home, September 6, from heart disease.

Leo Dinkelspiel, M.D., New York; College of Physicians and Surgeons in the City of New York, 1883; formerly a Fellow of the American Medical Association; captain in the medical corps of the Serbian army during the war with Bulgaria in 1884; died at the home of his sister in New Rochelle, N. Y., September 11, from cerebral hemorrhage.

John Joseph Thompson, M.D., Webster, Mass.; Jefferson Medical College, 1887; aged 56; a Fellow of the American Medical Association; town physician of Webster for fifteen years; chairman of the school committee for ten years and trustee of the public library for twenty years; died at his home, September 16, from cerebral hemorrhage.

Edgerton Clapp David, M.D., Picton, Ont.; University of Michigan, Ann Arbor, 1877; aged 66; for many years a practitioner of Bad Axe, Mich., and Buffalo; who has been an inmate of the Rockwood Asylum, Kingston, Ont., on account of mental disease, for eighteen years; died in that institution, April 20, from septic endocarditis.

Emma Albertina Walser Townsend, M.D., New Brighton, N. Y.; Women's Medical College of the New York Infirmary for Women and Children, New York, 1888; aged 51; who is said to have been the first woman intern in the New York Hospital; for several years a member of the local board of education; died at her home, September 13.

Albert James Mackay, M.D., Peacham, Vt.; University of Vermont, Burlington, 1897; aged 50; a Fellow of the American Medical Association; member of the legislature in 1915-1916; died Brightlook Hospital, St. Johnsbury, Vt., September 11, two days after an operation for intestinal disease.

John H. Wilson, M.D., Bethlehem, Pa.; University of Pennsylvania, Philadelphia, 1860; aged 80; a Fellow of the American Medical Association; surgeon of volunteers throughout the Civil War; one of the best known practitioners of the Lehigh Valley; died at his home, September 12.

Daniel Hennessey, M.D., Bangor, Me.; Geneva (N. Y.) Medical College, 1866; aged 79; a Fellow of the American

Medical Association; a member of the surgical staff of the Aid-de-Camp Hospital on David's Island, N. Y., after the Civil War; died at his home, September 10.

Charles L. Hall, M.D., Mount Jackson, Va.; Washington University School of Medicine, Baltimore, 1876; aged 65; formerly a practitioner of Lost River, W. Va., and a member of the West Virginia House of Delegates from Hardy County; died at his home, September 5.

Enoch T. Jones, M.D., Hampton, Ark.; Memphis Hospital Medical College, Memphis, Tenn., 1901; aged 49; formerly a Fellow of the American Medical Association and once president of the Calhoun County (Ark.) Medical Society; died at his home, September 9.

James W. Dreyfus, M.D., Louisiana, Mo.; Washington University, St. Louis, 1877; aged 65; formerly a Fellow of the American Medical Association; a member of the Missouri State Medical Association; died at his home, August 19, from cerebral hemorrhage.

Francis S. Merriam Meyers, M.D., Mt. Vernon, N. Y.; Women's Medical College of the New York Infirmary, New York, 1894; aged 46; a member of the Medical Society of the State of New York; died at her home, September 14, from heart disease.

George Henry Turner, Jr., M.D., Hartland, Me.; Medical School of Maine, Brunswick, 1903; aged 38; formerly a member of the Maine Medical Association and a practitioner of Portland, died at his home, September 9, from acute gastritis.

Thomas Fitzgibbon, M.D., St. Francis, Wis.; Rush Medical College, 1882; aged 62; a Fellow of the American Medical Association; formerly professor of gynecology in the Milwaukee Medical College; died at his home, September 17.

Malcolm Eugene Douglass, M.D., Guilford, Md.; Hahnenmann Medical College, Philadelphia, 1880; aged 69; formerly a practitioner of Dansville, Va.; died in his office, September 13, from heart disease.

Isaiah W. Willits, M.D., Bloomsburg, Pa.; Jefferson Medical College, 1875; aged 73; a member of the Medical Society of the State of Pennsylvania; died at his home, August 24, from heart disease.

Seth C. Felt, M.D., Long Beach, Calif.; Detroit College of Medicine, 1876; aged 77; a veteran of the Civil War; until 1903 a practitioner of New Boston, Mich.; died at his home, September 5.

Charles H. Whiting (license, Maryland); a practitioner for forty-nine years; a veteran of the Civil War; died in the University Hospital, Baltimore, September 11, from cerebral hemorrhage.

George Watson Stevenson, M.D., Cleveland; Western Reserve University, Cleveland, 1872; aged 69; a Fellow of the American Medical Association; died at his home, August 30.

John O. Guhman, M.D., St. Louis; Missouri Medical College, St. Louis, 1889; aged 46; a Fellow of the American Medical Association; died suddenly at his home, September 11.

Walter L. Davis, M.D., Cincinnati; Miami Medical College, Cincinnati, 1866; aged 72; for more than thirty years alienist of Hamilton County, Ohio; died at his home, September 8.

Robert G. Van Valzah, M.D., Springfield, Ore.; College of Physicians and Surgeons, Baltimore, 1885; aged 52; also a druggist; died at his home, September 5, from nephritis.

Charles A. Mattison, Conway, Ark. (license, Arkansas, 1903); aged 53; a colored practitioner of Faulkner County for twenty-five years; died at his home, September 9.

Charles R. Sheetz, M.D., Algona, Iowa; Rush Medical College, 1882; aged 65; also a druggist; died at his home, September 7, from disease of the prostate gland.

William B. Jones, Summerville, Ark. (license, Arkansas, 1903); aged 73; a practitioner of Calhoun County, Ark., since 1860; died at his home, September 9.

L. Love Crump, West Point, Miss. (license, Mississippi); aged 75; a Confederate veteran; died at his home, September 6, as the result of an accident.

Elisha Dyer Leffingwell, M.D., Oswego, N. Y.; Bellevue Hospital Medical College, 1877; aged 67; died at his home, September 11.

Nathan N. E. Wood, M.D., Chicago; Bennett Medical College, Chicago, 1878; aged 64; died at his home, September 15.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

THE THERAPEUTIC VALUE OF THE GLYCEROPHOSPHATES

Report of the Council on Pharmacy and Chemistry

The Council has adopted the following report and authorized its publication.

W. A. PUCKNER, Secretary.

Glycerophosphates are the salts of glycerophosphoric acid, $H_2[C_3H_5(OH)_2]PO_4$. This acid is produced by the interaction of glycerin and phosphoric acid. In general, only sodium glycerophosphate, $Na_2[C_3H_5(OH)_2]PO_4 + 5\frac{1}{2}H_2O$, and calcium glycerophosphate, $Ca[C_3H_5(OH)_2]PO_4 + H_2O$, are used in medicine, though the glycerophosphates of lithium, potassium, manganese, magnesium, iron, quinin and strychnin are claimed as constituents of proprietary preparations. At a time when certain disorders were assumed to be due to a deficiency of phosphorus in the nerve structure in the body, glycerophosphates were introduced as "nerve foods" and "tonics" on the theory that they would be assimilated more readily than hypophosphites or ordinary phosphates. What led to this assumption was the fact that the lecithins, which form a part of the nerve structure, were known to contain the glycerophosphate radical in the molecule. The belief that inorganic phosphates cannot supply the body's need of phosphorus is implied or expressed in most of the "literature" devoted to proprietary phosphorus preparations.

Thus, Schering and Glatz quote G. Meillière as saying that "the organism is incapable of assimilating inorganic forms of phosphorus."

Again, when exploiters of glycerophosphates admit that the body can synthesize its phosphorus compounds from inorganic phosphates, they attempt to counterbalance the admission by contending that the use of organic compounds "spares" the system the necessity of making such synthesis. This assumption rests on the theory that the organic phosphorus compounds are absorbed and stored as such.

This theory is contradicted by evidence which has been presented¹ that the organic phosphorus compounds are split up into inorganic phosphates before absorption.

The Council requested E. K. Marshall, Jr., to review the evidence for and against the therapeutic value of organic phosphorus compounds. Marshall's study² brings out the following points:

1. In various tissues of the animal body, enzymes have been found which hydrolyze complex organic phosphorus com-

pounds so as to liberate the phosphorus in the form of inorganic phosphates.

2. Metabolism studies of the phosphorus balance with diets containing inorganic phosphorus compounds, as compared with diets containing organically bound phosphorus, are somewhat conflicting in their results. The balance of evidence, however, is in favor of the view that there is no difference between organically combined phosphorus and inorganic salts with respect to the phosphorus balance.

3. Experiments indicate that the organism thrives on and supplies its phosphorus needs quite as well from inorganic phosphorus compounds as from organically bound phosphorus.

Marshall concludes:

"We see that the evidence is very convincing of the view that the animal organism can synthesize its complex organic phosphorus constituents from inorganic phosphates, and that organic phosphorus is of no more value as a food than inorganic."

In view of this report, the Council deemed it advisable to take up the consideration of certain glycerophosphate preparations on the market. As the therapeutic claims are all similar, it is not necessary to quote them extensively.

TONOLS (SCHERING'S GLYCEROPHOSPHATES)

Tonols (Schering and Glatz, New York) comprise iron, lime, lithium, magnesium, manganese, potassium, quinin, sodium and strychnin "Tonols" or glycerophosphates; also Duotonol Tablets, said to contain equal parts of calcium and sodium glycerophosphates; Triotonol Tablets, each said to contain "Sodium Tonol 2½ grains, Lime-Tonol 2½ grains, Strychnine-Tonol 1/60 grain"; Quartonol Tablets, said to contain "Sodium and Lime-Tonols, each 2¼ grains, Quinine Tonol ½ grain, Strychnine-Tonol 1/200 grain"; Sextonol Tablets, said to contain "Sodium and Lime-Tonols, each 2 grains, Iron-Tonol, ½ grain, Manganese and Quinine-Tonols, each ¼ grain, Strychnine-Tonol, 1/200 grain."

The name "Tonols" is objectionable in that it is not only nondescriptive of the composition but also therapeutically (and falsely) suggestive. The composition of the more elaborate Tonols is particularly unscientific; there is no justification for

combining quinin, strychnin, iron, manganese, etc., in one formula.

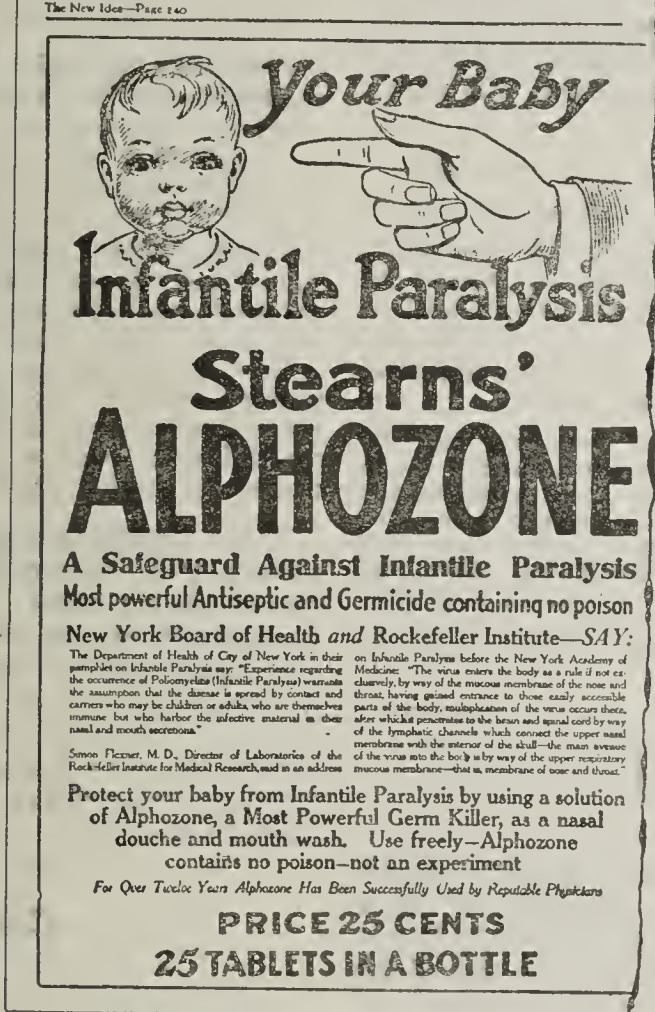
PHOSPHORCIN COMPOUND

Phosphorcin Compound, called "The Elementary Phosphorus indicated in all forms of Nervous Diseases" and the "Perfect Formula," is said to be manufactured by the Organic Products Company, Wetzlar an der Lahn, Germany, and Greenwich, Conn. It is sold in the United States by Eimer and Amend, New York, according to whom:

"Each two fluidrachms contain:
"Acidulated Bone Phosphor O. P. Co. 2 grains
"Calcium Glycerinophosphate, Merck & Co. 1½ grains
"Magnesium Glycerinophosphate, Merck & Co. 1½ grains
"Sodium Glycerinophosphate, Merck & Co. 2½ grains
"Lactated Pepsin 2 grains
"Ignatia Extract 1/20 grain
"C. P. Glycerin (Special Process) O. P. Co. 50%"

"Acidulated bone phosphor" presumably is acid phosphate of calcium. This formula is an unscientific shotgun combination.

The New Idea—Page 240



This is a photographic reproduction (greatly reduced) of a full page advertisement from a house organ put out by Frederick Stearns & Company, Detroit, Mich. Make your own comment.

1. McCollum and Hart, Grosser and Husler, Plimmer, and Bayliss and Plimmer, quoted by Marshall (Note 2).

2. Marshall, E. K.: The Therapeutic Value of Organic Phosphorus Compounds, THE JOURNAL A. M. A., Feb. 13, 1915, p. 573.

ROBINOL

Robinol, manufactured by John Wyeth and Brother, Philadelphia, is called a "Universal Tonic." It is said to be:

"A preparation of the glycerophosphates of lithium, calcium, sodium, iron, manganese, quinine, with 1-16 gr. strychnine glycerophosphate in each fluidounce."

This is a semisecret preparation, since the quantities of most of the ingredients are not given and the vehicle is not named. This complex combination, too, is unwarranted.

PHOSPHOGLYCERATE OF LIME (CHAPOTEAUT)

This is said to be prepared by the Laboratoires de Pharmacologie Générale, Dr. Ph. Chapelle, Paris and New York. It is sold in this country by E. Fougera and Co., Inc., New York. It is offered in several forms, especially in that of wine, which is called the "Medicinal Wine and Tonic Par Excellence." The alcohol is no doubt the constituent to which this preparation is indebted for such popularity as it has attained, for it is much more freely advertised than the syrup, capsules or granulated form. The usual claims are made with regard to the efficacy of calcium glycerophosphate "during convalescence, in cases of enfeebled vitality, and nervous affections associated with an excessive elimination of phosphates."

ELIXIR GLYCEROPHOSPHATES, NUX VOMICA AND DAMIANA

This is manufactured by Sharp and Dohme, Baltimore. The manufacturers' statement of composition is:

"Each fluidounce represents Nux Vomica 8 grains, Damiana 64 grains, combined with Glycerophosphates of Calcium and Sodium."
"Alcohol 20 per cent."

Sharp and Dohme call this mixture a "Reconstructive, Nerve Stimulant, Aphrodisiac," and claim that:

"Phosphorus in elemental form has long been prescribed under the title of Elixir Phosphorus, Nux Vomica and Damiana, but due to the rapidity of chemical change occurring in preparations containing this form of Phosphorus, much of the Physiologic action is lost. The Glycerophosphates present Phosphorus in its most available form—the form in which it exists in the brain and nervous system. They powerfully stimulate the functions of nutrition and are rapidly assimilated by the system."

"Nux Vomica is a general Nerve Tonic. Damiana exerts a stimulant effect upon the sexual appetite and function."

The claim that the glycerophosphates may be substituted for elementary phosphorus is, at least, novel.

The elixir is an unscientific semisecret combination.

RECOMMENDATIONS

All of the preparations mentioned violate Rule 6 (unwarranted therapeutic claims). In addition, Robinol and Elixir Glycerophosphates, Nux Vomica and Damiana violate Rule 1 (secrecy of composition) in that not all the quantities of the ingredients are declared; Tonols, Phosphorcin Compound and Robinol violate Rule 8 (objectionable names). It is recommended that the Council endorse Marshall's findings² and declare that Tonols (Schering and Glatz), Phosphorcin Compound (Eimer and Amend), Robinol (John Wyeth and Brother), Phosphoglycerate of Lime Chapoteaut (E. Fougera and Co.), and Elixir Glycerophosphates, Nux Vomica and Damiana (Sharp and Dohme) are ineligible for New and Nonofficial Remedies.

KORA-KONIA

Report of the Council on Pharmacy and Chemistry

Kora-Konia is a "dusting powder" which at present is advertised to the medical profession through medical journals, circulars, post cards and sample packages. It is put out by the "House of Mennen," which sells various toilet preparations such as talcum powder, shaving soap, etc. On the trade package is the statement:

"Indicated in the treatment of Acne, Dermatitis, Eczema Intertrigo; in obstinate cases of chafing, prickly heat, nettle rash, chicken pox, measles, scarlatina and irritations of the skin; as a soothing absorbent and antiseptic dusting powder and as an umbilical dressing."

While a circular asserts that:

"Kora-konia is indicated in the treatment of acne, dermatitis, eczema and eczematous conditions of the utmost severity, . . . eruptive fevers, . . ."

What purports to be a physician's testimonial reads:

"I used Kora-Konia in a new born case of inherited syphilis and the eruption soon cleared up."

Germicidal powers are claimed for Kora-Konia in a medical journal advertisement. In view of the various claims made and the fact that it is advertised to the medical profession, the Chemical Laboratory of the American Medical Association was asked to analyze Kora-Konia. This was done and the chemists reported as follows:

LABORATORY REPORT

Kora-Konia is a white powder, slightly greasy to the touch. Qualitative tests showed the presence of boric acid, zinc, magnesium, a solid fatty acid and material insoluble in hydrochloric acid containing magnesium and aluminum. Starch was not found. Quantitative determinations gave the following results:

Acid-insoluble material (talc).....	48.3 per cent.
Magnesium (Mg ⁺⁺) soluble in dilute acid...	1.2 per cent.
Zinc (Zn ⁺⁺)	4.5 per cent.
Stearic acid (impure).....	39.2 per cent.
Boric acid	3.0 per cent.
Carbon dioxide (CO ₂).....	1.5 per cent.

From this analysis it is concluded that Kora-Konia has essentially the following composition:

Zinc stearate U. S. P.....	44 per cent.
Talc	48 per cent.
Magnesium carbonate U. S. P.....	5.0 per cent.
Boric acid	3.0 per cent.

Essentially this dusting powder consists of the well-known substances talc and zinc stearate in about equal proportions to which small quantities of magnesium carbonate and boric acid have been added. Inasmuch as the claim is made, by inference at least, that Kora-Konia represents original investigation carried out "with the cooperation of the medical profession" it should be stated that the preparation of commercial zinc stearate was described and recommended as a dusting and toilet powder nearly twenty-five years ago.¹

There is nothing new or original in any one of these substances or in the combination. The extravagant and unwarranted claims made for this simple dusting powder are undoubtedly leading the public, as well as some thoughtless physicians, to place undeserved confidence in it. In view of the small amount of boric acid present in the powder, its antiseptic powers must be slight and its germicidal powers almost nil. The Council declared Kora-Konia ineligible for New and Nonofficial Remedies and authorized publication of this report.

Correspondence

Curtailement of Official Reports by Great Britain

To the Editor:—I am sure that your readers will share the conviction that a serious error is being made in the British policy of retrenchment in public expenditures according to which "on account of the war and the desirability of curtailing expenses on public administration as far as prudently can be done, the local government board has recommended that no reports be printed this year by medical officers of health and sanitary inspectors." This extract is from a letter from one of the foremost health officers in England, and indicates a direction of public policy which may tend seriously to impair the admirable efficiency of the public health service of the United Kingdom.

Of interest in this connection is the following brief extract from the annual report of the acting medical officer of health of the Borough of Royal Leamington Spa: "The local government board has suggested that the annual report for 1915 should deal only with the events of the year and also that it need not be printed. Acting on the latter suggestion your committee has decided that such copies of the report as are required by law should be typewritten, and that it should not be printed for general distribution as in former years."

Unquestionably the curtailment of official reports is a matter of considerable practical importance and perhaps

1. Proceedings A. Ph. A., 1892, Vol. 40, p. 488.

imperative in view of the heavy and increasing military expenditures; but no existing conditions can justify the complete cessation of the issuance of official reports, particularly on public health activities, where the facts of recent experience, unless promptly brought to public attention, are merely of historical value.

As another recent illustration of this regrettable direction of English public policy, reference may be made to the material reduction in the contents of the annual report of the Metropolitan Asylum Board, which constitutes by far one of the most useful sources of information on the results of the institutional treatment of contagious and infectious diseases.

FREDERICK L. HOFFMAN, Newark, N. J.
Statistician, Prudential Insurance Company of America.

Glyco-Thymoline and Poliomyelitis

To the Editor:—Referring to your article on "Glyco-Thymoline and Poliomyelitis" (Propaganda, THE JOURNAL, Sept. 16, 1916, p. 895). This summer I have treated perhaps fifty people for infected middle-ear, and for nasal sinusitis, caused by douching the nose with so-called antiseptics, to ward off poliomyelitis. Some years ago I treated a girl who was employed in the office of the Glyco-Thymoline people, Kress and Owen, for mastoiditis, presumably caused by the too liberal use of the nasal wash which she obtained for nothing. I am constantly writing and preaching against the use of nasal washes, but unfortunately most physicians are swayed by the persistency with which the various nasal wash people offer their wares. The nasal douche is decidedly more harmful than useful.

ALBERT BARDES, M.D., New York.
Otolologist, Flushing Hospital.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

THE OCULOCARDIAC REFLEX

To the Editor:—Please answer the following questions:

1. Who first described the oculocardiac reflex?
2. Will you give a brief description of the reflex?
3. Will you give some references to the literature on the subject?

CLARENCE W. LIEB, M.D., Watkins Glen, N. Y.

ANSWER.—1. This was first described by Aschner in 1908, and is therefore sometimes spoken of as the Aschner reflex.

2. The oculocardiac reflex is a change in the heart's rate or rhythm following pressure on one or both eyeballs. The path of the reflex is generally considered to be along the fifth cranial nerve, the medulla and the vagus or more rarely the sympathetic nerves. Usually slowing of the pulse rate results. This is probably due to inhibitory stimulation along the vagus nerve, and individuals showing this slowing are spoken of as vagotonics. Rarely there is an increase in the pulse rate. It is believed that in these cases the impulse passes along the sympathetic. Such persons are described as sympathicotronics. It is generally considered that in normal persons the cardiac rate is slowed from four to ten beats a minute. The diagnostic value of this reflex is not as yet definitely determined. There is some evidence to show that this sign may enable one to differentiate between disease of the heart muscle and disease of the cardiac nervous mechanism.

3. The following are some references:

- Aschner: *Wien. klin. Wchschr.*, 1908, xxi, 1529.
Gunson, E. B.: The Oculo-Cardiac Reflex, *Brit. Jour. Children's Dis.*, April, 1915; abstr., THE JOURNAL, May 15, 1915, p. 1635.
Aviragnet, Dorencourt and Bouttier: *Compt. rend. Soc. de biol.*, 1914, lxxvi, p. 771.
Guillain and Dubois: *Bull. et mém. Soc. méd. d. hôp. de Paris*, 1914, xxxvii, 584.
Lesieur, Vernet, and Petzetakis: *Bull. et mém. Soc. méd. d. hôp. de Paris*, 1914, xxxvii, 440, 446, 593, 599.
Lesieur, Vernet and Petzetakis: *Bull. et mém. Soc. méd. d. hôp. de Paris*, 1914, xxxvii, 515.

Monier-Vinard and Meaux-Saint-Marc: *Bull. et mém. Soc. méd. d. hôp. de Paris*, 1914, xxxvii, 614.

Petzetakis: *Bull. et mém. Soc. méd. d. hôp. de Paris*, 1914, xxxvii, 562.

Petzetakis: *Bull. et mém. Soc. méd. d. hôp. de Paris*, 1914, xxxvii, 727.

Levine, S. A.: Oculocardiac Reflex, *Arch. Int. Med.*, 1915, xv, 758; abstr., THE JOURNAL, June 12, 1915, p. 2017.

Lian, C.: Therapeutic Utilization of the Eyeball-Heart Reflex, *Arch. d. mal. du cœur*, July, 1915; abstr., THE JOURNAL, Aug. 21, 1915, p. 745.

Ferralis, G. B., and Pezzi, C.: When the Oculo-Cardiac Reflex Induces Extrasystoles, *Policlinico*, Rome, May, 1916; abstr., THE JOURNAL, June 24, 1916, p. 2129.

LIQUOR ALUMINI ACETATIS (BUROW'S SOLUTION)

To the Editor:—THE JOURNAL (Sept. 9, 1916, p. 829) contains your answer to the question of Dr. Patterson on the composition of Burow's solution. It occurred to me that it might have been well to emphasize the recommendation that Burow's solution be not made with lead acetate, as was formerly customary. The presence of lead is not required, as the virtue in the preparation is in the acetic acid, which is constantly liberated in the wet dressing, as the strong odor of this substance after long application indicates. Lead, therefore, has been omitted in later editions of the National Formulary. The danger of lead in Burow's solution, namely, absorption of lead, was pointed out in a case report by Gottheil (THE JOURNAL, March 26, 1910, p. 1056). The use of acetic acid as a wet dressing must be of ancient origin, as its use is immortalized in the nursery rhyme of "Jack and Jill." After "Jack fell down, and broke his crown," you will remember he was put to bed with a head dressing of "vinegar and brown paper."

JOSEPH S. LEWIS, M.D., Buffalo.

ANSWER.—Burow's solution is official in the latest (fourth edition) of the National Formulary under the title "Liquor Alumini Acetatis." It is prepared by treating 150 gm. of lead acetate with 85 gm. of aluminum sulphate made up to 1,000 c.c. If the solution is properly made according to the directions given, it should contain very little lead, if any at all; the lead sulphate formed is practically insoluble, and a calculated excess of aluminum sulphate is employed in order to insure the conversion of all of the lead to lead sulphate. As the solution is now official, there should be but slight danger from lead poisoning following its use. The virtue of the aluminum acetate treatment does not reside wholly in the liberated acetic acid. If this were true, acetic acid alone would be as efficacious as the liquor alumini acetatis, which is not, however, the case.

DIGITALIN

To the Editor:—About six years ago an article in THE JOURNAL compared pure digitalin given hypodermically with the physiologic effect of the tincture. As I recollect, the article stated that $\frac{1}{2}$ grain digitalin was equivalent to about 10 minims of the tincture. Will you tell me what is considered the proper adult dose of the preparation known as Digitalin, Pure German? The physicians in this part of the country consider $\frac{1}{50}$ grain a large dose, and I have been criticized for using $\frac{1}{10}$ grain, a dose which I have used for five years, always with satisfactory results.

E. C. DAY, M.D., Laguna Beach, Calif.

ANSWER.—Digitalin German is described in New and Non-official Remedies, 1916, page 99. It says: "What has been said of the uncertainty of dosage of true digitalin must obviously apply with even greater force to 'German' digitalin, since the activity of the latter probably depends mainly on the contained true digitalin. The dose of 'German' digitalin was formerly given as 0.001 to 0.002 gm. ($\frac{1}{60}$ to $\frac{1}{30}$ grain) maximum dose 0.004 gm. ($\frac{1}{16}$ grain); with a maximum per day of 0.02 gm. ($\frac{1}{5}$ grain). Many clinicians, however, have used very much larger doses without ill effects, and the relative activity of certain specimens of the 'German' digitalin and other members of the group would seem to indicate that such specimens of 'German' digitalin might be given safely in daily doses of a grain or possibly more."

Inspiration of the Teacher.—Immortality is a theme on which human thought has exhausted itself without absolute and universal conviction because it takes the human mind beyond its depth at the first long stride forward. But there is one phase of immortality about which we can all be assured. The mind of today can, through the minds of tomorrow, project itself into immortality. Ideas and ideals travel through generations of minds to eternity. It will ever be the inspiration of the teacher that to him in particular comes this great opportunity to be a part of the future, by molding and guiding and training the minds of the present.—R. L. Wilbur.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARIZONA: Phoenix, Oct. 3-4. Sec., Dr. John Wix Thomas, 306 Goodrich Bldg., Phoenix.
CALIFORNIA: Los Angeles, Oct. 3. Sec., Dr. Charles B. Pinkham, Room 527 Forum Bldg., Sacramento.
COLORADO: Denver, Oct. 3. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.
DISTRICT OF COLUMBIA: Oct. 10-12. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.
FLORIDA: Homeopathic, Jacksonville, Nov. 10. Sec., Dr. J. B. Griffin, St. Augustine.
GEORGIA: Atlanta, Oct. 10-12. Sec., Dr. C. T. Nolan, Marietta.
IDAHO: Wallace, Oct. 3. Sec., Dr. Charles A. Dettman, Burke.
ILLINOIS: Chicago, Oct. 10-12. Sec., Dr. C. St. Clair Drake, Springfield.
IOWA: Des Moines, Oct. 17-19. Sec., Dr. Guilford H. Sumner, State House, Des Moines.
KANSAS: Topeka, Oct. 10-12. Sec., Dr. H. A. Dykes, Lebanon.
MICHIGAN: Lansing, Oct. 10-12. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.
MINNESOTA: Minneapolis, Oct. 3-6. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.
MISSISSIPPI: Jackson, Oct. 24-25. Sec., Dr. J. D. Gilleylen, Jackson.
MONTANA: Helena, Oct. 3. Sec., Dr. William C. Riddell, Helena.
NEVADA: Carson City, Nov. 6. Sec., Dr. S. L. Lee, Carson City.
NEW JERSEY: Trenton, Oct. 17-18. Sec., Dr. Alexander MacAlister, 438 E. State St., Trenton.
NEW MEXICO: Santa Fé, Oct. 9. Sec., Dr. W. E. Kaser, East Las Vegas.
OKLAHOMA: Oklahoma City, Oct. 10-11. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.
PORTO RICO: San Juan, Oct. 3. Sec., Dr. Quevedo Baez, San Juan.
RHODE ISLAND: Providence, Oct. 5-6. Sec., Dr. Gardner T. Swarts, 313, State House, Providence.
WYOMING: Laramie, Oct. 3-5. Sec., Dr. H. E. McCollum, Laramie.

Minnesota April Report

Dr. Thomas S. McDavitt, secretary of the Minnesota State Board of Medical Examiners, reports the oral, practical and written examination held at Minneapolis, April 4-6, 1916. The total number of subjects examined in was 16; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 3, all of whom passed. Sixteen candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Rush Medical College.....	(1915)	88.7;	87
Woman's Medical College of Pennsylvania.....	(1909)		92

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Columbian University	(1903)		Dist. Colum.
Chicago College of Medicine and Surgery.....	(1914)		Iowa
Hahnemann Medical College and Hospital, Chicago..	(1910)		Illinois
Illinois Medical College.....	(1902)		Texas
Northwestern University	(1911)		Illinois
Rush Medical College.....	(1902)		Illinois
University of Illinois.....	(1914)		Illinois
State University of Iowa, College of Medicine.....	(1908)		Iowa
University of Michigan Medical School.....	(1904)		Iowa
St. Louis College of Physicians and Surgeons.....	(1902)		Wisconsin
John A. Creighton Medical College.....	(1915)		Nebraska
University of Nebraska.....	(1911)		Nebraska
Medico-Chirurgical College of Philadelphia.....	(1898)		New Jersey
University of Virginia.....	(1906)		Virginia
Queen's University	(1898)		N. Dakota
Western University	(1905)		New Jersey

Mississippi June Report

Dr. J. D. Gilleylen, secretary of the Mississippi State Board of Health, reports the written examination held at Jackson, June 20-21, 1916. The total number of subjects examined in was 8; total number of questions asked, 64; percentage required to pass, 75. The total number of candidates examined was 55, of whom 30 passed, including 1 osteopath, and 25 failed. Three candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Atlanta Medical College.....	(1916)		77.5
Loyola University	(1916)		76
University of Illinois.....	(1916)		80
University of Louisville.....	(1916)		83
Tulane University of Louisiana.....	(1916)		76, 78.7
Jefferson Medical College.....	(1916)		77.5
University of Nashville.....	(1906)		80
University of Tennessee.....	(1916)	75, 75, 75, 75, 75.5, 76,	77, 78,
		78, 79, 80.5, 81, 82, 85, 88.6	

Vanderbilt University.....	(1916)	79, 82.6, 84.5, 85.5
University of Virginia.....	(1916)	81, 83

College	FAILED	Year Grad.	Reciprocity with
Birmingham Medical College.....	(1915)	54, 70	
University of Alabama.....	(1907)	69	
College of Physicians and Surgeons, Little Rock.....	(1910)	29	
Howard University	(1914)	51	
Atlanta Medical College.....	(1916)	63, 70	
University of Louisville.....	(1916)	70	
Tulane University of Louisiana.....	(1915)	68.5; (1916) 63, 69	
Mississippi Medical College.....	(1911)	36	
Lincoln Memorial University.....	(1916)	71	
Meharry Med. Coll....	(1912) 35; (1913) 55; (1915) 71; (1916)	64, 68	
University of Tennessee.....	(1916)	44, 62.8, 64, 64.5, 65, 68, 70	

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Bennett Medical College.....	(1911)		Kansas
Chicago Medical College.....	(1882)		Wisconsin
National University of Arts and Sciences.....	(1914)		Missouri

Rhode Island July Report

Dr. Gardner T. Swarts, secretary of the Rhode Island State Board of Health, reports the practical and written examination held at Providence, July 6-7, 1916. The total number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 80. The total number of candidates examined was 13, of whom 10 passed and 3 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Yale University	(1914)		86.3
Harvard University	(1916)	87.7, 94.7	
Tufts College Medical School.....	(1915) 83.2, 84.5; (1916)		83.8,
	86.7, 87.2		
Jefferson Medical College.....	(1916)		81.1
University of Vermont.....	(1906)		84

College	FAILED	Year Grad.	Per Cent.
College of Physicians and Surgeons, Baltimore.....	(1910)		74.2
Tufts College Medical School.....	(1915)	64.2, 68.7	

Book Notices

NURSING PROBLEMS AND OBLIGATIONS. By Sara E. Parsons, R.N., Superintendent of the Training School for Nurses, Massachusetts General Hospital, Boston. Cloth. Price, \$1 net. Pp. 147. Boston: Whitcomb & Barrows, 1916.

In an interesting introduction, Dr. Richard C. Cabot states that he is in complete agreement with the principles set forth by Miss Parsons in this book. He agrees also with her opinions as to the standards of training schools for nurses. He says: "No one any longer supposes that a medical school can be both reputable and self-supporting. To maintain proper standards, it must be, and always is, endowed." He believes the same principles apply to nurses' training schools. The book represents a series of talks given to nurses in the Massachusetts General Hospital. Special sections are devoted to ethics, qualifications for executive work, specialized nursing, graduate nursing and miscellaneous topics. The book is in simple language, and is replete with anecdote and the record of personal experience. Many nurses' training schools would profit if the principles outlined in this text were incorporated into a course of ethics required of every student.

THE EXPECTANT MOTHER AND HER CHILD. CONTAINING THE ESSENTIAL THINGS THAT EVERY MOTHER AND WOMAN SHOULD KNOW. By Margaret J. Modeland, R.N. Introduction by Harold A. Miller, M.D., Obstetrician at the Allegheny General Hospital. Leather. Price, \$1. Pp. 113, with illustrations. Philadelphia: John C. Winston Company, 1916.

The author presents, in an artistically prepared little book, the usual series of warnings and suggestions to expectant mothers. The book in general follows the lines usually found in books on the same subject. Some of the suggestions offered are, to put it mildly, not in accord with modern obstetrics and pediatrics: for example, that each baby receive an oil rub daily during the first six months of life; that the baby's back be rubbed to make it feel good; that quinin and castor oil be not taken, as they will produce abortion. So many books on this subject are now available that the market appears to be rather oversupplied. Perhaps it is now time to begin to eliminate books that are unfit, and to encourage those that merit approval.

Miscellany

AN ANATOMIC PRAYER

A Hymn Based on an Ancient Fragment of Osteology

C. D. SPIVAK, M.D.
DENVER

The following piyyut¹ is recited in Hebrew by all orthodox Jews at the Musaf² prayer on the second day of Rosh Hashanah, the Jewish religious New Year.³ The following is a free translation into English:

THE ANATOMIC PRAYER

"O deign to hear the voice of those who glorify thee with all their members, according to the number of the two hundred and forty-eight affirmative precepts. In this month, they blow thirty sounds (on the *Shofar*, ramshorn) according to the thirty members of the soles of their feet; the additional offerings of the day are ten, according to the ten in their ankles; they approach the altar twice, according to their two legs; five men are called to read the law, according to the five joints in their knees; they observe the appointed time to sound the cornet, on the first day of the month according to the one member in their thigh; they sound the horn thrice, according to the three in their hips; lo, with the additional offering of the New Moon, they are eleven, according to their eleven ribs; they pour out the supplication with nine blessings, according to the members in their arms, and which contain thirty verses, according to the thirty in the palms of their hands; they daily repeat the prayer of eighteen blessings, according to the eighteen vertebrae in their spine; at the offering of the continual sacrifice, they sound nine times, according to the nine members in their head; in the two orisons they kneel eight times, according to the eight vertebrae of their neck; he hath ordained the six orders of the Mishnah, according to the six members in the breastbone; their statutes and laws are contained in five books, according to the five perforations; the reins, inward parts, soul, breath, spirit, skin, flesh, sinews and their bones,

"These shall all lift up the eye, and pierce the ear, and open the mouth, that with the tongue and speech of their lips, and from the sole of their foot to their head, may show the particulars of their good acts; so that when the sound of the *Shofar* ascends, their adversaries may be ashamed; that they may be justified on the day of judgment, and hear the second time from their God."

COMMENT

That one who is not familiar with Jewish traditions may be enabled to understand the rationale of such a prayer, and the causes which induced the author to blend anatomy, the "ungodly science," with a hallelujah, it is necessary to become familiar with the following historical facts which will serve as a background. It is to be borne in mind that all the laws and precepts laid down by Moses in the Pentateuch for the guidance of the Jews are called commandments, *Mitzvoth*.⁴ The number of such commandments⁵ is 613. The commandments are divided into prohibitive commandments, *Mitzvoth lo taaseh*, whose number is 365, and the mandatory commandments, *Mitzvoth asch*, whose number is 248. Rabbi Simlai, a Palestinian haggadist⁶ says: "Six hundred and thirteen commandments were revealed to Moses, 365 being prohibitive (negative), equal in number to the days of the year, and 248 being mandatory (affirmative), corresponding in number to the bones of the human body.⁷ The enumeration and the division into prohibitive and mandatory commandments was undertaken by many Biblical and Talmudic scholars, and gave rise to endless disputes as to which of the

passages in the Bible are to be recorded as commandments, and whether they belong to the prohibitive or to the mandatory group." While the expounders and commentators were busily engaged in settling this controversy, each compiling a list of the commandments which differed from all the others, the stylists, grammarians and poets bestirred themselves and composed hymns whose central theme was the enumeration of the 613 commandments, all of which are known under the term *Azharoth*.⁸ There is no doubt of their antiquity, as they are mentioned by the well known Gaon Saadia⁹ and by the Bible commentator and grammarian Abraham ibn Ezra,¹⁰ who was conversant with the medical writings of his day, and who speaks in disparaging terms of their blunders in their enumeration, using a medical simile, "that the authors of *Azharoth* in general resemble a man who counts the various medicinal herbs mentioned in medical works without knowing anything of their virtues."¹² But none could accuse the author of the foregoing anatomic piyyut, Rabbi Eleazar Kalir,¹³ of ignorance. He was one of the greatest hymn writers the Jews ever had, and the structure of his hymns remained a model which was followed for centuries after him, and indeed constituted what is known as the Kaliric school.

"ALL MY BONES SHALL SAY, 'LORD, WHO IS
LIKE UNTO THEE?'"

Now, the Jewish religion, perhaps more than all others, abhors lip-prayer. The most sacred prayer of the Jews, a prayer which is recited three times a day and is on the lips of every dying Jew, is the Shema¹⁴ which includes the following verses: "And thou shalt love the Lord thy God with all thine heart, with all thy soul and with all thy might." Prayer is considered an expression of love for the Deity. Hence, according to the Talmudist,¹⁵ prayers must be recited in the manner of David the psalmist: "All my bones shall say, Lord, who is like unto thee?"¹⁶ "David said, I praise thee with all the members of my body by performing with them your commandments. On my head I wear phylacteries at prayer.¹⁷ I do not round the corners of my head.¹⁸ On my neck I wear the fringes at which I look with my eyes.¹⁹ My mouth speaketh the praise of the Lord.²⁰ My lips shall utter praise.²¹ I do not round the corners of my beard.²² With my tongue I speak thy righteousness.²³ Thy words have I hid in my heart.²⁴ With my right hand I copy the law, and on my left hand I bind the phylacteries.²⁵ I bless the Lord, my strength, who teacheth my hands to war.²⁶ My feet stand in an even place.²⁷ My membrum virile is circumcised.²⁸ With my nails I perform *Periah*,²⁹ my reins also instruct me in the law.³⁰ Thy law is within my entrails.³¹ All that is within me blesses the Lord,³² and, finally, all my bones shall say, 'Lord, who is like unto thee?'"³³

The Talmudists with their heightened imagination, allowed themselves the poetic license of giving the words "my bones" the interpretation of a figure of speech, and therefore quoted many passages from psalms wherein parts of the body praise the Lord. But no bones are mentioned in the Psalms. In David's day the majority of the bones of the human body were an unknown quantity. There are mentioned in the

8. The most distinguished compilers of the 316 commandments were: Kahira (ninth century) Saadiah (892-942), Gobirol (1021-1058), Maïmonides (1125-1204) and Jacob of Coucy (thirteenth century). See Schechter, S.: Studies in Judaism, 1896, p. 248.

9. Azharoth, the name of a hymn of great antiquity which begins with the word Azharoth, the theme of which is the enumeration of the 613 commandments in rhymes. This hymn gave rise to hundreds of others which are known under the general name Azharoth.

10. Gaon Saadia, the founder of scientific Judaism, lived from 892 to 942.

11. Abraham ibn Ezra lived from 1092 to 1167.

12. Yesod Moreh, Gate 2, end.

13. Rabbi Eleazar Kalir flourished during the eighth century. Zunz: Literaturgeschichte der Synagogale Poesie, Berlin, 1865. Landshuth: Amude ha-Abodah, Berlin, 1875, p. 32.

14. "Hear, O Israel, the Lord our God is one God." Deut. 2, 5.

15. Yalkut Shimoni 733. 16. Ps. 35, 10. 17. Ex. 13, 15. 18. Lev. 19, 27. 19. Num. 15, 38. 20. Ps. 165, 11. 21. Ps. 119, 171. 22. Lev. 19, 27. 23. Ps. 35, 28. 24. Ps. 119, 11. 25. Ps. 144, 11. 26. Ps. 26, 11. 27. Ex. 12, 48.

28. In the operation of circumcision, the operator, the mohel, after the excision has been completed, seizes the inner lining of the prepuce with thumb nail and index finger of each hand and tears it so that he can roll it fully back over the glans and expose the latter completely.

29. Ps. 17, 7. 30. Ps. 40, 9. 31. Ps. 103, 1.

1. Piyyut (plural, Piyyutim), hymn added to the older liturgy of the Jews that developed during the Talmudic era and up to the seventh century. The piyyutim are recited on the holy days. The word piyyut is derived from the Greek term for poetry.

2. Musaf, additional prayer recited on holy days after the regular daily morning prayer, Shacharit.

3. The first day of the Jewish month of Tishrei. It falls late in September or early in October.

4. The ten commandments are called by the Jews the ten words, the same as in Greek — decalog.

5. The Jews call the 613 commandments collectively by the word Taryag mitzvoth coined from the numerical value of the letters: T = 400, R = 200, Y = 10, G = 3.

6. Haggadah, the nonlegal part of the old rabbinic literature, contains homilies, narratives, stories, legends and references to or short essays on medicine, astrology, magic, theosophy, mathematics, etc.

7. Makkoth 23b.

Bible the names of a few bones, but it is uncertain whether they refer to the bone itself or to the outer form of the body which includes the bone. The word arm, forearm, shoulder, knee, elbow, hip, etc., may mean the bone or the part of the body including the bone and the soft parts.

THE ANCIENT FRAGMENT OF OSTEOLOGY

Rabbi Kalir, in composing an *Azhara*, a hymn on the 613 commandments, treated the subject from a poetic as well as from a scientific point of view. His poetry he derived from the sweet singer David: "All my bones shall say 'Lord, who is like unto thee?'"³² His science he derived from the *Mishnah*,³³ in which is preserved an osteologic fragment which reads as follows:

Man has 248 bones divided as follows:

In the foot, <i>pissath ha-regel</i>	30
In the ankle, <i>kursal</i>	10
In the shin bone, <i>shok</i>	2
In knee joint, <i>arkubba</i>	5
In the thigh, <i>yarek</i>	1
In the hip bone, <i>kotlilh</i>	3
Ribs, <i>tzlaoth</i>	11
In the hand <i>pissath-ha-yad</i>	30
In the forearm, <i>kaneh</i>	2
In the elbow joint, <i>marpek</i>	2
In the arm, <i>zeroa</i>	1
In the shoulder, <i>kathef</i>	4
Number of bones on each side.....	101
Or on both sides.....	202
Vertebrae, <i>chulyoth</i>	18
In the head, <i>rosh</i>	9
In the neck, <i>tzavor</i>	8
In the breast bone, <i>mafteach ha-leb</i>	6
Around the openings (anus) <i>nekabbim</i>	6

Total 248³³

There are a number of difficulties which we encounter. We are uncertain as to whether our translation of the osteologic fragment into modern nomenclature really corresponds to the nomenclature of those days. But no matter what the meaning of each word is, it is evident that the number of bones does not correspond with the modern findings. It would be a miracle if it were otherwise. When we examine the osteologic fragments in the works of Hippocrates³⁴ we find that the cranium is composed of only one bone, that there are only seven ribs and that the hand has many joints. From another fragment of Hippocrates³⁵ we learn that the hand has 27 bones, the foot 24, the neck 7, the hip 5, the back 20, the head, together with the eyebones, 8. The number of all the bones is 91, and with the nails 111. We see that Hippocrates recognized only half the number of the bones. Galen speaks guardedly of the number of bones and commits himself to an indefinite statement: "There are more than 200 bones in the human skeleton."³⁶

THE INCENTIVE FOR THE STUDY OF ANATOMY BY THE HEBREWS

The discrepancy in the enumeration of the bones by the Talmudists may perhaps be explained by the method they used in the study of anatomy. They did not study anatomy as the foundation of the medical sciences.³⁷ All their scientific studies had as an incentive some religious precept or rite. The following is the origin of the anatomic studies of the ancient Hebrews:

According to the Mosaic law,³⁸ any one who comes in contact with a dead body or any part thereof or remains in a tent wherein a corpse is found is considered *tame*, infected, unclean, for seven days. The *Mishnah* teaches that this tent-infection, *Tumath-ohel*, takes place in the presence either of a complete corpse, or of an anatomic unit, an *eber*, member, that is, a bone covered with its soft parts. A bone stripped of its soft parts does not infect. Should, however, a collection of such bones by either their bulk or number constitute more than half of the skeleton, *sheled*, their infecting power

is equal to that of a complete corpse. This law made it imperative that the number of bones of the human body be ascertained. The idea that there exists a complete analogy between the bodies of animals and men was generally discouraged by the Talmudists,³⁹ although in some cases the analogy was relied on.⁴⁰

Direct observations, therefore, on the human body were resorted to, as, for instance, on the bodies of those killed on the battle field, on the wounded, the maimed, the drowned and on the bodies of those condemned to die. The Talmud relates the story, in the name of Mar Samuel,⁴¹ that the disciples of Rabbi Ishmael⁴² obtained the body of a harlot who had been executed, and having subjected it to prolonged boiling, *Shelikah*, and then counted the bones and found their number to be 252.⁴³ Neither of the numbers given agree with modern anatomic knowledge. It is probable that the author of the *Mishnah*, which gives the number of bones as 248, derived his knowledge from an investigation performed in a similar manner. The explanation of the discrepancy is probably to be found in the youthful age of the subject used, many of the bones not having been completely ossified. The prolonged boiling, on the other hand, caused the bones to be separated into their original component parts, so that the disciples of Rabbi Ishmael counted the epiphysis and diaphysis⁴⁴ as separate bones.

I venture to assert that there is not to be found in the liturgy of any religion, Christian or pagan, a prayer or hymn which, like this anatomic piyyut of Rabbi Kalir, represents undoubtedly a page of osteology from a chapter of anatomy which was taught 2,000 years ago, and in which the *leitmotif* is that "All my bones shall say, 'Lord, who is like unto thee?'"

Quacks of Today and Yesterday

As THE JOURNAL has repeatedly stated, the medical quack and the "patent medicine" vendor are ever ready to reap the profits of public fear in time of epidemic disease. The methods of the quack during an epidemic are described by Graham Everitt, in his book, *Doctors and Doctors*, London, 1888. He says:

"Of the quacks of the plague-year 1665, Defoe gives us a very vivid description, derived undoubtedly from the recollections of his father, and of those of his friends who remembered the visitation. He tells us how the posts of houses and the corners of streets were plastered with their bills announcing, 'Infallible Preventive Pills against the plague; never-failing preservatives against the Infection; Sovereign Cordials against the corruption of the Air . . .; Anti-pestilential Pills . . .; the Royal antidote against all kinds of infection,' and so on. Then he gives us the announcements of the illustrious professors themselves, 'the eminent High Dutch Physician,' from Holland; the 'Italian Gentlewoman,' who gave 'her advice only to the female sex'; and the 'Experienced Physician,' who had devoted himself to the study of what he is pleased to term 'the doctrine of antidotes.' All these ignorant and impudent swindlers professed to have had special experience in cases of plague infection in foreign countries. One fellow 'would pawn his life' (worthless as it was), that if the public took his 'preparation,' 'they should never have the plague, no, though they lived in the house with people that were infected.' Every one of these rascals soon disappeared; some supposed 'they were all swept away in the infection to a man'; but Defoe imagines, with far greater probability, that 'they fled into the country, and tried their practices upon the people there,' who lived in daily apprehension of the infection.

39. Tosaf. Chullin 42b, Sebaim 116a.

40. Sanhedrin 78a.

41. Mar Samuel, Babylonian amora, teacher of the law, judge, astronomer and physician. Lived 165-257. Wunderbar in his monograph, *Biblisch, Talmudische Medicin*, Riga and Leipzig, 1850-1859, gives (in restes Heft p. 28) a list of the medical sayings and opinions of Mar Samuel.

42. Rabbi Ishmael, tanna of the first and second centuries.

43. Berachoth, 45a.

44. The following authors discuss the subject: Kazenelson, L.: *Anatomiya normalnaya i patologicheskaya*, St. Petersburg, 1889 (Russian). Rabinowicz, Israel Michel: *La médecine du Talmud*, Paris, 1880. Kottelman, L.: *Die Ophthalmologie bei den alten Hebräern*, Hamburg and Leipzig, 1910. Preuss, Julius: *Biblisch-talmudische Medizin*, Berlin, 1911.

32. Six treatises dating from the first century B. C. which are used as a text for all Talmudic discussions and commentaries.

33. Ohlloth 1. 8.

34. Hippocrates: *De Locis in Homine*.

35. Hippocrates: *De Ossium Natura*.

36. Galen: *Deusu partium*. Liber iii.

37. See C. D. Spivak in Jewish Encyclopedia, article *Medicine in the Bible and Talmud*, viii, 409.

38. Num. 19. 14.

Medicolegal

Grounds for Refusals to Carry Out Contracts to Marry

(*In re Oldfield's Estate* (Ia.), 156 N. W. R. 977)

The Supreme Court of Iowa holds that where a man on learning that he has pernicious anemia refuses to carry out an existing contract to marry, no damages can be recovered therefor. The court says that it takes from certain authorities, based as it thinks on sound reasoning: First. That one may repudiate an agreement to marry when, subsequent to the making of the contract, he becomes afflicted with a loathsome disease which, on the consummation of the marriage, may be communicated to the spouse and to the offspring born of such marriage. Second. When, after the making of the contract to marry, he becomes afflicted with a fatal and incurable malady, and the consummation of the marriage would hasten his death, he is not bound to perform by consummating the marriage, and therefore is not liable in damages for such failure. Or, in other words, that there is implied in every contract to marry that the parties will not endanger life or health in the consummation of the marriage, and that where illness or disease comes on one after making the contract to marry, such as would render marriage dangerous to his life, a breach of the contract, based on such unavoidable and such unanticipated condition, is excusable. The court does not mean by this that the danger should be simply problematic, or a possible contingency—one that may or may not be a resultant consequence of the act of consummating the marriage—but one in which the evidence renders reasonably certain the inevitable consequence of such an act. Where the malady is of such a fatal character that he cannot enter into the marriage relation and receive any of the benefits which grow out of, and are involved in, the relationship established by the consummation of the marriage, he is excused. Third. That where one is stricken, before the time arrives for the consummation of the marriage, with a fatal malady, and has but a few days or weeks or months to live, and the evidence makes this reasonably certain, he is excused from the consummation of the marriage, and, being excused, his estate, on his death, is not liable in damages for such failure. These are implied conditions in the agreement to marry, and the agreement to marry is voided by their happening; and, the agreement being void, no liability for damages results from the failure to perform. The first proposition rests on public policy, as well as on the conditions herein suggested. The consideration for every agreement to marry is found in the consummation of that agreement by marriage. Each has bargained to give and receive, on that day, all that is implied in the marriage relationship—all that grows out of the marriage relationship. If, by the act of God, before the time fixed for the consummation of the marriage, either party is rendered incapable of giving that which the contract calls for, the other party may repudiate the agreement to marry because of the failure, through the act of God, of the very consideration on which the promise rests. It may be that the very condition that renders him incapable of giving, renders him wholly incapable of receiving any of the consideration which, under the consummated contract, he is entitled to. The giving and receiving are mutual obligations. One is a condition for the other. If the woman may repudiate the contract because the man has become, by the act of God, in such a condition physically as to render him incapable of giving to her all that, under the consummated contract, she is entitled to, then the man may, the contract being mutual, refuse to perform when, by the act of God, he has become wholly incapable of receiving any of the consideration which the consummated contract entitles him to. One cannot give to another that which the other is wholly incapable of receiving. This court would hold, rather, that the consideration for the original agreement to marry has been destroyed by the act of God, and that, what is claimed to be a repudiation of the contract is simply a communication to the opposite party of the happening of an implied condition in the original contract which rendered the contract incapable of performance.

Evidence of Use of Mails to Defraud

(*Samuels vs. United States* (U. S.), 232 Fed. R. 536)

The United States Circuit Court of Appeals, Eighth Circuit, affirms a judgment of conviction of the defendant, who was charged with having used the mails to promote a scheme to defraud, in connection with which he advertised himself as "Professor H. Samuels," and the remedy exploited as "Prof. H. Samuels' Systematic Remedy." The court says, among other things, that there was no error in the admission in evidence of the advertisements of the defendant, published in many newspapers, paying to one advertising firm as much as \$175,000 in one year for this advertising, nor in the admission of letters from various parties claiming to suffer from many different ailments—one from a broken nose, another from rupture, another from syphilis, one from goiter, one from a bullet wound in the thigh—and asking whether or not the remedy would cure them. To these letters he replied that from the testimonials in his possession other persons had been cured from such ailments by the use of his medicine. The medicine, as he described it in his circulars, was a clear liquid, and to be administered through the eyes, and would serve as a natural nerve vitalizer. In his replies to these letters, he explained that "the optic nerve is the only large nerve that comes to the surface, and the use of this medicine will affect every part of the body, thus causing the different organs of the body to perform their proper functions." It was urged that in the letters and advertisements the defendant claimed only what had been said or written to him by those who had used his preparation, and that therefore these representations were not his, but those of his patients. But the gist of the offense was, not what others thought, but whether he knew them to be false. Sending them out with knowledge that they were false, he made them his own. The fact that these letters, circulars and advertisements were not set out in the indictment did not prevent their admissibility, in a case of this nature. As the fraudulent intent was one of the material allegations in the indictment, evidence of other and similar ventures by the accused were properly admissible as bearing on the question of intent. The evidence was also admissible that the defendant was not a great scientist, a man of scientific education, and a man of letters and learning, as claimed in his advertisements, and which was charged in the indictment to be untrue. On the other hand, it was not error to refuse to admit in evidence a copy of the defendant's publication on the eye. At best it was merely a self-serving statement. If he wanted to prove that he was a great scientist by reason of having written and published that book, he should have introduced witnesses who were qualified to testify on that point. The jury was not the proper body to examine the book and determine from it whether he was a great scientist or not. Besides, no foundation had been laid to prove the real author of the book. He may have employed a scientist to write it and published it as his own work. The extravagant claims made for the preparation to cure almost all the diseases known, many of them of a nature which could be cured only by surgery; the undisputed fact that the preparation contained nothing but ordinary hydrant water of the city of Wichita, where it was prepared, with a little salt and sugar in it, the minute trace of boracic acid found in it being indigenous to the hydrant water of that city; the high price charged for it, at first \$5 a bottle, afterward \$3 a bottle, when the cost of its preparation was trifling; the testimony of physicians that it had no therapeutic value whatever—all these proofs certainly justified the submission of the case to the jury to determine whether the so-called medicine was merely a scheme to defraud, and that the mails had been used for the purpose of carrying it out. One of the important questions in issue was what the defendant knew to be the true facts, and not what others believed. If he knew that the medicine was not a cure for the many ailments claimed for it, and in fact for none, the fact that many of those who used it believed that it had cured them would be no defense. The evidence of his patients bore on his intent, and therefore was properly admitted; but it was for the jury to determine from all the evidence what his intention was, regardless of what some or all of his patients believed.

Society Proceedings

COMING MEETINGS

Am. Assn. for the Study and Prev. of Inf. Mort., Milwaukee, Oct. 19-21.
American Association of Railway Surgeons, Chicago, Oct. 17-19.
American Public Health Association, Cincinnati, Oct. 24-27.
Clinical Congress of Surgeons, Philadelphia, Oct. 23-28.
Delaware State Medical Society, Milford, Oct. 9-10.
Idaho State Medical Association, Twin Falls, Oct. 5-6.
Kentucky State Medical Association, Hopkinsville, Oct. 24-27.
Medical Association of the Southwest, Ft. Smith, Ark., Oct. 2-4.
Minnesota State Medical Association, Minneapolis, Oct. 11-13.
Mississippi Valley Medical Association, Indianapolis, Oct. 10-12.
Nevada State Medical Association, Reno, Oct. 10-12.
New England Surgical Society, Boston, Oct. 5-7.
New Mexico Medical Society, Albuquerque, Oct. 11-13.
Southern Medical Association, Atlanta, Nov. 13-16.
Vermont State Medical Society, St. Johnsbury, Oct. 12-13.
Virginia State Medical Society, Norfolk, Oct. 24-27.
Wisconsin State Medical Society, Madison, Oct. 4-6.

COLORADO STATE MEDICAL SOCIETY

Forty-Sixth Annual Session, held at Glenwood Springs, Sept. 5-7, 1916

(Continued from page 975)

President's Address: Abdominal Pain

DR. JOHN R. ESPEY, Trinidad: Each individual at some time experiences pain. It is the general experience of any lapse of normal health and is nearly always present in disease. I believe that while pain persists nature still hopes for a cure either spontaneously or by some action which she is trying to suggest. Peritoneal pain requiring operation and in which operation offers a reasonable hope of effecting a cure continues to be more or less agonizing; but how ominous a portent is it when that pain suddenly ceases without a removal of the cause. While there may be exceptions, the sudden stopping of pain in the presence of peritonitis is a precursor of dissolution. In the present era, any investigator noting a gastric pain would look carefully into the right iliac fossa in his search for a cause. He would also remember that a diseased gallbladder more frequently gives gastric symptoms than those strictly symptomatic of its own diseases. In the upper abdomen the palm of the hand will cover an area containing the pyloric region, the duodenum, the head of the pancreas, the gallbladder and common duct and the hilum of the right kidney. These organs are the seats of diseases that give rise to pain as a most prominent symptom. It is largely by the reflections and radiations of pain that we are given a clue to the organ affected. When pain and tenderness are observed in the abdomen below the umbilicus, we must consider the possibility of enteroptosis and that the pain may come from organs normally situated above the kidney, stomach or gallbladder; also that pelvic diseases of the urinary bladder, ovaries and extra-uterine pregnancy may develop upward. In cases of bilateral pain or tenderness in this region, ovarian and parametric affections should be regarded in women and also conditions about the neighboring hernial openings.

Diagnosis of Menstrual Reflex Through the Tubes

DR. J. N. HALL, Denver: A girl of 15 was admitted to St. Joseph's Hospital moribund, and seen at once by Dr. Leonard Freeman and myself. She had never menstruated. She was in collapse, with a slightly distended abdomen, with more or less uniform tenderness and rigidity, and a small amount of fluid in the abdomen. There was a history of cramping pain and vomiting, a rise of temperature to about 100 F., a very rapid and feeble pulse, pallor and collapse, with death after about forty-eight hours. The urine was not obtained. The chest was negative. The diffuseness of the abdominal signs, the lack of definite tenderness at the site of the appendix, the absence of a history of digestive symptoms, and the evidence of internal hemorrhage as shown by pallor, collapse, rapid, feeble, running pulse, and fluid in the abdomen led me to suggest to Dr. Freeman that it might well be a case of reflux from the fallopian tube in an attempt at menstruation, with obstruction which prevented

the normal flow. At the postmortem examination we found the abdomen half filled with tarry blood, and the leaking tip of the tube was easily identified. The hymen was not imperforate, as we anticipated, but an obstructive closure existed high in the vagina. The upper vagina, uterus and tubes were distended with blood of the same character as that in the abdomen. We were unable to say whether the obstruction was developmental or cicatricial in character, but in the absence of any history I believe it to have been of the former nature. In this case the infectious element predominated over the hemorrhagic one in the symptomatology.

Congenital Pyloric Stenosis

DR. JOHN F. BINNIE, Kansas City, Mo.: The great symptoms of congenital hypertrophic pyloric stenosis are: 1. Explosive, expulsive vomiting with resultant emaciation. 2. Visible gastric peristalsis. 3. Persistent constipation. 4. Oliguria. 5. Tumor, not always palpable. Treatment by means of properly regulated diet and perhaps of antispasmodics usually promptly leads to disappearance of the symptoms. In doubtful cases roentgenology is valuable in diagnosis. Maylard, William Russell and others describe congenital pyloric stenosis in adults. Such stenoses are ringlike, uniform narrowings of the pylorus without any evidence of present or past inflammation and are discovered during exploratory gastrotomy for obscure gastric symptoms. If these surgeons are correct in their findings and interpretations, such stenoses are probably the sequellae of cured or unrecognized congenital hypertrophies.

Only in doubtful cases is it justifiable to attempt a cure by medicinal and dietetic means. Conscientious lavage may keep the stomach so empty that vomiting and peristalsis may cease to be symptoms and yet the patient be starving.

Gastro-enterostomy has been the favorite operation with most surgeons and has given excellent results. It has the advantage that its steps are much more familiar to the general surgeon than are those of the much more complicated classical pyloroplasty. As one eminent and experienced surgeon remarked to the writer, in gastro-enterostomy it is much easier to correct any mistakes one may make than in the other operation. Anterior gastro-enterostomy is supposed to be easier than posterior but has the evident disadvantage of a long loop of jejunum above the anastomosis and hence there is danger of obstruction by kinking due to the weight of biliary and pancreatic secretions, etc., in this loop pulling it down. This is the true cause of the so-called vicious circle. Posterior gastro-enterostomy, if performed by the no-loop method, has no such disadvantage and is not a difficult operation.

Botulism

DR. GEORGE H. CURFMAN, Salida: Up to recent times the reports of outbreaks of botulism were confined to meat as a source of poisoning. For a century it has been understood that improper pickling or canning of meats was essential for the production of the disease. In the Darmstadt outbreak in 1904, in which the poisoning occurred in a cooking school, twenty-one became ill after eating bean salad. Of this number eleven died. Landmann believed that the *Bacillus botulinus* had been carried into the can along with some little piece of leftover meat, which might readily be found in any kitchen. It was also suggested that the spores of the organism was carried in on the beans from the fields. In this country all or nearly all the reported outbreaks have been due to canned goods. All of the reported outbreaks have occurred on the Pacific Coast, with the exception of one in Boston, in which the source of poisoning was thought to be minced chicken.

Meats, especially liable to botulinus infection, such as sausage, salt pork and preserved meats, should never be eaten uncooked. Meats presenting a rancid butyric acid-like odor should be destroyed. The brine used in corning meats should contain at least 10 per cent. of salt, as the organism cannot develop in such a solution. Particular attention should be paid to sausage casings, to see that they are free from fecal masses and that they have been carefully cleaned with some antiseptic solution prior to use.

Cystoscopy in the Insane: a Preliminary Report

DR. PHILIP WORK, Pueblo: The physical difficulties encountered in doing cystoscopic work among the insane are not as great as among the sane. The sensibilities are not so acute and the physical malformations are little, if any, more prominent. The mental attitude of the patient must be carefully determined beforehand, for it is inadvisable to cause undue mental excitement for the sake of a physical examination unless there is urgent indication for its performance. Permanent influences are apt to be unfavorable rather than favorable. It is impossible to formulate any data on bladder capacity. There is no vesical pathology except that of the organic disease or as a result of profound mental depression and the latter only from attendant mechanical causes. Treatment of the vesical pathology has a negligible effect on the majority of psychoses.

Fasting

DR. C. D. SPIVAK, Denver: With reference to rest in bed in severe cases I follow the method of Weir Mitchell to the letter. 1. Absolute rest in bed. Sitting is not allowed under any circumstances. The bed pan is used. 2. Diet. In many severe cases of gastro-intestinal disorders the best bill of fare is abstinence. One, two or even three days' fasting will do no harm in cases of ulcer, dyspepsia, and diarrhea of all kinds and varieties. Nutritive enemas can be employed in cases in which a longer period of fasting is necessary. When food by the mouth is allowed it must be given in small quantities, no matter whether liquid or solid, and at regular intervals. 3. Poultices. The poultices take the place of splints. They may make the patient feel comfortable and keep him warm and at rest. In severe cases the poultices are applied constantly during the day for one or two weeks, in milder cases from four to eight hours daily. Although I use all the three above-mentioned measures even to this day, I have changed my opinion regarding the relative importance of each and also changed the definition of rest as applied to the treatment of gastro-intestinal disorders.

From observations made by eminent men on professional fasters, on students, soldiers, and workingmen, and from my own limited observations on patients and on myself, it was found that the process of fasting is not combined with pain or distress. During the first day or two there is a craving for food at meal time and one is haunted by the ghosts of beef-steaks and turkeys. At the end of the second day or the beginning of the third day the desire for food may be entirely absent. Eventually a normal and healthy appetite comes and then the stomach and intestines are found in a condition to do their work efficiently.

Infections of the Seminal Vesicles

DR. WILLIAM M. SPITZER, Denver: The symptoms of spermatoecystitis may be grouped under four headings—nervous, sexual, urinary and constitutional symptoms.

The nervous symptoms are melancholia, extreme mental depression and headache. In the extremely acute stage of spermatoecystitis, usually occurring between the sixteenth and twenty-fifth day of an acute gonorrhea, the onset is characterized by frequency, tenesmus, burning and terminal bleeding, all due to the posterior urethritis in part, and oftentimes by inability to urinate. This retention demands catheterization. A rectal examination now discloses, either on one side or both, a large, bulging, hot prostatic mass, heretofore diagnosed as prostatic abscess. After a few days, as a rule, this abscess ruptures into the urethra, the rectum or the skin of the perineum, in the order named as to frequency. This is not a prostatic abscess, but is always a vesicular abscess, due to the closure of the ejaculatory ducts in the presence of pus in the vesicle, and is an extremely dangerous illness, resulting on rather rare occasions in death from general peritonitis, or from general sepsis.

The constitutional symptoms, if I may so term them, are endocarditis, myocarditis, myositis in various locations and so-called gonorrheal rheumatism or gonorrheal arthritis.

Many of these cases go on to resolution automatically. Of those which do not, consistent, properly performed stripping of the vesicle will clear up another large percentage, and the disease will not recur if all the other lesions in the genito-urinary tract are at the same time cured. Stripping the vesicles consistently and properly cures some cases. Injection of the vesicle, it is claimed, cures some that do not give way to stripping, and what vesiculotomy or drainage of the vesicles will do remains to be seen.

DISCUSSION

DR. OLIVER LYONS, Denver: The differential diagnosis in the early stages is difficult, and a little mismanagement at this time may breed a good deal of mischief. The varieties of symptoms are due to the anatomic proximity of the vesicles to the ureter, the bladder, the peritoneum, and its nerve supply. This disease is frequently accompanied with prostatitis or posterior urethritis. Owing to the anatomic proximity of the vesicles to the bladder we frequently find in routine cystoscopic examinations the mucous membrane of the bladder covering the vesicles hyperemic and edematous. There is a mild trigonitis. This in all likelihood will give rise to frequent, painful, urgent urination, and in the acute cases perhaps to complete retention of urine. In many of the chronic or subacute cases it is not uncommon for the patients to carry from 2 to 4 ounces of residual urine. These cases are also accompanied with the usual typical mucopurulent discharge, and sometimes the patients will have a perfectly clear, sparkling urine, the only abnormality being perhaps a reaction for albumin.

DR. J. F. McCONNELL, Colorado Springs: Fuller's method of stripping the seminal vesicles is extremely hazardous in tuberculous seminal vesiculitis because of the danger of setting up new infection and spreading the infection already established. To the rectal feel after the stripping, there is an increased tenderness as well as enlargement. Tuberculin is extremely valuable in the treatment of tuberculous seminal vesiculitis.

Cesarean Section

DR. LOUIS H. MCKINNIE, Colorado Springs: In twenty-eight cases I have performed three operations in generally contracted pelves, the internal conjugate of which measured 6, 8 and 9 cm., respectively; two in flat pelves, measuring 9 and 8 cm. Four patients, some of whom were permitted to go into trial labor not through choice, but through lack of measurement and observation, had measurements of 10, 11, 12 and 9 cm. There were two deformed pelves; in two there were no measurements on which reliance could be placed, the internal conjugate being made out as best we could at 4 and 5 cm. In these eleven cases there have been one maternal and two children's deaths. Two of the operations were performed on the same mother. One objection against cesarean section is: once a cesarean section, always a cesarean section. This woman on whom I advised the first operation absolutely declined the second and said she would deliver herself or die. Four cases were placenta previa.

I have operated in ten cases of eclampsia with no deaths. These patients were all in more or less coma when the operation was done; all of them had had one or more convulsions. I prefer gas-oxygen for this operation. To me it carries less danger in the eclamptic than ether or chloroform, because it has less effect on the kidneys. The patient is quickly under the anesthesia and the uterus contracts much more promptly. DeLee does not like gas-oxygen, stating that it will not relax the abdominal wall, and unless the child is delivered rapidly it will be asphyxiated. Of 28 cases, there were 29 children; maternal deaths, one from infection; children four, one death caused by head being crushed by forceps, but living at the time of delivery; one died suddenly six hours after delivery; twins, premature, twins not diagnosed, since the mother was absolutely unconscious when found, fetal heart sounds present, the size leading us to believe that it was about at term.

DISCUSSION

DR. H. R. BULL, Grand Junction: About three years ago I was called seventy-five miles to see a woman who was

reported to be having severe hemorrhages at term. I found her in a log cabin with a centrally implanted placenta, showing there was considerable loss of blood. She had had three hemorrhages previous to the time I saw her. It became a question of what was the right thing to do, whether in a log cabin to do Braxton Hicks' version with a mortality of at least 50 or 60 per cent. to the child and 80 per cent. to the mother under these conditions, or to try to get her to a hospital and do a cesarean section. I chose the latter alternative. I narcotized her, put her on the train, and took her to a hospital where I did a cesarean section on her, delivered her of a living child, and she made a good recovery.

DR. THOMAS A. DAVIS, Portland: There are a certain number of women with lesions of the heart who can be delivered by cesarean section safely, but could not go through the regular routine of delivery.

DR. H. R. MCGRAW, Denver: In placenta previa I think cesarean section is an ideal operation, although in a great number of cases this operation is done where the old methods could probably be used just as well. In tuberculosis I should consider cesarean section a dangerous procedure. I do not use gas-oxygen for the reason that I find I cannot get sufficient muscular relaxation.

Surgical Tuberculosis of the Peritoneal Cavity

DR. OSCAR M. SHERE, Denver: Laparotomy per se must not be regarded as a cure in tuberculous peritonitis and its empiric performance has no place in scientific surgical therapy. Removal of the localized focus in the abdomen is the only rational form of treatment in this disease. In the chronic forms surgery should be limited to those instances in which there is great tension from effusion or intestinal obstruction due to adhesions. Energetic hygienic measures as well as a properly administered tuberculin treatment will greatly improve the results attained in these cases.

The Present Status of Roentgen Therapy

DR. SAMUEL B. CHILDS, Denver: In the treatment of superficial epitheliomas the Roentgen ray can effect a permanent cure in more than 95 per cent. of the cases, and the results obtained from a cosmetic standpoint are superior to those obtained by any other method of treatment. In leukemia and Hodgkin's disease a symptomatic cure is greatly enhanced by the use of deep Roentgen therapy. In uterine hemorrhage in carefully selected cases, a cure can be expected in over 95 per cent. At present, however, deep Roentgen therapy seems indicated chiefly in the treatment of uterine hemorrhage in those cases in which an operation is undesirable. In exophthalmic goiter we have a remedy in Roentgen therapy which can relieve comparatively early the alarming symptoms in many cases, and if an operation is later deemed necessary the patient will be in a better condition to successfully stand it. All operable deep-seated cancers, with adjacent lymphatic glands, should be thoroughly removed surgically and an area wide of the entire locality should be treated by the most approved methods of radiotherapy as soon after the operation as possible and as thoroughly as though the disease still existed. From the results already reported in the treatment of deep-seated cancers, postoperative radiotherapy can be depended on to diminish materially the present high percentage of recurrences. All patients with inoperable cancer should have the benefit of radiotherapy, supplemented by electro-coagulation in cases suitable therefor.

Spontaneous Pneumothorax in the Tuberculous

DR. CHARLES O. GEISE, Colorado Springs: In two cases a spontaneous pneumothorax developed while the patient was under treatment by artificial pneumothorax. My experience with spontaneous pneumothorax in the tuberculous has been decidedly unfavorable as to prognosis, no patient under my observation having entirely recovered. I have attempted the withdrawal of the fluid and the introduction of equal amounts of air or nitrogen with only partial success. I have attempted extensive rib resection in three cases with death in two and marked improvement in one; these fluids have become purulent at periods varying from a few days to several months.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Physiology, Baltimore

September, XLI, No. 3

- 1 Unilateral Destruction of Semicircular Canals in Cats. H. G. Fisher and H. R. Muller, Baltimore.—p. 267.
- 2 Photographic Method for Measuring Surface Area of Human Body. F. G. Benedict, Boston.—p. 275.
- 3 Relationship Between Body Surface and Heat Production Especially During Prolonged Fasting. F. G. Benedict, Boston.—p. 292.
- 4 *Interauricular Time Interval. G. Bachmann, Atlanta, Ga.—p. 309.
- 5 *Differences in Irritability and Latent Period in Different Parts of Wall of Stomach. W. C. Alvarez, San Francisco.—p. 321.
- 6 *Vegetarian Diet in Light of Present Knowledge of Nutrition. E. V. McCollum, N. Simmonds and W. Pitz, Madison, Wis.—p. 333.
- 7 Distribution in Plants of Fat Soluble A, Dietary Essential of Butter Fat. E. V. McCollum, N. Simmonds and W. Pitz, Madison, Wis.—p. 361.
- 8 Effect of Certain Procedures on Course of Fatigue in Frog's Muscle. J. O. Crider and W. W. Robinson, Oxford, Miss.—p. 376.
- 9 Blood Pressure in Experimental Pneumonia. L. H. Newburgh and W. T. Porter, Boston.—p. 384.
- 10 Physiology of Reproduction in Birds. Occurrence and Measurements of Sudden Change in Rate of Growth of Avian Ova. O. Riddle, Long Island, N. Y.—p. 387.
- 11 Id. Chemical Composition of White and Yellow Egg Yolk of Fowl and Pigeon. A. A. Spohn and O. Riddle, Long Island, N. Y.—p. 397.
- 12 Id. Metabolism of Egg Yolk of Fowl During Incubation. O. Riddle, Long Island, N. Y.—p. 409.
- 13 Id. When Gland Functions for First Time Is Its Secretion Equivalent of Subsequent Secretions? O. Riddle and A. A. Spohn, Long Island, N. Y.—p. 419.
- 14 Id. Effect of Alcohol on Size of Yolk of Pigeon's Egg. O. Riddle and G. C. Basset, Long Island, N. Y.—p. 425.
- 15 Id. Sexual Differences in Fat and Phosphorus Content of Blood of Fowls. J. V. Lawrence and O. Riddle, Long Island, N. Y.—p. 430.

4. **Interauricular Time Interval.**—Bachmann maintains that the time of onset of right and left auricular contraction, contrary to general belief, is not synchronous. The excitatory wave originating in the sino-auricular node reaches the right auricle sooner than the left; hence the right auricle contracts an appreciable time before the left. The time difference averages 0.013 second. The most important path of conduction between the two auricles appears to be the interauricular band. This special importance is demonstrated by the effects of crushing the band, the conduction being delayed 3 to 4.6 times the normal average. The interauricular band has not the same importance relatively to the auricles that is possessed by the auriculoventricular band, as crushing does not cause a complete block. Its importance lies in the circumstance that its fibers form the most direct interauricular path and that the rate of conduction is highest along this path.

5. **Irritability in Different Parts of Stomach.**—The stomachs of frogs, rabbits, cats and dogs were examined by Alvarez. He found that the latent period for faradic, galvanic and mechanical stimuli is shortest around the cardia and along the lesser curvature so far as the incisura angularis. These limits include also the most irritable part of the stomach. The region of the greater curvature and fundus is much less irritable and often fails to react at all. The pyloric ring is more irritable and reacts more promptly than does the rest of the antrum. The duodenum is much more irritable than the pyloric antrum. The posterior surface of the stomach is a little less irritable than the anterior surface, and the latent periods are longer. With the exception of the cardia and lesser curvature, the stomach in situ is often quite refractory to stimulation in its cardiac half. This seems to be due to nervous inhibition as it is less marked in the excised stomach, and still less so in strips of muscle cut from the fundus or greater curvature. It seems likely that the nervous mechanism serves more to restrain the muscle—to keep it from reacting to every stimulus—than to render it more irritable. The little work done so far on the stomach of man has given results in agreement with those obtained in animals.

6. **Adequacy of Vegetarian Diet.**—Since, apparently, nothing is known regarding the chemical natures of certain dietary essentials, and since the unknown factor which is present in certain fats seems to contain neither nitrogen nor phosphorus, the authors have proposed to discontinue the term vitamin and have suggested the terms fat soluble A and water soluble B. The fat soluble A which is essential for growth and certainly in mammals for maintenance as well, was first observed in butter fat, but was later found to be present in many natural foodstuffs. Butter fat and egg yolk fat apparently contain more of it than any other natural foods. Animal tissues contain some of this unknown factor, especially the active organs. It is present in small, but wholly inadequate amounts in the cereal grains. A much greater content of it is found in the leaves of the forage plants, among which the authors have studied the flour prepared by grinding alfalfa leaves. The vegetable oils generally contain very little if any, of this substance. Water soluble B, appears never to be associated with the fat fraction as it is isolated from natural foods. In their experimental diets the authors have employed either water extracts or alcoholic extracts of wheat embryo as a source of the water soluble B. For the fat soluble A, 3 to 5 per cent. of butter fat suffices. Diets consisting of purified protein, dextrin and salts, which will not induce growth in young rats, likewise produce no growth when one of the additions, wheat embryo extract or butter fat is added, but becomes adequate when both are present.

The practically complete success in the nutrition of rats with strictly vegetarian diets made up of but three natural foodstuffs, and the failure attending the employment of a wider variety in the food mixture, emphasizes the fallacy of the assumption that the safest plan to insure perfect nutrition, is to include a wide variety in the selection of the constituents of the diet. So long as definite knowledge is wanting concerning the specific nutritive properties of the constituents of the diet, variety will unquestionably make for safety, but will not by any means assure safety. The conscientious adherence to a vegetarian diet by one who has no adequate technical knowledge regarding the subject of diet appears to be fraught with danger since among the foods of vegetable origin, ordinarily consumed by human beings, several dietary factors are, as a rule, of an unsatisfactory chemical character. It is certain that all of the components of a successful diet are present in foods of plant origin.

Annals of Surgery, Philadelphia

September, LXIV, No. 3

- 16 *Tumors of Carotid Body; Report of Two Cases. R. Winslow, Baltimore.—p. 257.
- 17 Transverse Incisions in Upper Abdomen. A. V. Moschcowitz, New York.—p. 268.
- 18 Technic and Management of Operations on Stomach. G. W. Crile, Cleveland.—p. 290.
- 19 *More Radical Treatment of Duodenal and Gastric Ulcer. J. B. Deaver, Philadelphia.—p. 294.
- 20 *Radium Treatment of Uterine Cancers. J. Ransohoff and J. L. Ransohoff, Cincinnati.—p. 298.
- 21 *Radical Operation for Cancer of Rectum and Rectosigmoid. W. J. Mayo, Rochester, Minn.—p. 304.
- 22 Sarcoma of Appendix. M. G. Wohl, Omaha.—p. 311.
- 23 Fractures About Wrist in Childhood and Adolescence. A. C. Burnham, New York.—p. 318.
- 24 *Undescended Testis. D. N. Eisendrath, Chicago.—p. 324.
- 25 Acute Suppurative Pancreatitis; Gangrene of Major Portion of Pancreas. Recovery. Determination of Pancreatic Function Three Years Subsequently. R. T. Miller, Pittsburgh.—p. 329.
- 26 Amebic Abscess of Liver. A. C. Wood, Philadelphia.—p. 335.
- 27 System of Keeping Surgical Records. C. H. Frazier, Philadelphia.—p. 347.
- 28 Surgical "Follow-Up" System. C. L. Gibson, New York.—p. 349.

16. **Tumors of Carotid Body.**—The two cases reported by Winslow do not differ materially from those that have been reported hitherto, except that the growth in one case had only been noticed for two months previous to operation, which would suggest a malignant process. If such was the case, however, a radical cure appears to have been attained, as the girl was free from recurrence five years later. The age of this girl (16) is also exceptional for the development of a carotid tumor. The second case appears to conform more closely to the usual type of cases that have been reported. The

patient was a young man, aged 24 years, with a slow growing lump that had been noticed eight years before it became sufficiently large to suggest to him the propriety of a surgical procedure for its removal. A very interesting phenomenon in the first case was the sudden and prolonged tachycardia that followed the ligation of the carotid vessels. Apparently no injury was done to the pneumogastric nerve to cause a loss of its inhibitive action on the heart. There was no perceptible influence on the pulse of the second case when the carotid was ligated, and it never exceeded 80 per minute during the time he was in the hospital. In this case the pneumogastric nerve was not seen, but as he had paralysis of the left vocal cord and postoperative contraction of the left pupil, damage must have been inflicted on the nerve itself or, more likely, on the left recurrent laryngeal branch. Another point of considerable interest in this case is the fact that while the common carotid artery tunneled the tumor the external carotid was not seen.

19. **Treatment of Duodenal and Gastric Ulcer.**—Deaver reports his belief that all ulcers of the duodenum or stomach are best treated by excision. In the presence of a strong clinical probability of gastric ulcer supported by positive Roentgen ray evidence or doubtful findings to palpation and inspection he does not hesitate to perform gastrotomy in order to settle the matter by inspection of the mucosa. In the individual case the advisability of excision depends on the local condition. Deaver says that no ulcer should be excised when subsequent closure and anastomosis present too great operative hazards. It is in such cases that operations which depend on drainage and alteration of gastric chemistry have their field.

20. **Radium Treatment of Uterine Cancers.**—Of the three operable cases treated with radium by the Ransohoff's a clinical cure has been effected in each case.

21. **Cancer of Rectum and Rectosigmoid.**—Of 430 patients on whom a resection was done in the Mayo Clinic, 364 recovered from the operation. Eliminating those who were operated on less than three years ago, 33.3 per cent. lived three years or more, and 28.3 per cent. lived five years or more, after operation. Mayo says these percentages may be increased fairly to 37.5 and 35.8 per cents., respectively, by subtracting from the mortality figures the normal death rates for corresponding ages for periods of three and five years, that is, 4.2 and 7.5 per cents.

24. **Undescended Testis.**—Eisendrath urges that cases of true nondescent or ectopic descent of the testis should be operated at as early an age as the condition of the child will permit, the lower limit being about 2 years. Atrophy of the spermatogenic cells occurs in about 90 per cent. of the cases of retained testis, hence the necessity for early operation. Eisendrath claims that tumor formation, torsion and the usual complications of the congenital hernia accompanying nondescent of the testis are not as rare as thought to be and must be taken into consideration in weighing the question of an operation. Hypopituitarism is not the result of the nondescent, but an independent and not infrequent accompanying condition. The operation for nondescent, that is, retained testis, has but little influence on this lack of development of the male sexual characteristics and one should be guarded in the prognosis for such cases, as well as in the possible development of the testis after operations in young adults.

Archives of Diagnosis, New York

July, IX, No. 3

- 29 *Recognition of Gouty Etiology in Chronic Joint Affections. W. Weinberger, New York.—p. 191.
- 30 Early Diagnosis of Acute Infantile Paralysis. L. C. Ager, Brooklyn.—p. 205.
- 31 Echinococcus Cyst of Left Lobe of Liver Discharging into Left Hepatic Duct. R. S. Fowler, Brooklyn.—p. 209.
- 32 Subacute Catarrhal Cholecystitis; An Early Type of Gallbladder Disease. R. S. Fowler, Brooklyn.—p. 214.
- 33 Early Diagnosis and Treatment of Chronic Nephritis. J. H. Barach, Pittsburgh.—p. 218.
- 34 Vascular vs. Interstitial Nephritis. B. G. R. Williams, Paris, Ill.—p. 227.
- 35 *Relation of Migraine to So-Called Acidosis of Children. J. A. Lichty, Pittsburgh.—p. 230.

- 36 Clinical Diagnostics of Diseases of Heart. E. E. Cornwall, Brooklyn.—p. 233.
37 Diagnostic Methods in Glénard's Disease; Enteroptosis. A. E. Gallant, New York.—p. 267.

29. **Gouty Etiology in Joint Affections.**—Of the laboratory findings pointing to the gouty etiology in chronic joint affections, Weinberger says, the most reliance may be laid on the presence of undoubted tophi and on the observation of the characteristic uric acid curve during an attack. The attack may occur spontaneously or may be produced by the addition to the food of a definite amount of purin. Although it has not been shown that the ingestion of purin gives rise to an attack in all cases of polyarthritides due to gout, in the cases presented by the author the attack developed promptly. While the diagnosis of gout may be further supported by other concurring data like high uricemia, low endogenous uric acid output, and delayed elimination of exogenous uric acid, these factors alone are either ambiguous or not distinct enough to be of any decisive value.

35. **Migraine and Acidosis of Children.**—It is a common error, says Lichty, to interpret attacks of periodic vomiting in children and infants as being attacks of so-called acidosis when they are in reality precursors of a definitely established course of migraine. The author has seen about nine patients who had so-called cyclical vomiting, later called acidosis, and now have fully developed attacks of migraine. In 700 cases of migraine he has obtained the history every now and then of bilious attacks with obstinate vomiting in childhood with migraine coming on at puberty. He advises to search diligently for a hereditary history of migraine before interpreting a condition of acidosis in childhood or before the age of puberty.

Archives of Internal Medicine, Chicago

September, XVIII, No. 3

- 38 *Dissociated Jaundice. C. F. Hoover and M. A. Blankenhorn, Cleveland.—p. 289.
39 *Comparison in Various Diseases of Carbon Dioxid Tension in Alveolar Air (Plesch Method) with Amount of Carbon Dioxid in Venous Blood (Van Slyke's Method). I. C. Walker and C. Frothingham, Jr., Boston.—p. 304.
40 *Chronic Influenza in Pulmonary Tuberculosis. M. L. Hamblet and H. L. Barnes, Wallum Lake, R. I.—p. 313.
41 *Studies in Blood Pressure. With Especial Reference to Diastolic and Pulse Pressure Readings. W. W. Cadbury, Boston.—p. 317.
42 Subsequent History of Pellagrins in Spartanburg County, S. C., Who Survived Initial Attack. J. F. Siler, P. E. Garrison and W. J. MacNeal, New York.—p. 340.
43 *Treatment of Syphilis of Central Nervous System. I. C. Walker and D. A. Haller, Boston.—p. 376.
44 *Blood Fat Before and After Splenectomy. H. Dubin and R. M. Pearce, Philadelphia.—p. 426.

38. **Dissociated Jaundice.**—Hoover and Blankenhorn found true dissociated jaundice of hepatic origin in two cases of primary anemia and in two cases of lead poisoning. In the four cases bile salts were found in the blood in large amounts. Excepting in jaundice of hemolytic origin and in complete jaundice which has undergone renal dissociation, the authors have never found bile pigment without bile salts in the plasma. They claim that bilirubin and bile salts may both be present in very marked concentration in the plasma and neither pigment nor salts appear in the urine. Adsorption of bilirubin in the plasma may not only withhold the pigment from the renal filter, but also from the tissues; so there may be pronounced cholemia (pigmental) without choluria (pigmental) and also without icterus of the tissues. When pigmental cholemia is present (in varying degrees) without choluria, the collodion sack will yield no pigment to an aqueous dialysate from the plasma. When choluria attends cholemia (pigmental), the collodion sack will yield bile pigment to an aqueous dialysate from the plasma. Bile salts will dialyze from plasma when no bile salts are demonstrable in the urine.

39. **Carbon Dioxid Tension in Alveolar Air in Various Diseases.**—A total of 116 observations were made by Walker and Frothingham on 100 different cases which represented thirty types of disease. As a rule, cases were chosen in which there was not a complication of diseases. They studied primary anemia, exophthalmic goiter, typhoid, lung abscess, chronic nephritis, syphilis, chronic cardiac disease, pneu-

monia, acute articular rheumatism, diabetes, gastric cancer, cirrhosis of the liver, acute nephritis, asthma and miscellaneous diseases. In summing up these 116 observations it appears that in the great majority of the cases the carbon dioxid tension in the alveolar air, as collected by the Plesch method, corresponds with that as estimated in the venous blood by Van Slyke's method. Exceptions were met in exophthalmic goiter, pneumonia and asthma, but even in these diseases, except during an attack of asthma, the variations occurred in only a very small percentage of the cases. Subsequent studies on several of the cases in which marked differences occurred on the first examination showed practically identical results in the air and blood studies. From these observations it seems to the authors fair to conclude that the carbon dioxid tension in the alveolar air, as determined by the Plesch-Higgins method, agrees very closely with the results obtained by the Van Slyke method of determining the amount of carbon dioxid in the venous blood and is therefore a very accurate index of the amount of carbon dioxid in the venous blood. Furthermore, this method is applicable to a great variety of acute and chronic diseases.

40. **Chronic Influenza in Pulmonary Tuberculosis.**—Hamblet and Barnes endeavored to obtain data as to the frequency of influenza infection as a complication of phthisis; as to the frequency with which the symptoms of patients diagnosed as having pulmonary tuberculosis, but with negative sputum, may be accounted for by chronic influenza infection, and as to what extent the percentage of recoveries in sanatoriums for tuberculosis have been swelled by the inclusion of cases of influenzal bronchitis. Of 100 patients, diagnosed as having closed tuberculosis whose sputums were cultured for influenza, at least ninety-six were negative. Of 100 patients, diagnosed as having closed tuberculosis, influenza bacilli were recovered from six. Of 100 patients, with open tuberculosis, influenza bacilli were recovered from seven. Of twenty patients in whom the diagnosis of tuberculosis continued doubtful, the sputum was negative for influenza bacilli in all. In none of the patients examined did the influenza bacilli occur in pure culture nor were they the predominating organism.

41. **Studies in Blood Pressure.**—An analysis of 305 patients made by Cadbury showed that about 68 per cent. of cases of hypertension are found in patients between 40 and 69 years of age, the greatest number occurring between the ages 50 and 59. Almost three fourths of the cases, 72.8 per cent., had definite signs of chronic nephritis. Arteriosclerosis was also common. The next most common conditions were circulatory disturbances, chronic myocarditis or valvular lesions. Albumin is usually to be found at some time in cases of hypertension. If it is persistently absent, the cause of the high blood pressure is generally vascular or cardiac disease, and not renal. In hypertension cases with a normal heart load of 40 to 60 per cent., 85 per cent. had chronic nephritis. Of those cases in which the load was under 40 or over 60 per cent., only about 70 per cent. were cases of nephritis. When the load was under 40 per cent., the prognosis proved to be most unfavorable, but there were several cases without signs of cardiac decompensation. Among those whose heart load was 40 to 60 per cent., only 28 per cent. gave signs of cardiac decompensation; of those whose heart load was 61 to 99 per cent., there were 59 per cent. with cardiac decompensation, and of those whose load was 100 per cent. or more, 66 per cent. showed signs of cardiac decompensation. Hypertrophy of the heart without decompensation was most common in cases with a normal load; when the load was 100 per cent. or over, there were the fewest cases of heart hypertrophy without decompensation and the greater number of decompensated hearts. Subnormal diastolic pressures suggest the presence of aortic regurgitation and the absence of chronic nephritis.

In cardiac decompensation the effect of digitalis was rather to increase pulse pressure and systolic pressure and cause a fall in the diastolic pressure. Deaths in hypertension patients occurred most frequently between the ages of 40 and 60 years, and the underlying condition was either chronic nephritis or chronic disease of the heart, or a combination of the two. More

than half the deaths occurred with symptoms of uremia or apoplexy. Twenty-eight per cent. died with signs of progressive heart failure. The patients in more than half the fatal cases had had a systolic pressure of over 200 mm., and 86 per cent. had had diastolic pressure of over 100 mm.

43. Treatment of Syphilis.—Seventy-five patients with the following diagnoses have been treated at the Peter Bent Brigham Hospital; forty-eight cases of tabes dorsalis, six of general paresis of the insane, sixteen cases of cerebrospinal syphilis, and five of syphilitic meningitis. To these patients 450 intraspinal injections of salvarsanized serum and 350 doses of salvarsan were given. The results of each treatment are summarized by Walker and Haller as follows: Patients with recent syphilitic meningitis and cerebrospinal syphilis may be relieved symptomatically by intravenous salvarsan; the spinal fluid Wassermann reaction may become negative with 1 c.c. and the cell count may become normal. Patients with long-standing cerebrospinal syphilis and tabes may be benefited symptomatically following salvarsan, but little or no change occurs in the spinal fluid findings. Patients with recent and those with late syphilitic meningitis, cerebrospinal syphilis, tabes and general paresis of the insane are markedly improved following the combination of intravenous salvarsan and intraspinal salvarsanized serum (Swift-Ellis method), and those who fail to improve under salvarsan alone do improve both in symptoms and in spinal fluid findings following this double treatment. That intraspinal salvarsanized serum greatly benefits patients with central nervous system syphilis is shown by the fact that those with negative serum reactions and with positive spinal fluid findings are symptomatically relieved by this treatment. In many patients the spinal fluid Wassermann reaction becomes negative with 1 c.c., the cell count becomes normal and negative (Noguchi) globulin test is obtained following sufficient treatment with salvarsanized serum intraspinally without other medication.

44. Blood Fat Before and After Splenectomy.—Analysis made by Dubin and Pearce, before and after splenectomy, of the blood of dogs showed practically no change in the amount of total fats and unsaturated fatty acids, as expressed by the iodine value.

Archives of Ophthalmology, New Rochelle, N. Y.

September, XLV, No. 5

- 45 Studies of Optic Nerve Atrophy in Association with Chiasmal Lesions. C. B. Walker and H. Cushing, Boston.—p. 407.
- 46 Declinations of Vertical Meridians of Retina. G. T. Stevens, New York.—p. 438.
- 47 Studies on Actions of Toxins and Protein Degeneration Products on Eye. A. C. Woods, Philadelphia.—p. 451.
- 48 Case of Melanosarcoma of Orbit, Treated with Radium. E. B. Heckel, Pittsburgh.—p. 465.
- 49 Retrobulbar Neuritis with Central Scotoma from Toxic Action of Thyroidin. M. Standish, Boston.—p. 469.
- 50 Report of Removal of Tumor at Apex of Orbit, with Preservation of Eyeball, Case of Plexiform Neuroma of Eyelid. Microscopic Examination. A. Knapp, New York.—p. 475.
- 51 Improved Capsule Forceps for Intracapsular Cataract Extractions. F. H. Verhoeff, Boston.—p. 479.

Boston Medical and Surgical Journal

September 14, CLXXV, No. 11

- 52 *Present Status of Alveolar Osteomyelitis (Pyorrhea Alveolaris). Its Causes and Treatment with Vaccines. L. S. Medalia, Boston.—p. 367.
- 53 Use of Emetin. A. C. Reed, San Francisco.—p. 375.
- 54 Peripheral Neuritis Following Emetin Treatment of Amebic Dysentery. A. R. Kilgore, Shanghai, China.—p. 380.
- 55 Dystonia Musculorum Deformans—Oppenheim's New Disease of Children and Young Adults. I. H. Coriat, Boston.—p. 383.

52. Treatment of Pyorrhea Alveolaris with Vaccines.—“Pyorrhea alveolaris,” so-called, Medalia says, is in reality a chronic alveolar osteomyelitis. The sockets are enlarged medullary spaces of the maxillary bones while the so-called “peridental membrane” is in reality a ligament which keeps the tooth suspended in the alveolar cavity. The mechanical causes are responsible for starting the disease, while the pyogenic bacteria (pneumococcus, staphylococcus, and M. catarrhalis) are responsible for keeping it up. Chronic alveolar osteomyelitis is a specific disease, though not in the

sense that it is always due to one and the same organism; it is due to a variety of organisms. Systemic diseases play only a secondary part in starting the disease, but may be caused by it, and in turn become responsible for keeping up the local condition. A great many rheumatic diseases, so-called, also a great many gastro-intestinal affections are directly related to chronic alveolar osteomyelitis—“Riggs disease.” The vaccine treatment of this disease, together with the proper attention to diet, cures or relieves the systemic diseases, especially the rheumatic affections. Vaccine treatment (immunotherapy), together with local mechanical treatment (and the proper attention to the general systemic condition of the patient) yields by far the best results in this intractable disease—chronic alveolar osteomyelitis.

Bulletin of Medical and Chirurgical Faculty of Maryland, Baltimore

September, IX, No. 3

- 56 Delivery by Abdominal Section. E. P. Davis, Philadelphia.—p. 33.
- 57 Oral Hygiene. B. M. Hopkinson, Baltimore.—p. 39.

California State Journal of Medicine, San Francisco

September, XIV, No. 9

- 58 Value of Fuchsin in Urology. V. G. Vecki, San Francisco.—p. 349.
- 59 Industrial Hernia. W. B. Smith, Randsburg.—p. 351.
- 60 Diagnosis and Treatment of Poliomyelitis in Preparalytic Stage. J. A. Colliver, Los Angeles.—p. 352.
- 61 Removal of Foreign Bodies from Esophagus and Respiratory Tract. H. B. Graham, San Francisco.—p. 354.
- 62 Periodontal Septic Foci. T. S. Smith, San Francisco.—p. 356.
- 63 Apocodein—New Laxative with Exceptional Advantages. W. C. Alvarcz, San Francisco.—p. 363.
- 64 Pathologic Anatomy, Symptoms and Diagnosis of Renal Tuberculosis. L. J. Roth, Los Angeles.—p. 366.
- 65 History in Group Study. J. M. Read, San Francisco.—p. 369.
- 66 Retrodisplacements of Uterus with Especial Reference to Their Causation and New Method of Treatment. J. C. Neel, San Francisco.—p. 372.

Illinois Medical Journal, Chicago

September, XXX, No. 3

- 67 Improved Technic in New Submucous Operation. O. Tydings, Chicago.—p. 161.
- 68 Tonsil—Its Medicolegal Aspect. C. J. Whalen, Chicago.—p. 164.
- 69 Tonsil in Its Relation to Series of Infection Sequences. F. Buckmaster, Effingham.—p. 166.
- 70 Diagnostic and Prognostic Value of Visual Fields with Some Suggestions in Technic. G. F. Sucker, Chicago.—p. 173.
- 71 Detection of Monolateral Malingerers and Demonstration of Instrument. C. B. Wagner, Chicago.—p. 178.
- 72 Horse Hair Suture for Relief of Tension in Glaucoma. J. W. Smith, Bloomington.—p. 179.
- 73 Common Focal Centers of Metastatic Infections in Upper Respiratory Tract. W. J. Rideout, Freeport.—p. 180.
- 74 Treatment of Penetrating Injuries to Eyeball. H. W. Woodruff, Joliet.—p. 183.
- 75 Circular Plastic of Eyelid in Cicatricial Ectropion. E. F. Snyder, Chicago.—p. 186.
- 76 Diagnosis of Disorders Affecting Perception Organ of Hearing. O. J. Stein, Chicago.—p. 188.
- 77 Value of Roentgenogram in Diagnosis of Mastoid Disease. G. E. Shambaugh, Chicago.—p. 193.
- 78 Treatment of Chronic Constriction of Eustachian Tubes. A. S. Rochester, Chicago.—p. 195.
- 79 Comparative Value of Indirect and Direct Laryngoscopy. S. A. Friedberg, Chicago.—p. 197.
- 80 Examination of Discharge in Mastoid Disease. A. H. Andrews, Chicago.—p. 198.
- 81 Danger of Incomplete Examination in Nasal Conditions. C. H. Long, Chicago.—p. 200.
- 82 Operative Measures Advocated in Removal of Faucial Tonsil. A. B. Middleton, Pontiac.—p. 202.
- 83 Prognosis and Treatment of Common Intracranial Complications of Nose, Throat and Ear Infections. N. H. Pierce, Chicago.—p. 203.

Iowa State Medical Society Journal, Des Moines

September, VI, No. 9

- 84 Signs of Times. L. L. Henninger, Council Bluffs.—p. 377.
- 85 Practical Points on Refraction. F. W. Dean, Council Bluffs.—p. 378.
- 86 Cause and Treatment of Accommodative Weakness. F. E. Franchere, Sioux City.—p. 380.
- 87 Eye-Strain. E. C. Lawrence, Des Moines.—p. 382.
- 88 Certain Types of Appendicitis. D. W. Ward, Oelwein.—p. 384.
- 89 Vaccine Therapy. M. F. Stults, Wiota.—p. 388.
- 90 Dyspepsia. W. C. McGrath, Eagle Grove.—p. 394.

Medical Record, New York*September 9, XC, No. 11*

- 91 Clinical Possibilities of Pharyngeal Pituitary. W. S. Bryant, New York.—p. 441.
 92 Heredosophilic Dental Stigmata. J. B. Stein, New York.—p. 445.
 93 *Primary Carcinoma of Lungs. E. Scott and J. Forman, Columbus.—p. 452.
 94 Gastro-Enterology and Surgery. J. C. Johnson, Atlanta, Ga.—p. 455.
 95 Alkaloidal Adjuvants in General Anesthesia. R. C. Coburn, New York.—p. 460.

93. **Primary Carcinoma of Lungs.**—This paper is a study of four specimens of primary carcinoma of the lung. Based on a slight increase in temperature, the presence of a cough, evidence of consolidation in the lung and the loss of flesh, each case was mistaken for one of pulmonary tuberculosis in an advanced stage. Complete necropsies were held in each instance, and no new growths were found other than in the lung. The new growths in three instances begins in the large bronchus at the root of the lung, and extends along it into the substance of the lung. In all three cases, the bronchial lymph nodes have been invaded and overgrown by the neoplasm. The growth has extended into the pericardium in two cases. In one case there was also a distinct invasion of the esophagus producing stricture. In each lung there is a thickening of the pleura, which is especially marked over the portion of the lung involved by the tumor.

Military Surgeon, Washington, D. C.*September, XXXIX, No. 3*

- 96 Relation of Civilian Physician to National Preparedness. L. A. La Garde, U. S. Army.—p. 237.
 97 Inactive Medical Reserve Corps in War. H. C. Coe, U. S. Army.—p. 244.
 98 Some General Information Concerning Diagnosis and Treatment of Syphilis. M. A. Reasoner, U. S. Army.—p. 253.
 99 Proposed Methods of Venereal and Hygienic Educational Prophylaxis. W. D. Owens, U. S. Navy.—p. 265.
 100 Use of Habit Forming Drugs (Cocain, Opium and Its Derivatives) by Enlisted Men. Report Based on Work Done at United States Disciplinary Barracks. E. King, U. S. Army.—p. 273.
 101 Fumigation by Cyanid Gas. R. H. Creel, U. S. P. H. Service.—p. 282.
 102 Duties of Medical Supply Officers and Their Methods. H. I. Raymond and E. P. Wolfe, U. S. Army.—p. 288.
 103 Malingering. H. R. McKellar, U. S. Army.—p. 293.
 104 Proposed Motor Ambulance Company. M. Ashford, U. S. Army.—p. 300.

New Jersey Medical Society Journal, Orange*September, XIII, No. 9*

- 105 *Phases of Cancer Problem. J. G. Clark, Philadelphia.—p. 461.
 106 *Indications for Surgery. E. J. Ill, Newark.—p. 468.
 107 *Morbidity of Childhood and Mortality of Succeeding Decades. T. N. Gray, East Orange.—p. 472.
 108 *Education of Nurse. G. K. Dickinson, Jersey City.—p. 481.

105, 106 and 107. Abstracted in THE JOURNAL, July 29, p. 389.

108. Abstracted in THE JOURNAL, July 29, p. 390.

New York Medical Journal*September 9, CIV, No. 11*

- 109 Tuberculosis in Relation to Feeble-mindedness. P. Bryce, Ottawa, Ont.—p. 481.
 110 Some Thoughts on Prostatectomy. H. H. Morton, New York.—p. 485.
 111 Case of Hypopituitarism. L. N. Boston, Philadelphia.—p. 490.
 112 Quartz Light in Cutaneous Diseases. E. Pisko, New York.—p. 493.
 113 Symptom Ataxia. H. F. Wolf, New York.—p. 494.
 114 Dysentery in Serbia. J. Rudis-Jicinsky, Chicago.—p. 495.
 115 Preexisting Condition of Injured. G. R. Doré, Bordeaux, France.—p. 498.
 116 Test for Syphilis. G. B. Ubel, Ithaca.—p. 503.
 117 Drug Addiction. E. W. Markens, Newark, N. J.—p. 504.
 118 Recovery from Tetanus. B. Scheinkman, New York.—p. 505.

Northwest Medicine, Seattle, Wash.*September, XV, No. 9*

- 119 Medical Education. R. B. Dillehunt, Portland, Ore.—p. 285.
 120 Etiology and Pathology of Arteriosclerosis. F. Epplen, Spokane.—p. 289.
 121 Symptoms and Diagnosis of Arteriosclerosis. C. R. McCreery, Tacoma.—p. 294.
 122 Prophylaxis and Treatment of Arteriosclerosis. E. W. Janes, Tacoma.—p. 296.
 123 Eye Symptoms in Arteriosclerosis. H. Stillson, Seattle.—p. 300.

- 124 Deep Roentgenotherapy with Coolidge Tube. J. H. Snively, Seattle.—p. 302.
 125 Splenomedullary Leukemia. Treatment by Roentgen Ray and Benzol; Report of Case. E. Myers, Portland, Ore.—p. 306.
 126 Varieties of Acidosis. J. Besson, Portland, Ore.—p. 309.

Oklahoma State Medical Association Journal, Muskogee*September, IX, No. 9*

- 127 Anatomy, Physiology and Pathology of Accessory Sinuses of Nose. A. C. McFarling, Shawnee, Okla.—p. 271.
 128 Sinusitis. J. H. Barnes, Enid.—p. 279.
 129 Treatment—Conservative and Radical. G. E. Hartshorne, Shawnee.—p. 282.
 130 Active Immunization by Vaccine Therapy. W. H. Bailey, Oklahoma City.—p. 287.
 131 Early Diagnosis of Incipient Pulmonary Tuberculosis in Adult. W. F. Dutton, Tulsa.—p. 291.
 132 Some Proctologic Don'ts. J. M. Cooper, Oklahoma City.—p. 294.
 133 Oklahoma's School of Medicine. L. R. Long, Oklahoma City.—p. 295.

Southern Medical Journal, Birmingham, Ala.*September, IX, No. 9*

- 134 Syphilis of Nervous System. B. R. Tucker and H. J. Hayes, Richmond, Va.—p. 765.
 135 Clinical Study of Epilepsy. D. D. V. Stuart, Jr., Baltimore.—p. 767.
 136 Ocular Complications of Malaria and Toxic Effect of Quinin on Eye. W. T. Davis, Washington, D. C.—p. 769.
 137 Modern Medicine. W. E. Deeks, New York.—p. 773.
 138 *Etiology of Pellagra in Children. H. W. Rice, Columbia, S. C.—p. 778.
 139 Pellagra in Charleston, S. C. W. A. Smith, R. M. Pollitzer and H. S. Mustard, Charleston, S. C.—p. 786.
 140 Diagnosis of Cutaneous Cancer. H. H. Hazen, Washington, D. C.—p. 790.
 141 Operation of Vital Statistics Law in Arkansas. C. W. Garrison, Little Rock, Ark.—p. 797.
 142 Registration of Births and Deaths in Dallas, Texas. E. B. Summers, Dallas, Texas.—p. 800.
 143 Vital Statistics Vitalized. W. L. Heizer, Bowling Green, Ky.—p. 803.
 144 Need of Uniform Health Regulations in Southern States. D. W. Jones, Brookhaven, Miss.—p. 806.
 145 *Mesenteric Thrombosis and Embolism; Report of Thirty-Five Cases. J. H. Blackburn, Bowling Green, Ky.—p. 810.
 146 Injuries of Urinary Tract. H. J. Williams, Macon, Ga.—p. 820.
 147 Proper Management of Placenta Praevia. M. S. Davie, Dothan.—p. 826.
 148 Application of Protracted Proctoclysis in Treatment of Eclampsia. G. M. Murray, Atlanta, Ga.—p. 829.
 149 Etiology and Pathology of Trachoma. Differentiation from Allied Conjunctival Conditions. J. M. Ray, Louisville, Ky.—p. 832.
 150 Treatment of Trachoma. H. T. Aynesworth, Waco, Texas.—p. 836.
 151 Diphtheria Involving Sinuses, Mastoid and Middle Ear. F. Vinsonhaler, Little Rock, Ark.—p. 839.

138. **Pellagra in Children.**—A study of 200 pellagrous orphan children was made by Rice. The facts in a large per cent. of the cases of pellagra in one orphanage strongly discredit an essentially causative relation of corn. The incidence of pellagra was much higher in children under 12 years of age. The differences discovered in the diet of the smaller and larger children seem inadequate to account for this age distribution. But there appears to be some relation between the amount of animal food consumed and the spread of pellagra in orphanages. The predisposing factors: age, sex, hereditary weakness, poor nutrition and coincident diseases, apparently were operative in this series of cases. There was no evidence pointing to unsanitary conditions or to the insects as a cause of the spread of the disease.

145. **Mesenteric Thrombosis and Embolism.**—In twenty-five of thirty-four cases of this affection analyzed by Blackburn in which a clinical diagnosis was made, intestinal obstruction was found in ten cases, mesenteric thrombosis in three cases, and suspected mesenteric thrombosis in one. Strangulated hernia and "acute surgical abdomen" were pronounced in two cases each. The following diagnoses were made in one case each: Appendicitis, appendicitis and peritonitis, peritonitis, acute hemorrhagic pancreatitis, fecal impaction, intestinal perforation in typhoid, and ptomaine poisoning. Pain was present in twenty-six of the thirty-three cases. It is described as cramp-like, severe, extreme, intense, and agonizing. It was localized in the epigastrium in two cases, lower abdomen in one, about umbilicus in four, to left of umbilicus, left half of abdomen in three cases, to right of umbilicus and above in two cases, median in one case, and general in ten cases. In three

instances the pain was defined as localized at first, becoming general later. In one instance as general at first, localizing in lower abdomen later. In twenty cases tenderness was located as follows: Six general, six right side, two left side, two median, two lower abdomen, one epigastric, and one at umbilicus and lower abdomen.

Vomiting is mentioned alone in seven cases; nausea and vomiting in twelve. The bowels were constipated in ten cases. Distention is mentioned in twenty-seven cases; muscular rigidity is mentioned in four cases. The temperature in most cases was normal or subnormal early in the attack, but may rise to 104 or 105 degrees, if progress of case is not too rapid. Late in the attack, with the collapse, the temperature frequently becomes subnormal again. The pulse rate is almost always above 110 to 120, frequently 140 to 150. In the three cases in which the leukocyte count was recorded it was as follows: Increased from 5,000 to 31,000 after admission (four days), 28,000 and 21,000. The order of frequency of the different symptoms was as follows: distention, pain, tenderness, pulse and temperature ratio, nausea and vomiting, constipation, tumor and melena. It is worthy of note that melena, which is considered characteristic of this condition, was present in only three cases. Most of these symptoms varied as to time of onset, localization, radiation, duration, etc. Apparently the ideal method of treatment consists in resection of the intestine, with an end-to-end or lateral anastomosis, and closure of the abdomen; but the recoveries occurred after this method on account of the small amount of intestine involved rather than from the particular technic used. In the cases with more extensive destruction of intestine, the drainage must be used after the anastomosis, or without it in extreme cases.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

August 26, II, No. 2904

- 1 Prehistoric War Wound. L. F. West and A. Keith.—p. 281.
- 2 *Salt Pack Treatment of Infected Gunshot Wounds. J. E. H. Roberts and R. S. S. Statham.—p. 282.
- 3 Plea for Ignoring "Laudable Pus" in Treatment of Septic Wounds. M. Donaldson, E. Alment and A. J. Wright.—p. 286.
- 4 Secondary Infections of Joints in Acute Medical Ailments; Report of Cases. G. H. Edington.—p. 289.
- 5 Death After Nitrous Oxid-Oxygen and Spinal Anesthesia. W. E. Robinson.—p. 291.

2. **Salt Pack Treatment of Infected Wounds.**—The method of dressing wounds with a firm pack of gauze and sodium chlorid tablets combined with a preliminary free excision of the wound and lacerated and infected tissues, has given results which have effected revolutionary changes in methods of treatment. During the last twelve months it has gradually supplanted other methods of treatment, until now the authors and others employ it in the majority of cases. The operative details in connection with a wound naturally vary with the site, nature and degree of infection of the wound. For example, wounds of the buttock by shrapnel ball or shell are invariably laid open in their whole extent. If there are separate entry and exit wounds they are joined by an incision dividing the glutei down to the track between them. Foreign bodies are removed and the necrotic tissue lining the track excised. Bleeding points are tied with catgut, and after examination for bony or visceral lesions a salt pack is applied. Such a wound is often ready for suturing within ten days to a fortnight.

The superficial wound if small is excised so that it will admit a finger. The full extent of the wound is then determined so far as possible by digital examination, and unless essential structures are involved the whole area is laid open, all pockets being exposed to the end. Foreign bodies, including pieces of cloth and blood clot, are carefully searched for and removed, and all necrotic tissue cut away with scissors until a freely bleeding surface remains. If the deep fascia or superficial muscles tend to come together and close the mouth of the wound sufficient tissue is excised to ensure

that, when the salt pack is in place, the mouth of the wound will be widely open. A conical wound not requiring the use of drainage tubes is thus produced. In all cases side tracks and pockets are opened up so that they may be packed to the bottom. In cases in which a fracture exists, fragments, unless small and completely detached, are not removed. With the exception of iodine for the skin they do not apply any antiseptic to the wound.

Lancet, London

September 2, II, No. 4853

- 6 *Latent Tuberculosis. C. Y. Wang.—p. 417.
- 7 Diagnosis of Enteric Fevers in Inoculated Individuals by Agglutinin Reaction. G. Dreyer and E. W. A. Walker.—p. 419.
- 8 Method of Drop Measuring Liquids and Suspensions. R. Donald.—p. 423.
- 9 Employment of Blood Transfusion in War Surgery. E. Archibald.—p. 429.
- 10 Three Cases Illustrating Functional Consequences of Head Injuries. T. E. Harwood.—p. 431.
- 11 Heart and Active Service. H. J. Seeuwen.—p. 432.
- 12 *Use of Picric Acid in War Surgery. T. F. Brown.—p. 433.
- 13 Empyema Due to Infection by *Bacillus Typhosus* Para. A. C. C. Weeks.—p. 433.
- 14 Surgical Treatment of Erythema Induratum of Bazin. E. Kondeleon.—p. 434.
- 15 Case of Hereditary Syndactyly. W. E. Le Gros Clark.—p. 434.
- 16 Shiah Pilgrimage and Sanitary Defences of Mesopotamia and Turco-Persian Frontier. (To be continued.) F. G. Clemow.—p. 441.

6. **Latent Tuberculosis.**—From the large amount of evidence accumulated, Wang says, one may draw the conclusion that the existence of latent tuberculosis in the human body has been abundantly proved. Further, by means of the animal test, it can be substantiated in a certain proportion of individuals otherwise not recognizable as tuberculous by the naked eye or the microscope, probably an average of about 12 per cent., with perhaps variations at different periods of life. How long tubercle bacilli may remain latent in the human body cannot be determined on the present knowledge of the subject; but in the case of animals tubercle bacilli may reside in the tissues as long as 104 days without producing any specific changes.

12. **Use of Picric Acid in War Surgery.**—The value of picric acid was tested by Brown and his associates in the treatment of over 3,000 wounded patients. They carried out the following routine treatment so far as practicable. 1. To superficial wounds 1 per cent. picric acid solution was applied on thin gauze. The wound was thus left practically exposed to the air; usually one dressing per day was sufficient. 2. Suppurating sinuses were treated by syringing with 0.5 to 1 per cent. of the solution twice daily, and hydrogen dioxide solution used every two or three days to remove debris. 3. Arm and leg baths with 0.5 per cent. solution for thirty minutes were used for suppurating fractures and crushed tissues, with an occasional bath of hypertonic saline as a change. The results were uniformly good, healthy and vigorous granulation and quick recovery taking place. Several cases of septic compound fracture and injuries to bone cleared up in a remarkably short time. Deep septic wounds caused by shrapnel, etc., granulated and were ready for skin grafting likewise. It must be noted, however, that they found 1 per cent. solution too strong for the delicate epithelium of new skin, and weaker solutions, 0.5 per cent., and 0.2 per cent., were used when the granulation reached the level of the surrounding epidermis. A 0.2 per cent. solution in water and spiritus vini rectificatus was used in several cases of erysipelas with excellent results.

Annales de Médecine, Paris

July-August, III, No. 4, pp. 323-459

- 17 Technic for Measurement of Blood Pressure. (Recherches sur les appareils destinés à mesurer la tension artérielle chez l'homme.) A. B. Marfan and H. Dorencourt.—p. 323.
- 18 *Changes in Viscosity of the Blood. (Recherches sur la viscosité du sang humain.) O. Josué and M. Parturier.—p. 343.
- 19 *Varying Resisting Power of Leukocytes as Element in Prognosis. (Recherches sur les variations de la résistance leucocytaire.) P. Mauriac.—p. 370.
- 20 *The Urologic Syndrome in Meningococcus Meningitis. P. Cazamian.—p. 383.

- 21 Tendon and Skin Reflexes in Case of Severed Spinal Cord. (Les réflexes tendineux et cutanés, les mouvements de défense et d'automatisme dans la section totale de la moelle d'après une observation anatomo-clinique.) H. Claude and J. Lhermitte.—p. 407.
- 22 Astasia Abasia with Vestibular Nerve Disturbances in Two Syphilitics. (Deux cas d'astasia-abasia avec troubles du nerf vestibulaires chez des syphilitiques anciens.) G. Guillain and J.-A. Barré.—p. 431.

18. **Viscosity of the Blood.**—Josué and Parturier emphasize that the viscosity of the blood can be estimated only when coagulation has been rendered impossible. Otherwise the viscosity increases as soon as the blood leaves the vessels, long before coagulation becomes manifest. All research on the viscosity of the blood that has been done with coagulable blood is fraught with error. Works on the viscosity of blood that has not been rendered noncoagulable are thus based on erroneous data. The best way to ward off coagulation is with sodium citrate. There is an unmistakable parallelism between the viscosity and the number of red corpuscles. All calculations of the viscosity should take into account separately the viscosity of the whole blood, of the plasma, and of the corpuscles. By determining the viscosity of the whole blood and the plasma, that of the corpuscles can be deduced from them. The viscosity of the plasma is most important for the metabolism; there is ample reason to assume that the viscosity of the fluid in which the corpuscles float is not without influence on the respiratory interchanges between the red corpuscles and the depths of the tissues to which they are bringing the oxygen. But at the same time the blood is being pushed along by the heart into the vessels, and the viscosity of the whole blood is an important factor in the amount of resistance which the heart has to overcome and the amount of work it has to do. The viscosity of the plasma is thus of greatest importance for the interchanges in the organism; the total viscosity, for the mechanics of the circulation.

19. **The Resisting Power of the Leukocytes as an Element in the Prognosis.**—Mauriac expatiates on the information to be derived from the leukocyte and the advantage of studying it to determine its resisting power, its activity and its physiologic value. The means we have for this are not so numerous that we can neglect any, and the technic he has worked out for estimating the resistance of the leukocytes is simple and instructive. Three drops of blood are dropped into a tube containing 0.5 c.c. of a solution of 2.06 gm. sodium citrate and 3.6 gm. sodium chlorid in 1,000 gm. distilled water. After shaking the tube it is set aside for an hour. Then it is shaken up anew and the suspension of the corpuscles is aspirated with a pipet. On a dry slide a rectangle is traced with the pipet, from 3 to 4 cm. long by 2 cm. wide and this is covered entirely with the blood solution. Aspirating the excess of fluid leaves a moist homogeneous surface, which dries at room temperature in half an hour. The leukocytes are then stained with a saturated solution of methylene blue in physiologic salt solution. The stain is left in contact for twenty minutes, then rinsed off lightly with running water, and the slide is left to dry. Under the microscope the leukocytes show blue; the reds are not visible.

By this technic the leukocytes are not injured and show up finely. Some are seen practically normal, with distinct outline and nuclei. These are the ones that have resisted the action of the citrate solution. The ratio between these resistant leukocytes and those that have become more or less disintegrated, is the index of leukocyte resistance. In the normal subject, fasting, this index—Resistance divided by Fragility—ranges from 0.7 to 0.9. The resistance of the red corpuscles can be estimated at the same time. After an hour's contact with the citrate solution the tint of the supernatant fluid ranges from that of water to a pink or bright red, proportional to the number of reds that have been laked. He gives the curves of the leukocyte index in a number of cases of pneumonia, meningitis, nephritis and erysipelas. They show that the effectual defensive reaction on the part of the leukocytes occurs when the young and active white corpuscles show first an increased resistance and then an abrupt drop to extra fragility. He calls this the *oscillation de défense*. Unless the fragility phase is preceded by the phase of extra

resistance, the outlook is bad. A fixation abscess and exposure of the spleen to radiotherapy induce polynucleosis, and hence augmented resisting powers, at first and later the disintegrating phase.

The power of regeneration of the leukocytes is the primary condition for success of medication, and all therapeutic measures which act by leukocytolysis are ineffectual so long as they disintegrate only the old corpuscles or those without physiologic importance. Worse than ineffectual, for they may do direct harm. It is necessary to proportion the leukocytolytic effect to be produced to the functional efficiency of the leukocyte-producing centers. The functional capacity of these centers should be studied and means to augment the polynucleosis applied. Only when this has been realized and the resisting powers of the leukocytes increased should we venture to apply measures that act by leukocytolysis, such as fixation abscess, Roentgen exposures of the spleen and injection of colloidal metals. The *oscillation de défense* was observed regularly in every case with a favorable outcome. It was not directly dependent on the temperature, the dyspnea, or other objective symptom, and it also seemed to be independent of the fluctuations in the resisting power of the reds. On the other hand, in meningitis the increased resistance of the leukocytes always coincided with the purulence of the cerebrospinal fluid, and there was a sudden and marked change to great fragility when the fluid cleared up.

20. **Polyuria in Meningitis.**—Cazamian discusses the urologic syndrome in the course of meningococcus meningitis, calling attention to the polyuria. It failed to appear, in his experience, only in the twenty-two fatal cases among his 101 meningitis patients. It seems to be secondary to the thirst and polydipsia caused by irritation of the nervous centers as the intensity of the inflammation subsides. The polydipsia polyuria may thus be regarded as a sign that the patient has started on the road to recovery.

Archives des Maladies du Cœur, etc., Paris

August, IX, No. 8, pp. 333-376

- 23 Soldier's Heart. D. Pletnew (Moscow).—p. 333.

Paris Médical

August 26, VI, No. 35, pp. 165-180

- 24 *Squill Extract as Rat Poison. (La lutte contre les rats des tranchées.) P. Lereboullet.—p. 165.
- 25 *Thread Drainage Wards Off Fistulas after Operations on the Anus. (La guérison rapide des fistules et des abcès de l'anus sans incontinence des matières.) H. Chaput.—p. 166.
- 26 Pulmonary Tuberculosis in Cheesy Stage Cured by Artificial Pneumothorax. R. Burnand.—p. 168.
- 27 Hydrotherapy for Results of War Wounds. (Hydrothérapie et blessures de guerre.) H. Dausset and M. Leulier.—p. 170.
- 28 Hammer Hand with Ulnar Paralysis. (Le signe de la main en marteau et de la main plantaire dans la paralysie cubitale.) Hesnard.—p. 176.

24. **Rats in the Trenches.**—Lereboullet says that nearly 50,000 rodents have been destroyed in the French trenches in the last four months. The main reliance is on rat dogs and on squillitin, the toxic extract of fresh squill bulbs.

25. **Anal Fistula.**—Chaput cures to the remotest recesses and passes a thread through the fistula, a silkworm gut or No. 10 rubber, and ties it to form a loop. He gives the details of the technic for this filiform drainage, as he calls it, for all varieties of fistulas and abscesses in the region of the anus. In ten cases of abscess the cure was soon complete, and in twenty cases of anal fistula the majority were cured in from fifteen to twenty days, without recurrence later and without cutting the sphincter.

Presse Médicale, Paris

August 24, XXIV, No. 47, pp. 369-380

- 29 *Semeiologic Importance of Signs of Pleurisy at the Apex. (Les signes de la pleurite du sommet et leur valeur dans le diagnostic de la tuberculose pulmonaire de l'adulte. L'adénite et la lymphangite nodulaire susclaviculaires.) E. Sergent.—p. 369.
- 30 Fracture of Neck of the Femur. H. Chaput.—p. 371.
- 31 Constriction of the Jaws After War Wounds. L. Imbert and P. Réal.—p. 372.
- 32 *Immobilization and Adjustable Traction for Fractured Femur. (Appareil tracteur auto-extenseur.) A. Manson.—p. 373.

33 Fracture of Lower Jaw. A. Herpin.—p. 374.

34 *Technic for Artificial Eyes After Wounds of the Orbit. (Prothèse orbitaire.) G. Valois and J. Rouveix.—p. 375.

29. **Signs of Pleuritis at the Apex.**—Sergeant ascribes great importance to inflammatory processes in the pleura in the apex region, not only for the diagnosis of tuberculosis but for distinguishing the form and the stage of the tuberculous process; while, on the other hand, it explains many blunders in diagnosis. This apical pleuritis is frequently accompanied by unequal pupils and enlargement of the supraclavicular glands. The pupil on the side affected is liable to be dilated or contracted, and the gland just back of the clavicle, at the external margin of the sternocleidomastoid, can be felt. When much enlarged it is soft, but otherwise hard. Sometimes it feels like a cord knotted along its course. This supraclavicular adenitis has nothing in common with cervical adenitis. It is connected with inflammation of the pleura in the apex region much more than with inflammation of the parenchyma at the apex. It is an objective, palpable sign of pleuritis at the apex. He has found in cadavers a chain of lymphatics starting in the focus in the apical pleura and terminating in the supraclavicular ganglion palpated during life. When the ganglion is large and soft, the pleuritic process is probably active. When the pleural focus has long healed over, the gland shrivels and grows hard. This apical pleurisy is nothing new, but physicians seem to have forgotten it. The changes which it induces are liable to lead to the mistaken diagnosis of infiltration of the apex when in reality there is only a benign lesion, a simple cicatrix, relics of a long past process.

32. **Immobilization and Adjustable Traction for Fractured Femur.**—Manson places the leg horizontally in a long narrow wooden box with a big screw in the center of the foot end. The foot is fastened to a small board, and this is hooked by a spiral spring to the screw in the footboard of the box. The screw can thus exert traction as needed while the spring equalizes it. The counter pressure is not against the groin but against a plaster plastron enclosing the root of both thighs and the buttocks. The box extends above the knee and the intervening space is bridged with plaster, like the handle of a basket, on both sides of the thigh.

34. **To Rebuild the Orbit.**—Valois and Rouveix use a funnel which expands at the tip of the funnel to form a cup just the size of the space under the eyelids. This cup is worked beneath the eyelids, which brings the funnel upright. Plaster is then poured through the funnel, and thus a cast of the orbit is easily obtained. From this cast they construct a hollow, soft rubber, elastic shell which fits into the orbit. The front is of hard rubber, and this reproduces the aspect of the eye. The elastic shell transmits the movements of the orbit to the artificial eye even when there is not a trace of a stump left.

Correspondenz-Blatt für Schweizer Aerzte, Basel

August 19, XLVI, No. 34, pp. 1057-1088

35 *State of Fallopian Tubes During Puerperal Fever. (Etat des trompes dans les fièvres puerpérales et leur rôle comme voie de propagation.) H. Chassot.—p. 1057.

36 *Treatment of Dislocated Fractures of Long Bones. C. Arnd.—p. 1069.

37 *Operative Treatment of Flatfoot. C. Arnd.—p. 1074.

38 *Roentgenoscopy of Joints. (Die Darstellung der Gelenke durch Röntgenstrahlen.) C. Arnd.—p. 1075.

35. **The Fallopian Tubes in Puerperal Fever.**—Chassot has been making a special study of the part played by the tubes in the spread of the infectious process in nine cases of puerperal fever with necropsy. He cut sections at the isthmus, at the opening into the uterus, and at the farther end. The clinical course in each case is described and compared with the microscopic findings in the tubes. Nothing was found to indicate that the tubes had much to do with the spread of the infection. In only one case was there an old catarrhal infection that might possibly have been the cause of the uterine infection. In one other case there was pyosalpinx, presumably secondary to the ulceration in the uterus. In three cases and in one tube in a fourth case the tubes were apparently entirely normal. In the five others there was a slight, only microscopic catarrhal trouble. This noninvolve-

ment of the tubes shows that pyosalpinx cannot be referred to an old pregnancy as often as is generally assumed at present. We must remember also that the streptococci set up acute processes as a rule, while gonococci are more the agents of chronic catarrhal conditions.

36. **Treatment of Dislocated Fracture of Long Bones.**—In reducing a fracture of this kind, the traction from the muscles is the most serious obstacle to be combated. Arnd gives here an illustrated description of how to guide this muscular traction to be a help instead of a hindrance. He cuts a groove in the end of each stump and lays a long stout nail in the grooves, which form a slanting double plane. The stumps are then pulled apart by the operator and an assistant. The head of the nail at the same time is pulled down to form a lever. The tip swings through a circle of from 90 to 150 degrees and levers the lower stump into place. It is held in place by the nail which is then driven slanting into the spongiosa of the upper stump. The head of the nail keeps the other stump from slipping out of place, and the lengthwise pull of the muscles coaptates the stumps while the nail prevents them from slipping to one side. The procedure is illustrated.

37. **Operative Treatment of Flatfoot.**—Arnd has been quite successful in treating flatfoot by displacing the tendon of the tibialis anticus to shorten it and give it a firm hold so that it pulls the arch of the foot into shape. The tendon is left intact. It is merely transferred to a deep groove chiselled for the purpose on the posterior aspect of the tuberosity of the scaphoid bone. If the tuberosity does not protrude enough for the purpose, the articulation between the astragalus and the scaphoid can be opened and a groove dug for the tendon here, suturing the ligament over the tendon again. It may be necessary to loosen the tendon sheath for part of the way, but this does not injure the tendon. The groove must be deep enough to hold the tendon in its place. The results of this method of correcting have been very satisfactory during the eighteen months to date.

38. **Roentgenoscopy of Joints.**—Arnd says that by injecting ether into a joint the capsule is inflated and instructive roentgenograms can thus be obtained. He leaves the cannula in place so that if the pressure seems too much, part of the ether can escape. He has thus obtained fine pictures of the destructive processes in deforming arthritis, of free bodies in the joints and dislocation of the meniscus. About 10 c.c. ether are injected, cautiously on account of danger of embolism. A very slight general anesthesia may follow, but it is transient. The ether had all been absorbed by the next day and no disagreeable consequences were observed.

Gazzetta degli Ospedali e delle Cliniche, Milan

August 17, XXXVII, No. 66, pp. 1025-1040

39 Wounded Vessel Should be Ligated Close to the Lesion. (Alcuni casi di impropria legatura delle arterie nella continuità del vaso.) G. Masnata.—p. 1027.

Pediatria, Naples

July, XXIV, No. 7, pp. 385-448

40 *Immunity Reaction and Vaccination against Scarlet Fever. (Osservazioni e ricerche sulle reazioni immunitarie spontanee o provocate nella febbre scarlattinosa.) G. Di Cristina.—p. 385.

41 *Mongoloid Idiocy. (Ancora sull'idiozia mongoloide.) U. Provinciali.—p. 392; (Contributo alla etiopatogenesi dell'idiozia mongoloide.) G. Di Giorgio.—p. 403.

42 *Thyroid and Parathyroid Insufficiency in Mother and Nursling. (Sindrome da insufficienza tiro-paratiroidica familiare.) F. Laureati.—p. 411.

40. **Immunity Reaction in Scarlet Fever and Preventive Vaccination.**—Di Cristina recalls that Caronia published in 1914 an account of research on scarlet fever which demonstrated that the scales from a desquamating patient seem to contain a specific antigen. An extract of these scales added to serum from a scarlet fever patient and guinea-pig complement induced the deviation of complement reaction. The test seems to be positive at all stages of the disease, and aids in the differential diagnosis. Di Cristina reports research undertaken to determine whether this extract of the scales might not be potent as a vaccine, and whether children vaccinated with it might not be rendered immune. He prepared

a vaccine with 15 c.c. convalescent serum and 10 gm. of desquamated shreds and scales, adding 0.8 per cent. phenol and 1 c.c. of the guinea-pig complement, incubating for fifteen hours at a temperature of 37 C. (98.6 F.). Then the serum was aspirated, centrifugated and distributed in vials that were then sealed in the flame. The child was injected subcutaneously with 1 c.c. of this vaccine every second day. By the second or third injection the specific deviation of complement occurred. He has treated with this vaccine ten children who had never had scarlet fever. The results are given in seven children between 2 and 5 years old, treated in this way for from three to six days. The total amount of vaccine injected was from 0.75 to 4 c.c.

The children thus treated had all been casually exposed to the disease, but it did not develop in any of them. Encouraged by this success, he left some of the vaccinated children in the scarlet fever ward for several days. Some of the children on entering the hospital had been placed by mistake in this ward. They were vaccinated after twenty-four hours' contact with scarlet fever cases, and they were allowed to sleep with patients in the eruptive and the desquamating stages, but none of the vaccinated children contracted the disease even when they were kept in the bed with scarlet fever children for several days. It is evident, he declares, that the scales contain something which confers immunity on the healthy organism. The immunity reaction thus induced can be rendered manifest by the deviation of complement test.

41. Mongoloid Idiocy.—Provinciali reports 2 cases from Parma and Di Giorgio 16 from Palermo, and each discusses the etiology and the prognosis. The former gave thyroid treatment or treatment for syphilis with energy and perseverance, but without appreciable effect except overcoming constipation. Di Giorgio is inclined to incriminate the ductless glands, a pluriglandular insufficiency, as the cause of mongoloid idiocy. There was a history of some chronic infection or emotional shock among the parents as a rule, in his cases. The mother of one was of a nervous temperament and the news of her husband's shipwreck reached her during this, her seventh pregnancy. The Wassermann reaction was positive in one or both parents in 4 cases; one of the mothers had a goiter, and 3 were tuberculous; one had had malaria during the pregnancy, and 3 of the fathers were hard drinkers, while a neuropathic taint was known in 4 of the families. The Abderhalden test for thyroid tissue was positive in 2 cases and improvement under prolonged thyroid treatment was evident in 2 cases.

42. Familial Thyroid-Parathyroid Insufficiency.—Laureati agrees with Concetti that there is a physiologic insufficiency of the thyroid in the newly born. It gradually is overcome either by the development of the child's thyroid or by its getting in the mother's milk the products of her sound thyroid. If the mother or wetnurse has thyroid insufficiency, the child may suffer from lack of thyroid secretion and fail to thrive unless given to another woman to nurse. The infant may present symptoms of thyroid deficit or thyroid excess, or there may be abortive forms or a subphysiologic thyroid state. One young woman had no symptoms suggesting thyroid trouble until she became pregnant when she gained 44 pounds in weight. Her weight dropped back to normal after the birth of the child but she was not able to nurse it long, and suffered from tremor and insomnia. The child did not thrive until a wetnurse was provided, when it began to gain at once and was soon placid and sturdy. In another pregnancy the woman had the same temporary increase in weight.

Laureati thinks there can be no doubt that thyroid insufficiency was responsible for the abnormal conditions in both mother and child. Concetti noticed that thyroidectomized goats were unable to suckle their young adequately, but produced more milk under thyroid treatment. Their milk production dwindled again when the thyroid treatment was suspended. Laureati relates that a woman developed an incomplete type of exophthalmic goiter at the close of the last three of her six pregnancies. The disturbances persisted for three months and her nursing during this period became restless and lost flesh, with digestive disturbances and

debility. Under phosphorus and thyroid treatment, with bromids, for the mother and artificial feeding for the child, the trouble was soon broken up. By the tenth month the child's progress was normal in every respect. In both these cases the infants presented symptoms of the same type as the mother.

In another family, the first four of the six children of a healthy country couple grew abnormally in length and weight during the first months of life, and had laryngospasm when 4 or 5 months old and two died in convulsions. After weaning, the children became normal in weight and growth generally. As term approached in the sixth and seventh pregnancies, Laureati gave the mother a course of thyroid treatment and the children developed normally and had all the appearance of health. The right lobe of the mother's thyroid is somewhat hypertrophied, but she has never presented any symptoms suggesting exophthalmic goiter. The convulsions and tendency to tetany in this family suggest that the parathyroids in the infants were insufficient. Schiffer has reported the case of a family with five children all of whom had tetany in infancy when they were given artificial feeding but not while they were nursing their mother. Her milk evidently supplied antibodies which maintained the proper balance. When this was withdrawn, tetany manifested itself. Thyroid treatment is not only useful in warding off or curing the syndrome from thyroid and parathyroid insufficiency, but it serves also as a touchstone to reveal the true cause of abnormal development of nurslings and prove its direct dependence on the internal secretion of the thyroid gland in the nursing woman. Measures to restore thyroid functioning to normal tend to restore the balance in the ductless gland system.

Policlinico, Rome

August 20, XXIII, No. 34, pp. 1019-1042

- 43 Conservative Treatment of the Wounded. (A proposito della limitazione delle mutilazioni.) I. Scalzone.—p. 1019; (A proposito della questione delle mutilazioni e dell'isolamento scientifico in cui si trovano le unità sanitarie avanzate.) U. Camera.—p. 1023.

Siglo Medico, Madrid

LXIII, No. 3269, pp. 497-512

- 44 *Classification of Blood Diseases. (Clasificación de las hemopatías.) G. Pittaluga.—p. 498.

No. 3270, pp. 513-528

- 45 Jacksonian Epilepsy with Paralytic Phenomena Occurring during Two Attacks of Malaria at Three Years' Interval in Young Woman. (Caso de encefalopatía palúdica.) E. F. Sanz.—p. 514.

44. Classification of Diseases of the Blood.—Pittaluga classifies them in ten groups as the leukemias, anemias, hyperplasias of the lymph glands and spleen, granulomatosis, new growths (lymphosarcoma, chloroma and myeloma), new growths of the blood-producing organs, parasites of these organs and of the blood, and changes occurring in both in infectious diseases and in general disease of the organs and apparatus, and what he calls hemodystrophies. This latter term comprehends the cases of disease of the blood in which the biochemical changes predominate over the histopathologic, and there is a more or less prominent neuropathic factor evident, directly or indirectly through the endocrine glands, and an inherited or familial influence, directly or indirectly. The hemodystrophies include the hemorrhagic diatheses, purpura, scurvy, hemophilia, paroxysmal hemoglobinuria and hemolytic jaundice. Polycythemia and chlorosis also belong here. The neuropathic basis of chlorosis, with the endocrine factors (internal secretion of the ovary), the abnormal metabolism of iron and formation of the hemoglobin molecule—all stamp chlorosis as a hemodystrophy.

Russkiy Vrach, Petrograd

XV, No. 25, pp. 577-600

- 46 *Need for More Institutional Care of Dermatologic Cases. P. V. Nikolsky.—p. 577.

- 47 Care of Laborers in Workshops and Factories. D. P. Nikolsky.—p. 583. Commenced in No. 24.—p. 557.

No. 26, pp. 601-624

- 48 *Drop Wrist Reflex or Grasping Reflex. (O "ladonnom sgibatelnom reflexie" ili "reflexie za'lvativnaya.") V. M. Bechterew.—p. 601.

- 49 Gunshot Wounds of the Skull. V. A. Shaak.—p. 602.
50 Treatment of Infectious Diseases with Leukocytolysis Produced by Action of Roentgen Rays on the Spleen. (Liechenie zaraznikh boleznei leukocytolizom vizivaemim osvieshtsheniem selezenki Roentgen'ovskimi luchami.) I. I. Manukhin.—p. 616. Commenced in No. 22.—p. 522.
51 Improved Technic for Staining Horny Substance. (O novom sposobie okraski rogovogo veshtshestva.) A. M. Vasiutichkin.—p. 619.

46. **Skin Diseases in Russia.**—Nikolsky pleads for more hospital care of patients with cutaneous lesions. He cites statistics to the effect that there were in 1913 in the Russian empire 13,915,299 known cases of various skin lesions. The lists included 1,248,002 syphilitics, and 1,866 cases of leprosy; scabies, 5,475,594; parasitic lesions 194,343, and other skin lesions (eczema, erythema) 6,029,769. Of this tremendous mass of patients with skin diseases only 100,686, that is, 0.7 per cent., had been given hospital care.

48. **The Grasping Reflex.**—The flexor wrist reflex or the grasping reflex recently described by Yanishevsky (abstract 81 in *THE JOURNAL*, Sept. 9, p. 844), has been noted by Bechterew in focal lesions of the cerebral hemispheres, late stages of paralytic dementia, diffuse arteriosclerosis of the brain accompanied by hemiparesis, and also in a case of paralysis agitans. While this finger grasp reflex is a normal phenomenon in infants, it is inhibited in adults, and appears only when the higher inhibitory cortical centers are destroyed. The center for this reflex Bechterew is inclined to locate in the optic thalamus.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

August 19, II, No. 8, pp. 593-704

- 52 *Medical Education. (Een en ander over hooger onderwijs in de geneeskunde.) G. van Rijnberk.—p. 593.
53 *Cancer Mortality at Rotterdam. (Sterfte aan kanker en andere kwaadaardige gezwellen te Rotterdam over de jaren 1902-1914.) J. Sanders.—p. 604.
54 Treatment of Infectious Processes in the Orbit. (Aanwijzingen voor de behandeling der oogkasontsteking.) H. Burger.—p. 614.
55 *Prospects with Operative Treatment of Brain Tumors. (Iets over de chirurgie der hersengezwellen.) H. J. Boevé.—p. 617.
56 *Case of Epidemic Meningitis in Barracks. A. J. Korteweg.—p. 622.
57 Present Status of Knowledge in regard to Chemical and Physical Factors Predisposing to Cancer. G. F. Gaarenstroom.—p. 632.

52. **Medical Education.**—Van Rijnberk says that there is scarcely any one who does not have ideas on the best way of training men to be physicians. Professors, students and laymen all have decided views on the subject, and these ideas are at variance at nearly all points except the conviction that there is room for improvement in medical education. He continues, "But there is no hope of extensive modification of medical education. Too many factors cooperate to prevent this. Universities are conservative institutions. It is difficult to lead them into new paths, mainly from the often just fear that introduction of new, untried methods may interfere with good and tried ones. A medical school, besides, is an expensive pet. Every innovation, every improvement, clinics, laboratories, equipment, cost handfuls of money, and scarcely is one branch of learning provided for than others develop calling for additional expense. And so medical education always limps along behind onrushing science, and even at the best, it is a long way behind.

"The questions as to the number, the extent and the proportions between the various special fields of medicine are constantly pressing for solution. These special fields are ever increasing in number and each is ever broadening its scope. A consequence of this would be that the curriculum and the years of study would be constantly growing longer, if it were not for the unanticipated fact that the study of each special field makes the study of each other field much easier. There is such an intimate connection between them all that deepening one's knowledge in one brings almost regularly with it a better comprehension of all the allied fields, and thus the loss of time in one period is made up in another. Even allowing for this, however, the expansion of all the special fields embraced in the medical curriculum brings the question how to proportion them all and do justice to them without making the medical course interminably long. In

the answer to this question there are two opposing views. One takes the stand that the solution must be sought in the limitation of the time devoted to the preliminary and laboratory training. The other view is that nothing should be done to disturb the fundamental studies but that the untenable fiction of the general competence of the physician should be dropped, and he should be trained in special efficiency in a narrower field."

Van Rijnberk then refers to the talks on this subject at the recent conference on Medical Education as published in *THE JOURNAL*, Feb. 26, 1916, p. 626, translating into his own tongue Professor Lyon's address, nearly in full, with running comment. He remarks in conclusion: "Is not all this extremely well put and absolutely true? There is no dividing line in anatomy, physiology, etc., between what is of practical use and what is not, just as there can be no sharp dividing line between anatomy and physiology and between them both and medical art and science. 'Boundaries are imaginary lines, not Chinese walls, and whatever is good physiology is good medicine.' In this I heartily concur. Nothing is more dangerous for so-called applied science than utilitarianism. The broader the biologic foundations, the better the leechcraft."

53. **Cancer at Rotterdam.**—Sanders analyzes the statistics at Rotterdam, from 1902 to 1914, bearing on the mortality from malignant tumors, and compares them with figures from other cities and lands. Up to the age of 55, women are subject to cancer more than men, but above this age the reverse is observed. The mortality for the men from cancer was 6.02 per cent. and for the women 7.34 per cent. of the total mortality during the twelve years. Calculated by 100,000 inhabitants, it was 82.2 for the men and 91.2 for the women. The corresponding figures for a five-year period or longer are for the whole of the Netherlands 107.6 (men) and 108.5 (women); England 75.1 and 100.8, and Stuttgart 63.8 and 100.9. The cancer mortality is thus highest in the Netherlands. Men develop cancer of the lip, mouth and esophagus—the organs exposed to irritation from tobacco and alcohol, while malignant disease affects in women the organs liable to feel the direct effects of a pregnancy. Any theory dealing with cancer must take these two facts into account. During the twelve years the number of deaths from cancer of the sexual organs has diminished while that of the digestive organs has increased in both sexes.

55. **Brain Tumors.**—Boevé discusses the prospects from operative treatment, and urges that reports and statistics be kept in a way that permits accurate comparison of cases and results of treatment. He cites the reports of the leading authorities in this line. They show that the outcome is growing gradually better. Tooth's method of estimating the ultimate results seems the most instructive. He classifies his cases according to the time they survived from the beginning of symptoms to death or date of writing. The average survival thus for cases of endothelioma given operative treatment was forty-six months, and, without operation, eighteen months. A weak point of this method, however, is the determination of the first signs of trouble. In this way two parallel series of operative and nonoperative cases, revised each year to date, would prove very instructive. Boevé adds that the earning capacity should be included in the statistics. Horsley had a patient survive nine years without recurrence after removal of an endothelioma of the dura which had grown through the skull, but the man has never been able to work since, being paralyzed and blind on one side. Tooth's method of keeping the records would also show the actual benefit from palliative operations.

Boevé emphasizes further the vital importance of an early diagnosis before irreparable harm has been done, and while conditions facilitate operative intervention. It is more difficult to operate when the intracranial pressure is high. When choked disk has lasted for some time, vision is scarcely likely to be improved by removal of the tumor or a decompressive operation. The last few years have added much to our knowledge of brain tumors so that an early diagnosis is now possible with a tumor in the lateral recess, the pituitary body, the cerebellum or the motor zone. The main progress

in diagnostic measures has been in the systematic study of defects in the visual field, Barany's research, and the study of the functions of the pituitary body.

56. **Epidemic Meningitis.**—Korteweg relates that a young soldier was brought to the hospital one very hot day in a comatose state, with headache and vomiting, all ascribed to heat stroke although the temperature was only 37.2 C. (99 F.) and the pulse fluctuating, averaging 80. He was treated as for heat stroke, but by the next day the symptoms indicated meningitis. The course of the case was somewhat unusual in that the temperature and pulse declined while the brain symptoms improved. Not until the fifth day was the temperature up to 38, and it fluctuated, reaching 39 by the ninth and then dropping again to subnormal but becoming normal as convalescence advanced. The intense headache kept up until, by the eighth day, it occurred only on moving the head. The Kernig sign did not subside entirely until the nineteenth day. The whole company, 251 men, was examined for carriers and six were found, but all but one were found free from the meningococci a week and two weeks later and none were found the third week. The entire company was isolated until the carriers were sifted out, and these were still isolated in a separate building until two examinations gave negative findings. During the entire four weeks the whole regiment was spared all fatiguing exercises, and knapsacks and cartridge belts were laid aside. No further case of meningitis developed.

Finska Läkaresällskapets Handlingar, Helsingfors

LVIII, No. 7, pp. 1057-1168

- 58 *Fatal Iodoform Intoxication in Tuberculous Pleurisy. A von Bonsdorff.—p. 1057.
- 59 *Study of the Blood in Simple and Exophthalmic Goiter and Thyrotoxicosis. T. Sandelin.—p. 1076.
- 60 Etiology of Spring Conjunctivitis. O. Wallin.—p. 1083.
- 61 *Knotting of the Small Intestine. (Om tunntarmsknutar.) L. J. Lindström.—p. 1091.
- 62 Malformation Causing Spurious Congenital Diaphragmatic Hernia. V. Mäkelä.—p. 1107.

58. **Fatal Iodoform Poisoning After Intrapleural Injection.**—Von Bonsdorff has been very successful in treating tuberculous pleurisy with intrapleural injection of 1:10 iodoform glycerin in doses ranging from 5 to 15 c.c. Until recently he has never had a mishap from it although he has made 119 such injections in the last few years. Now he reports the fatal case of a merchant of 49 who had a tuberculous process in the left lung with bilateral pleurisy with effusion. He improved under artificial pneumothorax, tapping the pleural effusion and injection of the iodoform glycerin. Four injections were made in the course of eight weeks, the dose 10 c.c., the last dose 12 c.c. This was supplemented by injection of 3 c.c. and 2 c.c. in an abscess at the point of the old puncture. Three days after the last injection the man collapsed, with convulsions and maniacal attacks, speedily fatal. The man had been weakened not only by his tuberculosis but by abuse of alcohol.

59. **Blood Picture with Abnormal Thyroid.**—Sandelin has been making a special study of the blood picture since 1912 in every case of exophthalmic goiter, simple goiter and thyroid disturbance of any kind. He here records the findings in thirty-two cases. The tests were made on the fasting subject, early in the morning, after testing the technic on the healthy. The blood picture in all with abnormal thyroid functioning was practically identical, so that this cannot serve to differentiate exophthalmic from simple goiter, or as testimony for or against operative treatment. The findings also in sixteen patients from six months to two years after operative treatment of exophthalmic goiter confirmed anew the slight import of the variations from normal in the blood picture, except that when there was lymphocytosis it usually dropped to normal in time.

61. **Knotting of the Small Intestine.**—Lindström reports a case and compares it with six similar ones on record. Operative treatment was applied in five cases, with recovery of three, including his own. A long and narrow mesentery in his case favored the gradual twisting of the intestine into a knot until the sudden complete occlusion first attracted atten-

tion to it. He resected 103 cm. of the lower portion of the ileum with prompt recovery.

Hospitalstidende, Copenhagen

August 23, LIX, No. 34, pp. 825-844

- 63 *Research on Gastric Secretion in Thousand Patients, especially Secretion of Pepsin and Mucus. (Undersøgelser over Ventrikelsekretionerne.) G. Wiltrup.—p. 825. Commenced in No. 33.—p. 801.
- 64 Technic for Inducing Abortion at Fifth Month. (8 Tilfælde af Abortus provocatus i Tiden omkring 5te Svangerskabsmaaned.) V. Esmann.—p. 833.

63. **The Stomach Secretion in a Thousand Patients.**—Wiltrup classifies and tabulates the findings in 1,000 patients at the medical department of the Copenhagen general hospital. They confirm the view that increased secretion of mucus with an Ewald test meal is a sign of organic abnormal conditions. It occurs early, often before the pepsin shows signs of anything wrong. With the more chronic affections, the secretion of mucus is less, and it is rare to find any mucus in the most pronounced forms of chronic gastritis with complete achylia and apepsia. The admixture of mucus fluctuates from day to day, and is most profuse with exogenous gastritis. His sixteen tables show among other things that anacidity is practically always associated with reduced or lost peptic power. Also that hypopepsia is always a sign of gastritis. This may have existed for some time before the hypopepsia manifests itself. Some of the cases prove that hypopepsia may exist as the only secretory anomaly with an organic gastric affection. Admixture of a small amount of mucus with the stomach contents after an Ewald meal is a frequent phenomenon and of no import in the smaller amounts. But when present in considerable amounts, this is always a sign of gastritis, generally the acute and the ectogenous forms of gastritis. The diagnosis of acid gastritis is evident when normal acid findings are accompanied by considerable secretion of mucus. The peptic power then is normal or reduced. In 74 cases of chronic polyarthritis there was achylia in 26; hypochylia in 9, and the peptic secretion was normal in 37, while 2 had hyperacidity. In 77 cases suspected of gastric ulcer there was hyperacidity in 19 and normal pepsin findings in 72, with hypersecretion in 23.

Ugeskrift for Læger, Copenhagen

August 17, LXXVIII, No. 33, pp. 1397-1442

- 65 *Insufficiency of Glands with Internal Secretion. (Insufficiencia pluriglandularis.) K. H. Krabbe.—p. 1399.

65. **Pluriglandular Insufficiency.**—Krabbe describes the case of an imbecile, now 18 years old, who presents a long array of symptoms characteristic of deficiency of the internal secretion from a number of ductless glands, such as pigmentations, sclerodactylia, microcephaly, retention of teeth and senile changes in the teeth, cryptorchidism, aphasia, achylia, atrypsia, renal diabetes, latent tetany and lymphoblastosis, with various other metabolic, nervous and trophic disturbances, including scanty growth of hair and senile aspect. This list of anomalies includes some we are accustomed to see from insufficiency of the thyroid, of the parathyroids, suprarenals, testicles, and perhaps from the pancreas, but the picture of insufficiency is not complete for any of these organs. The special feature of the case is the combination of the infantile and the senile. He describes the case mainly to illustrate the necessity for examining the function of each of the ductless glands in suspicious cases, the growth of hair, the skin, the genitals and the conditions of growth, roentgenoscopy of the hypophysis, examination of the teeth, the epiphysis lines, and bones of the wrist, microscopic examination of the blood, the blood pressure, sugar in the blood and in the urine and, finally, the electric responses of the muscles and their excitability and the mental status. By determining early enough any deviation from normal in these findings, we may be able to start the proper treatment in time to ward off irreparable damage. Although to date only thyroid and ovary extract treatment has given unmistakably favorable results, yet there is reason to suppose that time will enlarge the list of effectual therapeutic agents of this kind, both for monoglandular and for pluriglandular insufficiency. The way to hasten this is by careful study of the syndromes involved.

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Bulletin

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Uretero-ureterostomy; ureterocystanastomosis; extirpation; ligation of proximal end of ureter; formation of ureteral fistula.

Operations on Bladder

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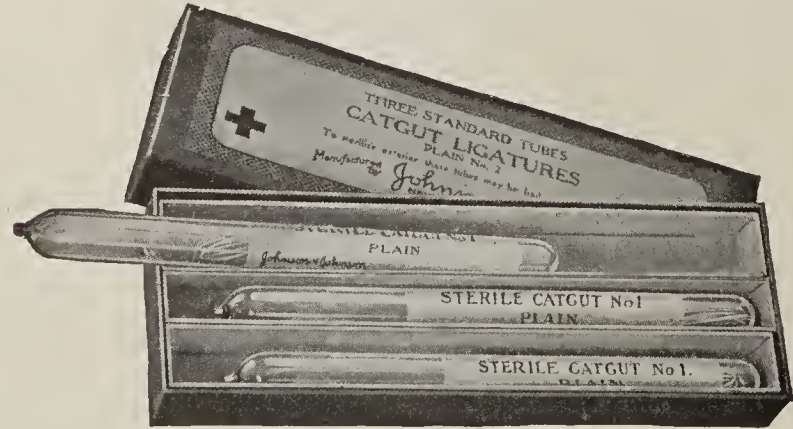
SOCIETY	PRESIDENT	SECRETARY	ANNUAL MEETING
Alabama, Med. Assn. of the State of	Henry Green, Dothan.....	H. G. Perry, State Bd. of Health, Montgomery	April, 1917.
Arizona Medical Association.....	Robert Ferguson, Bisbee.....	C. E. Yount, Prescott.....	1917.
Arkansas Medical Society.....	M. L. Norwood, Lockesburg.....	C. P. Meriwether, 309 S. Tr. Bldg., Little Rock	Little Rock, 1917.
California, Med. Soc. of the State of	Geo. H. Kress, Los Angeles.....	Philip M. Jones, Butler Bldg., San Francisco	San Diego, 1917.
Colorado State Medical Society.....	John R. Espey, Trinidad.....	Crum Epler, Pueblo.....	
Connecticut State Medical Society..	Samuel M. Garlick, Bridgeport..	M. M. Scarbrough, 105 College St., New Haven	New Haven, May, 1917.
Delaware State Medical Society.....	Geo. I. McKelway, Dover.....	G. W. K. Forrest, 901 Jackson St., Wilm'ton	Milford, Oct. 9-10, 1916.
District of Columbia, Med. Soc. of..	Edward Y. Davidson, Washington	H. C. Macatee, 1478 Harvard St., N.W., Wash'n	Washington, Dec. 7, 1916.
Florida Medical Association.....	Edmund W. Warren, Palatka....	Graham E. Henson, Jacksonville.....	Atlantic Beach, May, 1917.
Georgia, Medical Association of.....	Jarvis G. Dean, Dawson.....	Wm. C. Lyle, Augusta.....	Augusta, 1917.
Hawaii, Medical Society of.....	F. P. Reynolds, Honolulu.....	A. F. Jackson, 490 Beretania St., Honolulu...	
Idaho State Medical Association...	Truman O. Boyd, Twin Falls....	Ed. E. Maxey, Boise.....	Twin Falls, Oct. 5-6, 1916.
Illinois State Medical Society.....	W. L. Noble, Chicago.....	W. H. Gilmore, Mt. Vernon.....	Bloomington, May 16, 1917.
Indiana State Medical Association..	Geo. F. Keiper, Lafayette.....	Chas. N. Combs, Terre Haute.....	
Iowa State Medical Society.....	J. F. Herrick, Ottumwa.....	T. B. Throckmorton, Equitable Bldg., Des Moines	Des Moines, May, 1917.
Isthmian Canal Zone, Med. Assn. of	Lewis B. Bates, Ancon.....	Frazer F. Monroe, Ancon.....	Ancon, Dec. 16, 1916.
Kansas Medical Society.....	James W. May, Kansas City....	Chas. S. Huffman, Columbus.....	1917.
Kentucky State Medical Association.	James W. Kincaid, Catlettsburg..	Arthur T. McCormack, Bowling Green.....	Hopkinsville, Oct. 24-27, '16.
Louisiana State Medical Society....	Wm. H. Seemann, New Orleans..	L. R. DeBuys, Maison Blanche Bldg., N. Orleans	Alexandria, Apr. 17-19, '17.
Maine Medical Association.....	Willis F. Hart, Camden.....	John B. Thompson, 109 State St., Bangor....	Portland, June, 1917.
Maryland, Med. and Chir. Faculty of	J. W. Williams, Baltimore.....	J. I. France, 1211 Cathedral St., Baltimore...	1917.
Massachusetts Medical Society.....	Samuel B. Woodward, Worcester	Walter L. Burrage, 282 Newbury St., Boston..	Boston, June 12-13, 1917.
Michigan State Medical Society.....	A. P. Biddle, Detroit.....	F. C. Warnshuis, 91 Monroe Ave., Grand Rapids	
Minnesota State Medical Assn.....	J. Warren Little, Minneapolis...	Thos. McDavitt, 814 Lowry Bldg., St. Paul...	Minneapolis, Oct. 11-13, '16.
Mississippi State Medical Assn....	T. M. Dye, Clarksdale.....	E. F. Howard, 1st Nat. Bk. Bldg., Vicksburg..	Jackson, 1917.
Missouri State Medical Association..	J. Franklin Welch, Salisbury...	E. J. Goodwin, 3517 Pine St., St. Louis.....	Springfield, 1917.
Montana, Medical Association of...	John A. Donovan, Butte.....	E. G. Balsam, Billings.....	Kalispell, 1917.
Nebraska State Medical Association..	William F. Milroy, Omaha.....	Jos. M. Aiken, 466 Brandeis Block, Omaha...	Lincoln, 1917.
Nevada State Medical Association...	I. C. Ferrell, Fallon.....	Martin A. Robison, Reno.....	Reno, Oct. 10-12, 1916.
New Hampshire Medical Society...	Emdon Fritz, Manchester.....	D. E. Sullivan, 7 No. State St., Concord....	1917.
New Jersey, Medical Society of....	Philip Marvel, Atlantic City....	Thos. N. Gray, E. Orange.....	Asbury, 1917.
New Mexico Medical Society.....	E. F. Frisbie, Albuquerque.....	R. E. McBride, Las Cruces.....	Albuquerque, Oct. 11-13, '16.
New York, Med. Soc. of the State of	M. B. Tinker, Ithaca.....	Floyd M. Crandall, 17 West 43d St., N. Y....	1917.
N. Carolina, Med. Soc. of the State of	C. O. Laughinghouse, Greenville..	Benjamin K. Hays, Oxford.....	Ashtville, 1917.
North Dakota State Med. Assn....	Victor J. La Rose, Bismarck....	H. J. Rowe, Casselton.....	New Rockford, 1917.
Ohio State Medical Association....	Harmon B. Gibbon, Tiffin.....	C. D. Selby, 234 Spitzer Bldg., Toledo.....	Springfield, 1917
Oklahoma State Medical Assn.....	Chas R. Hume, Anadorko.....	C. A. Thompson, 507 Barnes Bldg., Muskogee	
Oregon State Medical Association..	William Kuykendall, Eugene.....	M. B. Marcellus, 901 Selling Bldg., Portland.	
Pennsylvania, Med. Soc. of State of	John B. McAlister, Harrisburg...	Cyrus Lee Stevens, Athens.....	
Philippine Islands Medical Assn....	Col. W. D. McCaw, U.S.A., Manila	R. B. Gibson, Manila.....	
Porto Rico, Med. Assn. of.....	Pedro G. Igaravidez, San Juan..	José S. Belaval, San Juan.....	
Rhode Island Medical Society.....	Edmund D. Chesebro, Providence.	J. W. Leech, 111 Broad St., Providence.....	1917.
South Carolina Medical Association.	C. B. Earle, Greenville.....	Edgar A. Hines, Seneca.....	Spartanburg, April, 1917.
South Dakota State Med. Assn....	Francis M. Crain, Redfield.....	R. D. Alway, 212 Main St., Aberdeen.....	1917.
Tennessee State Medical Assn....	Charles N. Cowden, Nashville...	Olin West, First Nat'l Bank Bldg., Nashville..	Nashville, 1917.
Texas, State Medical Association of.	James M. Inge, Denton.....	H. Taylor, Texas State Bk. Bldg., Fort Worth	1917.
Utah State Medical Association....	Eugene W. Whitney, Salt Lake City	W. Brown Ewing, 801 Boston Bldg., S. L. City	
Vermont State Medical Society.....	William W. Townsend, Rutland..	J. M. Hamilton, Rutland.....	St. Johnsbury, Oct. 12-13.
Virginia, Medical Society of.....	Jos. A. White, Richmond.....	Paulus A. Irving, Farmville.....	Norfolk, Oct. 24-27, 1916.
Washington State Medical Assn....	John M. Semple, Spokane.....	C. H. Thomson, Walker Bldg., Seattle.....	Spokane, 1917.
West Virginia State Med. Assn....	A. P. Butt, Davis.....	J. Howard Anderson, Marytown.....	Fairmont, Oct, 1917.
Wisconsin, State Med. Society of..	Louis F. Jermain, Milwaukee....	Rock Sleyster, Waupun.....	Madison, Oct. 4-6, 1916.
Wyoming State Medical Society....	.....	W. H. Roberts, Sheridan.....	

List of National Societies appeared in this space three weeks ago.

Corrections will be appreciated

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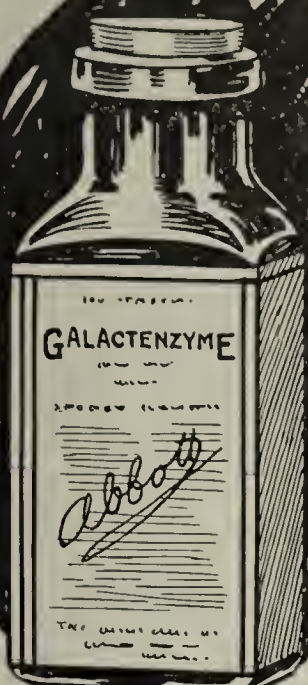
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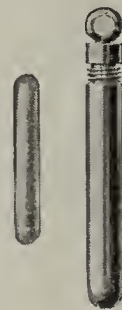
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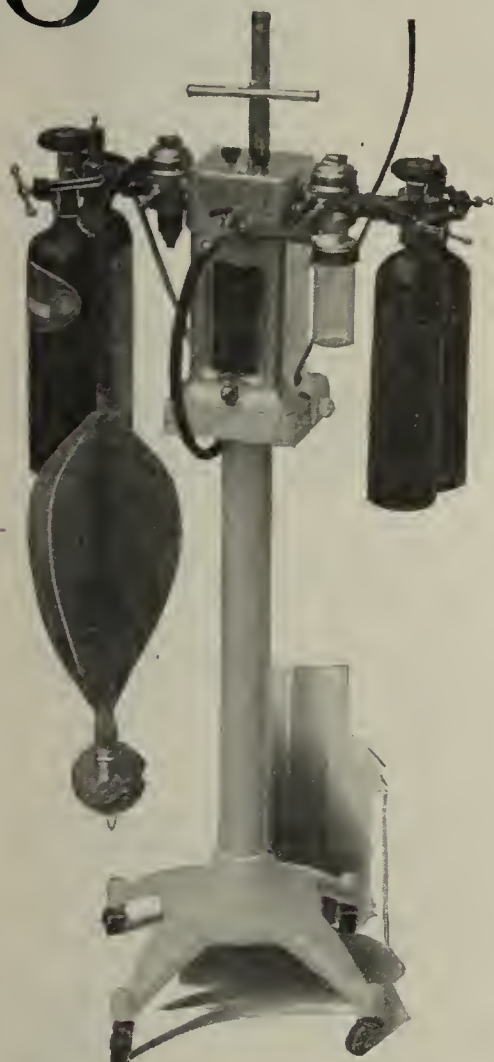
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A Truly Portable and Complete Outfit for Hospital or Private Use

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A *new* and *improved* apparatus for the administration of

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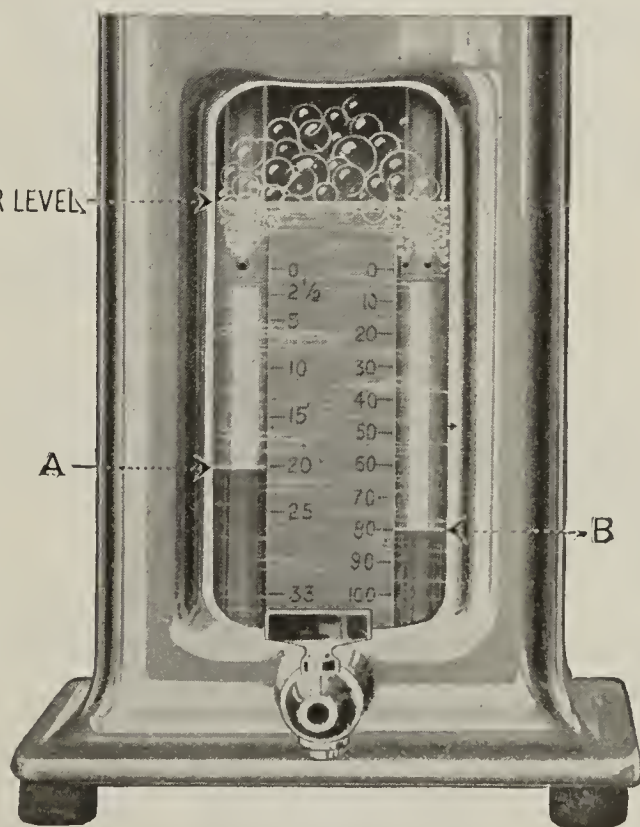
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A perfectly controlled, even and continuous flow of any mixture, assured.

Greater relaxation and ideal anesthesia or analgesia.

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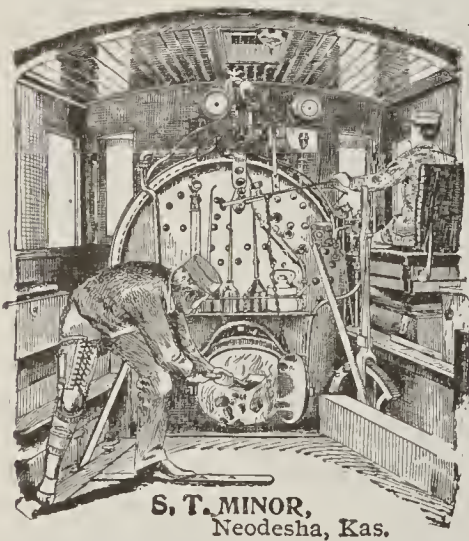
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**Latest Improved
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**Warranted not to
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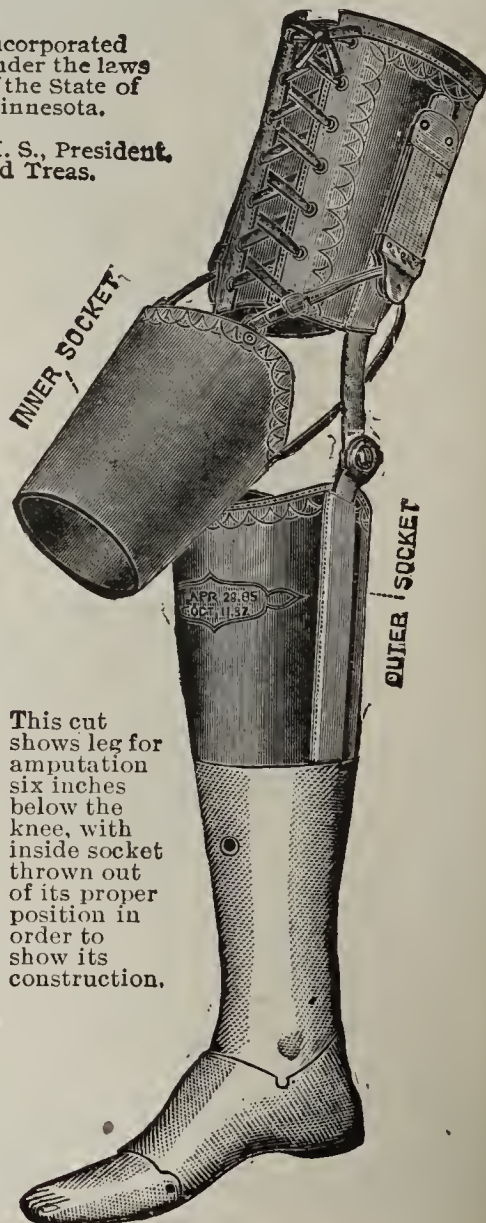
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This cut shows leg for amputation six inches below the knee, with inside socket thrown out of its proper position in order to show its construction.

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For 40 Years the Standard of Its Class

The purity, reliability, constant unvarying quality and special properties of **Packer's Tar Soap** have given it unique value for toilet, hygienic or therapeutic use. It is pleasant to use, and is unsurpassed for cleansing purposes.

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Soothing, Softening and Cleansing.

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Emollient, healing.



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A
Rational Procedure
in
Summer Diarrhea

For Infants of any age

Mellin's Food

4 level tablespoonfuls

Water (boiled, then cooled)

16 fluid ounces

Give one to three ounces every hour or two, according to the age of the baby, continuing until stools lessen in number and improve in character.

Milk, preferably skimmed, may then be substituted for water—one ounce each day—until regular proportions of milk and water, adapted to the age of the baby, are reached.

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(Continued on page 22)

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No matter where you are located, we have Superintendents, Surgical Nurses, etc. located in your state that can report for duty within forty-eight hours. We have the largest nurse registry in the world, and can furnish nurses with advanced hospital experience anywhere. Wire if you need a good nurse quickly.

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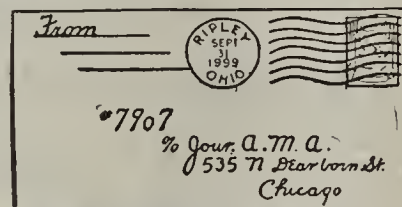
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WANTED—ASSISTANT PHYSICIAN FOR institution near Chicago; lady preferred. Add. 1035 B, % AMA.

WANTED—ASSISTANT OR PARTNER IN general practice and surgery; one-half net proceeds, no investment. Dr. W. C. Jones, Kilbourn, Wis. B

WANTED — A WOMAN PHYSICIAN AS assistant in eye, ear, nose and throat practice; state age, salary expected, college of graduation and give references in first letter. Add. 1057 B, % AMA.

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(Continued on page 22)



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FOOD

is appetizing and healthful
when raised with

ROYAL
BAKING POWDER

Made from Cream of Tartar.
derived from Grapes
No Alum-No Phosphate

A. M. A. ANNOUNCEMENT

(Continued from page 20)

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—O—

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\$250

buys a late model Studebaker. This car won't last over a day. Cole Motor Co., 1119 Locust. Wal. 1105.

Des Moines (Ia.) Register-Leader

—O—

SOMETHING WRONG WITH STEPHEN

Dr. M—— found that Stephen C——, who died yesterday morning, was a victim of the disease. The child suffered from the vulgar form of the affliction, the paralysis starting at the base of the brain and effecting all the muscles of the face.—Johnstown (Pa.) Democrat.

—O—

THE NEWER PATHOLOGY

The ailment that afflicts H—— D—— world's champion 100 yard sprinter, is subluxation of the fourth lumbar vertebra.

D——, in a letter, declares that the trouble translated in real English means that he has strained a spinal cord which resulted in partial—and only temporary—paralysis.—Portland (Ore.) Journal.

—O—

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Today she sees through the successful ministrations of two doctors who recently returned from India, where they studied and perfected themselves in the Smith cataract operation, in which the lens of the eye is removed, operated on, returned to its place, and the muscles around it shortened.—Duncarmon (Pa.) Record.

—O—

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Mrs. L. C. S——, known to the stage as Winona Winter, was pronounced recovering today from malarial fever after lying for weeks at the point of death. Her recovery was said to be due to the injection of a serum obtained by her husband from Johns Hopkins university, which obtained a small quantity from the cargo of the Deutschland, the German merchantman submarine.—Chicago News.

(Tonics and Sedatives on next page)

DR. GEORGE IVES'

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This laboratory is equipped for the Wassermann test, complement fixation test for gonorrhea, Lange gold test, Geraghty and Rowntree functional kidney test, tissue diagnosis, hygienic investigations, and numerous other tests. Autogenous and stock vaccines and reagents for various tests furnished. Individual instruction is offered to physicians, nurses and technicians.

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Highest order of individual service.

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and its

Preparations, Applicators, Etc.



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Correspondence Solicited

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means money and time saved, more efficiency in the treatment of the patient and less drudgery for the physician.

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is simplicity itself and a recognized economical complete, uniform and reliable short-cut method for ACCOUNTS and CASE-RECORDS
Twelve years of success.

LET US SHOW YOU! WE CAN!

Address Box 351, Yonkers, N. Y.

(Continued from page 20)

WANTED—ASSISTANT IN GERMAN Protestant Hospital; live in hospital; state all qualifications and salary wanted; work largely surgical. Add. 1008 B, % AMA.

WANTED—SURGICAL ASSISTANT WHO can do laboratory work; beginning salary, \$100 per month; give qualifications fully in first letter, including two good references; complete particulars will be furnished those whose letters indicate fitness for the position. Dr. Cottam, 303-306 Boyce-Greeley Building, Sioux Falls, S. D. B

WANTED—ASSISTANT TO GENERAL practitioner and surgeon with hospital; must have had hospital experience and be graduate of first class school; man with knowledge of x-ray or cystoscopy given preference; give school, age, church, married or single, habits, etc., first letter; salary \$100 per month and expenses; must come soon; this appears twice. Add. 1006 B, % AMA.

WANTED—ASSISTANT IN TUBERCULOSIS sanatorium in middle west; single preferred; salary \$75 monthly with maintenance; promotion if satisfactory. In application state age, health, habits, medical school, year graduation, experience in hospital and private practice, full personal and professional references, recent photograph, earliest date available. Add. 966 B, % AMA.

PHYSICIANS WANTED

WANTED—COMPETENT YOUNG SURGEON to take charge of Franco-Serbian Field Hospital. Unit will be established close to front, giving applicant excellent experience in emergency surgery. Unit leaves for Serbia early in October. Salary \$100 per month and traveling expenses. Applicant must remain at least six months. For full details write Dr. C. L. Gibson, 72 E. 54th St., New York, N. Y. C

WANTED—PHYSICIAN—SOUTHERN California; location free; nothing to sell; leaving practice in town of 10,000 to do special work in neighboring city; one other medical man; good roads, schools, churches, phones, gas, electricity, domestic water; orange belt; middle-aged Protestant preferred; must act at once. Wire P. O. Box 417, San Bernardino, Calif. C

WANTED—PHYSICIAN—IN VILLAGE of 450 in prosperous farming community (Red River Valley); nearest physician 17 miles; location open about October 1; good drug store in town; an excellent opportunity. If interested inquire at once of C. A. Thompson, secretary Commercial Club, Oslo, Minn. C

WANTED—PHYSICIAN—NORTHWEST—ern Illinois; to take place of doctor accepting appointment in east; railroad town 900; practice \$300 monthly; pay good; one other physician; large territory; rich country; must be licensed in Illinois and come soon; must take fixtures and drugs; price, \$500; part time; splendid opportunity. Add. 1051 C, % AMA.

WANTED—PHYSICIAN WHO IS A REGISTERED pharmacist, registered in Kansas or eligible to register as pharmacist by reciprocity, to help in store and do general practice; fine opportunity for such a man. Address with full particulars of yourself, 991, F. V. Kniest, Omaha, Neb. C

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WANTED—PATHOLOGIST WITH REPUTATION in tissue work and bacteriology; must be physician with abundant experience; give references, description of work done, salary desired, etc., in first letter; splendid opportunity for right man. Add. 1063 C, % AMA.

WANTED—LEWISTOWN, PA., HOSPITAL is in immediate need of a capable superintendent; general hospital of 40 beds; training school for nurses connected; salary, \$70 per month. Add. Rev. M. S. Gressman, Clerk, Lewistown, Pa. C

WANTED—FOR HOSPITAL OF 140 BEDS in eastern part of United States, resident bacteriologist and pathologist; one competent to do serum work, vaccines, and Wassermann tests; state age, qualifications, experience and salary expected. Add. 1025 C, % AMA.

(Continued on page 24)

Tonics and Sedatives

AMONG COLLEAGUES

"You are lying so clumsily," said the observant judge to a litigant who was making a dubious statement of his case, "that I would advise you to get a lawyer."—*Browning's Magazine*.

—O—

ECONOMY IN THE HOME

"I didn't know your little boy had to wear glasses."

"Well, y'know, he's not obliged to, but they were a good pair of poor dear 'Enry's, and I thought it such a pity to waste 'em."—*Passing Show*.

—O—

THE LAST WORD

Mrs. Lafferty—Tin stitches did th' doctor have to take in me ould man.

Mrs. O'Hara—Tin, was it, only tin? Sure, when th' doctor seen me poor husban' carried fr' th' wreck on th' railroad, he sez, sez he: "Do there be no wan here wid such a t'ing as a sewin' machine?"—*Judge*.

—O—

PREPARED FOR THE WORST

After the dynamite fatality, Casey ran back to break the news to Mrs. Murphy.

"Have you got Pat's life insured?" he asked. "Indeed I have and for a long while," was the reply.

"Well, then," blurted out the tactful messenger, "I hope ye won't have the trouble collecting it that the boys will in collecting Pat."—*Exchange*.

—O—

REAL FAME

There are many kinds of celebrity. When Haydon, the painter, visited Stratford, he held forth about Shakespeare to some rustics he met in a wayside inn. They told him that Stratford then contained "another wonderful fellow, one John Cooper."

"Why, what has he done?"

"Why, zur, I'll tell 'ee. He's lived ninety years in this 'ere town, man and boy, and never had the toothache."—*Epworth Herald*.

—O—

WHY NOT?

Two Irishmen were walking into Dublin from one of the outlying villages, and fell to discussing the war and the consequent increase in the cost of living.

"But have ye heard the latest news?" says Tim.

"No," says Pat. "Phwat is it?"

"There's a penny off the loaf."

"Bedad!" says Pat. "I hope its off the penny ones."—*Exchange*.

—O—

INSIDE INFORMATION

Mamma was serving jam pudding.

"Johnny, will you take a little pudding?"

Johnny: "Yes; will you give me the ends, please?"

Mamma: "But why do you wish to have the ends, Johnny?"

Johnny: "Why, when I was in the kitchen I heard Ellen say to cook, 'Put a good lot of jam in the ends, cook, because you know the ends are always left for us.'"—*Exchange*.

—O—

BUILT FOR IT

A certain professor, who was a remarkably fine, well-built man, was staying at a village some time ago.

He happened to pass two men carting flour, and overheard this conversation:

"Say, Bill, who's that?"

"That's the professor what's staying here," was Bill's reply; "they say as how he's very learned."

"What a spoilt man," rejoined the other. "I never in my life see'd such a back for a sack of flour."—*Tit-Bits*.

(Continued on next page)

MERCURIAL (GREY) OIL - \$1.50

One of the New and Nonofficial remedies. A valuable adjunct in the treatment of syphilis. Put up in syringes, each syringe containing 10 doses. Credit of 50c upon return of syringe. Pamphlet sent upon request.

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Sterile container with needle and complete instructions sent upon request.

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Slides of section sent upon request.

AUTOGENOUS VACCINES - \$5.00

in the treatment of:

Pyorrhea

Asthma

Sinus Infections

Throat Infections

Bladder and Urethral Infections

Chronic Bronchitis

Endocarditis

Otitis Media

Skin Infections

Hay Fever

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NATIONAL PATHOLOGICAL LABORATORY

(INCORPORATED)

CHICAGO, ILL.
5 S. Wabash Ave.

NEW YORK CITY
18 E. 41st Street

TONICS AND SEDATIVES

(Continued from preceding page)

AN EXAMPLE

The teacher had been doing her best to instill into the minds of her class the meaning of the word desert.

"So you see, children," she said, "a desert is a great place where nothing will grow. Now, Johnnie Tomkins, I don't believe you were listening."

"Yes, I was, teacher."

"And do you know what a desert is?"

"Yes, teacher; a place where nothing will grow."

"That is correct. Now, give an instance of one of the world's deserts."

"Dad's head, teacher!" replied Johnnie. — *Exchange.*

—o—

HIS PROFESSIONAL MANNER

One afternoon, just as Dr. Bundy's office hour had begun, a very excited individual rushed into his office.

"Doctor, doctor! Just one moment!" he cried.

"I'll see you shortly," said the doctor.

"Only a second, doctor!" protested the perturbed one. "Only a second is what I want!"

"I'll see you shortly," repeated the physician, with impatience.

The man, with a sigh, took a seat in the reception room. His excitement soon subsided, apparently, and he read the magazines lying on the table, making no further efforts to see the doctor.

After several patients had consulted the doctor, the latter stepped over to the man, and said:

"You were in somewhat of a hurry, I believe, sir. What can I do for you?"

"O, nothing now," replied the man. "I only dropped in to tell you that your neighbor's cows have escaped from the yard and are having a fine time among your flower-beds."—*New York Times.*

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for review in the interests of our readers and as space permits.

PEDIATRICS. Edited by Isaac A. Abt, M.D., Professor of Pediatrics, Northwestern University Medical School, with the Collaboration of A. Levinson, M.D. Orthopedic Surgery. Edited by John Ridlon, M.D., Professor of Orthopedic Surgery, Northwestern University Medical School, with the Collaboration of Charles A. Parker, M.D. Volume 5—Practical Medicine Series. Cloth. Price, \$1.35. Pp. 232. Chicago: Year Book Publishers, 1916.

THE PROBLEMS OF PHYSIOLOGICAL AND PATHOLOGICAL CHEMISTRY OF METABOLISM FOR STUDENTS, PHYSICIANS, BIOLOGISTS AND CHEMISTS. By Dr. Otto Von Fürth, Professor Extraordinary of Applied Medical Chemistry in the University of Vienna. Translation by Allen J. Smith, Professor of Pathology, University of Pennsylvania. Cloth. Price, \$6. Pp. 667. Philadelphia: J. B. Lippincott Company, 1916.

GYNECOLOGY. Edited by Emilius C. Dudley, A.M., M.D., Professor of Gynecology, Northwestern University Medical School, and Herbert M. Stowe, M.D., Assistant Professor of Obstetrics, Northwestern University Medical School. Volume 4—Practical Medicine Series. Cloth. Price, \$1.35. Pp. 232. Chicago: Year Book Publishers, 1916.

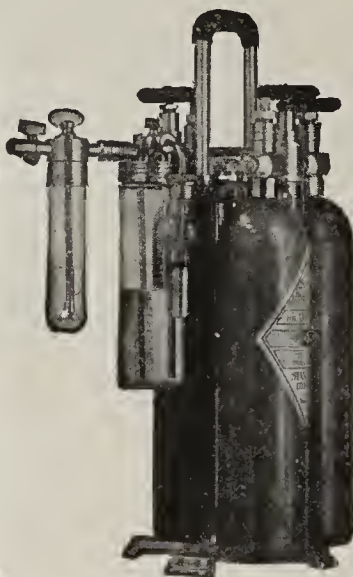
I. K. THERAPY (IMMUNKÖRPER, IMMUNE SUBSTANCES) IN PULMONARY TUBERCULOSIS, WITH A SUMMARY OF CASES. By William Barr, M.D., D.Sc., D.P.H., District Tuberculosis Officer for the West Riding of Yorkshire. Cloth. Price, \$1.25 net. Pp. 82. New York: William Wood & Co., 1916.

(Continued on next page)

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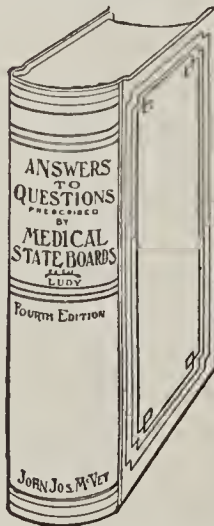
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SEE PAGE 20 FOR COST OF CLASSIFIED AND
COMMERCIAL ANNOUNCEMENT
ADVERTISEMENTS

(Continued from page 22)

WANTED—A FIRST CLASS PHYSICIAN;
write for particulars to Charles Mix County
Bank, Geddes, S. D. C

INTERNS WANTED

WANTED—MANHATTAN EYE, EAR AND
Throat Hospital. Competitive examination
for interns will be held at the hospital De-
cember 20 at 1 o'clock to fill vacancies oc-
curring January, April, July and October.
Add. Reuben O'Brien, Supt., 210 E. Sixty-
Fourth St., N. Y. City. D

WANTED — HARPER HOSPITAL, DE-
troit, Mich., has four positions as interns
in the surgical service open for October 1;
positions continue for one year with a second
year in the medical service if so desired; hos-
pital has 424 beds; 8,000 surgical cases and
3,000 medical cases treated last year. Add.
T. K. Gruber, M.D., Asst. Superintendent. D

WANTED—INTERN TO REPORT AT
once for service 6 months or 1 year; must
be experienced anesthetist and of good habits;
allowance, \$15 per month, board, room and
hospital laundry; small hospital but with good
clinical experience. Apply to Dr. James C.
Johnston, Supt., McAlester, Okla. D

WANTED — INTERN FOR ONE YEAR'S
rotary service in a 190-bed hospital in the
middle west. Add. with references 906 D, %
AMA.

NURSES WANTED

WANTED—SUPERINTENDENT OF
Nurses, R.N., well qualified, for a 41-bed
hospital. Apply to Mr. F. Baron, 138 Second
St., New York, N. Y.; if in person, apply
daily between the hours of 3 and 5. T

LABORATORY TECHNICIANS
WANTED

WANTED — IN SOUTH DAKOTA CITY,
bacteriologist qualified to do general bacterio-
logical work; examination of sputum, spinal
and pleuritic fluids, Wassermann, tissue, Widal
reaction, autogenous vaccines, etc.; graduate
preferred. Add. 979 V, % AMA.

LOCATIONS WANTED

WANTED—SMALL TOWN OR COUNTRY
location in Pennsylvania; no mining or con-
tract proposition considered; will purchase real
estate or equipment if price is right. Add.
927 E, % AMA.

WANTED—TO PURCHASE A PRACTICE
with or without real estate in a place of not
less than 5,000 population, within 50 miles of
New York City; or in the state of North
Carolina or Virginia. Add. Doctor D, 1242
Dean St., Brooklyn, N. Y. E

WANTED—PENNSYLVANIA LOCATION,
western or central; must be \$3,500 practice,
well established in railroad town of 2,000 to
10,000, Protestant community, large territory;
must bear strict investigation; possession not
later than November 1; real estate not desired
but would consider on easy terms. Add. 998
E, % AMA.

WANTED—IMMEDIATELY—BY AN EX-
perienced physician, an unopposed practice,
perceived physician, an unopposed practice,
or the practice of a retiring, invalid or deceased
physician, or a good opening for an eye, ear,
nose and throat practice, alone or with general
practice, in Michigan, Missouri, Colorado, Ore-
gon or Washington; would buy office furnish-
ings and some equipment. Add. Lock Box
1009, Eureka, Utah. E

WANTED—LOCATION BY EXPERIENCED
surgeon; just leaving surgeons in U. S.
Army; desire location in town with good
schools where children can be educated; prefer
western state; desire location offering connec-
tion with railroad, hospital, or corporation as
surgeon; pay cash for equipment, later buy
real estate if satisfactory. Add. 1029 E, %
AMA.

WANTED—HAVING SOLD, I AM IN THE
market to buy a location in Colorado or New
Mexico; would like small drug store in con-
nection with practice; would consider contract
practice or partnership with good man; long
experience, and graduate of Class A school;
no "blue sky." Add. 312 Pine St., Trinidad,
Colo. E

(Continued on next page)

BOOKS RECEIVED

(Continued from preceding page)

CARE AND FEEDING OF INFANTS AND CHILDREN. A Text-Book for Trained Nurses. By Walter Reeve Ramsey, M.D., Associate Professor of Diseases of Children, University of Minnesota, with Suggestions on Nursing by Margaret B. Lettice, Supervising Nurse of the Baby Welfare Association and Nann Gossman, Nurse in Charge of Children's Department, University Hospital, Minneapolis. Cloth. Price, \$2. Pp. 290, with 112 illustrations. Philadelphia: J. B. Lippincott Company, 1916.

A TEXT-BOOK OF HUMAN PHYSIOLOGY, INCLUDING A SECTION ON PHYSIOLOGIC APPARATUS. By Albert P. Brubaker, A.M., M.D., Professor of Physiology in the Jefferson Medical College. Fifth Edition. Cloth. Price, \$3, net. Pp. 776, with 359 illustrations. Philadelphia: P. Blakiston's Son & Co., 1916.

A PRACTICAL TREATISE ON DISORDERS OF THE SEXUAL FUNCTION IN THE MALE AND FEMALE. By Max Hühner, M.D., Chief of Clinic, Genito-Urinary Department, Mount Sinai Hospital Dispensary, New York. Cloth. Price, \$3 net. Pp. 318, with illustrations. Philadelphia: F. A. Davis' Company, 1916.

THE DIAGNOSIS OF NERVOUS DISEASES. By Purves Stewart, M.A., M.D., F.R.C.P., Physician to Westminster Hospital. Fourth Edition. Cloth. Price, \$6. Pp. 589, with 283 illustrations. New York: E. B. Treat & Co., 1916.

THE AMERICAN YEAR-BOOK OF ANESTHESIA AND ANALGESIA, 1915. Edited by F. H. McMechan, A.M., M.D. Cloth. Price, \$4. Pp. 420, with 250 illustrations. New York: Surgery Publishing Company, 1916.

The Public Service

U. S. Public Health Service

Changes for the seven days ended Sept. 20, 1916:

Rucker, W. C., asst. surg.-gen., granted 7 days' leave of absence, from Sept. 14, 1916.

Irwin, Fairfax, senior surg., represent the Service at the meeting of the American Hospital Association, Philadelphia, Pa., Sept. 26-29, 1916.

White, J. H., senior surg., granted 6 days' leave of absence, from Sept. 17, 1916, under paragraph 193 of the Service Regulations.

Young, G. B., surgeon, granted 2 days' additional leave of absence, Sept. 8-9, 1916.

Foster, M. H., surgeon, authorized to travel to different points in Pennsylvania and adjacent states to make investigations relative to prevalence of poliomyelitis, and direct officers under him to perform the same duty when necessary.

McCoy, G. W., surgeon, granted 7 days' leave of absence enroute under Bureau orders of Aug. 29, 1916.

Frost, W. H., passed asst. surg., relieved at New York, and rejoin station at Cincinnati, Ohio, stopping enroute at Bureau.

Watkins, J. A., passed asst. surg., relieved at New York, and rejoin station at Pittsburgh, Pa.

Derivaux, R. C., asst. surg., take temporary charge of marine hospital at New Orleans, La., and direct work of malaria investigations.

Treadway, W. L., asst. surg., relieved at Little Rock, Ark., and report at Washington for duty in field investigations of school hygiene.

Waller, C. E., asst. surg., proceed to Philadelphia, for duty on steamer *Murray*, in investigations of pollution of tidal waters.

Waring, C. H., asst. surg., relieved at Jackson, Miss., and proceed to Baltimore, Md., for duty in preventing the spread of poliomyelitis.

Anderson, T. B. H., asst. surg., Bureau letter dated Sept. 5, 1916, amended to grant 6 days' leave of absence from Sept. 7, 1916.

Woods, Edwin O., asst. surg., continued on duty at Seattle, Wash.

Stout, Joseph D., asst. surg., continued on duty at Stapleton, New York.

(Continued on next page)

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(Continued from preceding page)

WANTED—WILL PAY CASH FOR ESTABLISHED eye, ear, nose and throat practice (including up-to-date equipment) bringing annual income of not less than \$5,000; or will purchase partnership with congenial associates; might buy real estate if conditions are right; prefer prosperous city in Mississippi Valley state or west; in answering give full details; I intend to locate at once and will call and investigate your proposition. Add. 1061 E, % AMA.

WANTED—LOCATION IN A TOWN FROM 1,000 to 5,000 in Illinois, Michigan or Indiana; will pay \$100 for practice and introduction; do not need outfit; might buy real estate if desirable; give particulars about population, nationality, religion, occupation, fees and collections. Add. 1055 E, % AMA.

WANTED—LOCATION—IN WASHINGTON or Oregon by surgeon; will consider location favored by general practitioners or possibly a hospital or partnership; experienced in surgery, general practice, etc., and gilt-edge references; able to make moderate investment. Address with particulars, Dr. 948, % F. V. Kniest, Omaha, Neb. E

WANTED—LOCATION OR PARTNERSHIP in Illinois or reciprocating state; have had eighteen months' hospital training in New York, N. Y., and several years' general practice; just completed postgraduate course in physical and laboratory diagnosis; married man. Add. P. O. Box 136, Council Bluffs, Ia. E

LOCUM TENENS WANTED

WANTED—A GOOD PHYSICIAN TO take my country practice for six months or a year; Southern Michigan. Add. 994 F, % AMA.

WANTED—LOCUM TENENS FOR AT least three months, probably longer, to begin Jan. 1, 1917, to care for a large general practice, while I am taking post work; must sign contract not to continue practice in this town. Dr. F. A. Barta, Ord, Neb. F

WANTED—A LOCUM TENENS FOR SIX months in a hospital for the insane; preferably one who has had some experience in psychiatry; present incumbent wishes to do postgraduate work; board, room and salary; send photograph and recommendations; must report by October 25. Add. 1015 F, % AMA.

PARTNERS WANTED

WANTED — PARTNER—TO SETTLE AN estate; opportunity of life time for graduate nurse with initiative, ability, character, pleasing personality and few thousand dollars to secure interest in private sanatorium (tuberculosis); unexceptional references absolutely required; describe fully self, qualifications, references, etc., in first letter or no attention will be paid. P. O. Box 184, Denver, Colo. G

WANTED — EYE, EAR, NOSE AND throat partner; must be educated, well qualified, sober, honest, good operator, nice appearing, pleasing manners and know how to handle the public successfully; ready cash not essential; splendid opportunity for proper man to establish himself in growing city of 17,000 people. Dr. Yantis, Wichita Falls, Texas. G

WANTED—PARTNER OR ASSISTANT; young man, single, American, with some experience, especially surgical, in large rural practice easily increased; established twenty-one years by present incumbent; no opposition; good pay and roads; office equipped ready to step in; must have affability and good endorsements. Add. 1003 G, % AMA.

WANTED—NEW YORK—PARTNER AND successor; a splendid chance for a man with a little money to obtain an old established eye, ear, nose and throat practice; must have a New York license and be able to command from \$3,000 to \$5,000; growing city of 100,000 people; I wish to retire soon; if you cannot fill this bill do not answer this advertisement. Add. 908 G, % AMA.

PARTNERSHIP WANTED

WANTED—PARTNERSHIP IN EYE, EAR, nose and throat practice, or will purchase good practice, or a location desired; have had 1½ years' postgraduate work, mostly in Vienna and London; 7 years' general and 2 years' special practice; graduate of A+ school. Add. 1024 H, % AMA.

(Continued on next page)

THE PUBLIC SERVICE

(Continued from preceding page)

Eskey, C. R., asst. surg., continued on duty at Chicago.

Berkowitz, M. D., pharmacist, relieved at Pensacola Quarantine Station and proceed to Norfolk, Va., for duty.

Medical Corps, U. S. Navy

Changes for the two weeks ended Sept. 23.

Shepard, G. W., P. A. surgeon, to receiving ship, Norfolk, Va.

Drum, W. M., asst.-surg., M. R. C., appointed from Aug. 25, 1916.

Stuart, M. A., P. A. surgeon, to Navy Yard, Norfolk, Va.

Biello, J. A., P. A. surgeon, from New York Recruiting Station to Naval Hospital, Portsmouth, N. H.

Carson, V. H., asst.-surg., detached Marine Expeditionary Force, San Domingo, to *Castine*.

Borden, J. T., asst.-surg., detached Marine Brigade, Port-au-Prince, Haiti, to inspector in the Hatian Constabulary.

Helm, J. B., asst.-surg., detached *Castine* to inspector in the Hatian Constabulary.

Pryor, J. C., surgeon, detached Bureau of Medicine and Surgery, to Naval Medical School.

Koltes, F. X., surgeon, detached with the First Brigade of Marines, Port-au-Prince, Haiti, to director Hatian Constabulary.

Buckley, John, P. A. surgeon, commissioned from Feb. 4, 1916.

Rushmore, J. C., asst.-surg., commissioned from Aug. 10, 1916.

Gordon, Gibson, asst.-surg., commissioned from Aug. 10, 1916.

Francis, C. H., asst.-surg., commissioned from Aug. 10, 1916.

Blackwood, N. J., medical inspector, detached Navy Yard, Boston, to command *Solace*.

Kennedy, R. M., medical inspector, detached *Solace* to home wait orders.

Leys, J. F., surgeon, to Navy Yard, Boston.

Ohnesorg, Karl, surgeon, detached assistant naval attache, Berlin, Germany, to leave of absence.

Gatewood, J. D., medical director, detached command Naval Medical School, Washington, D. C., to Bureau of Medicine and Surgery, Navy Department.

Stitt, E. R., medical director, to command Naval Medical School, Washington, D. C.

Kennedy, R. M., medical inspector, to command Naval Hospital, Washington, D. C.

Dunn, acting asst.-surg., to Marine Recruiting Station, Atlanta, Ga.

Taylor, J. S., surgeon, detached *Alabama* to Force Surgeon Reserve Force, Atlantic Fleet, on *Rhode Island*.

Curl, H. C., surgeon, detached Force Surgeon, Atlantic Fleet, to Marine Barracks, Port Royal, S. C.

Trible, G. B., P. A. surgeon, to Naval Academy, Annapolis, Md.

Strine, H. F., surgeon, to Naval Hospital and Medical School, Washington, D. C.

Plummer, R. W., surgeon, to the *Alabama*.

Freeman, G. F., surgeon, detached *Tacoma* to home wait orders.

May, H. A., P. A. surgeon, detached Marine Barracks, Port Royal, S. C., to home and wait orders.

Garrison, P. E., P. A. surgeon, detached *Dolphin* to Expeditionary Force, San Domingo.

Old, E. H. H., P. A. surgeon, detached Naval Medical School and Naval Hospital, Washington, D. C., to *Solace*.

Sutton, D. G., P. A. surgeon, from *Chester* to Naval Medical School.

Allen, D. G., P. A. surgeon, to the *Chester*.

The following assistant surgeons, M. R. C., have been ordered to the Naval Medical School, Washington, D. C., Sept. 25, 1916, for course of instruction: L. H. Williams, F. F. Murdock, O. D. King, A. C. Sinton, C. H. Francis, J. J. Laughlin, J. A. Halpin, T. E. Cox, A. W. Hoagland, A. M. Larsen, F. T. Bower, I. W. Jacobs, A. H. Cecha, P. F. Prioleau, J. C. Bentley.

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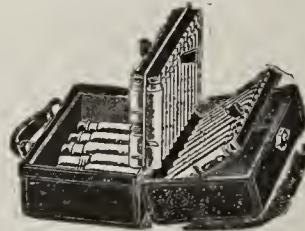
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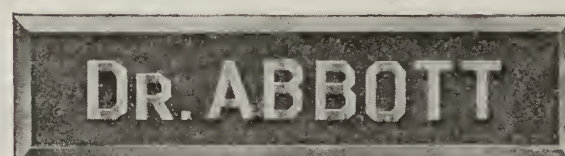
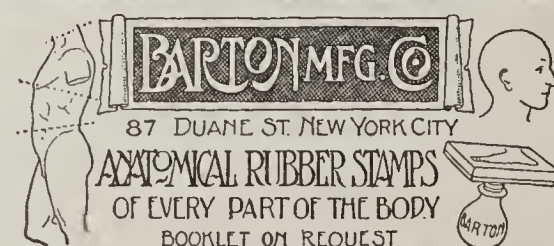
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(Continued from preceding page)

WANTED — ASSOCIATION OR ASSISTANTSHIP with an eye, ear, nose and throat specialist by a young man with 1½ years' general hospital experience and 3 years' training on the house staff in a well-known New York special hospital; best references furnished. Add. 898 H, % AMA.

SITUATIONS WANTED

WANTED — ASSOCIATION OR ASSISTANTSHIP with eye, ear, nose and throat specialist by woman physician with three years' experience in specialty; graduate of Class A school; general internship; house physician 1½ years; connected with one of the best ophthalmic clinics in Chicago; best of references. Add. 1060 I, % AMA.

WANTED — SALARIED POSITION, Locum tenens or unopposed location; available at once; in New Jersey or Massachusetts; highest qualifications and references as to ability and morals; no money to invest. Add. 1053 I, % AMA.

WANTED—POSITION—AGED 36, UNMARRIED; speak German and English; weight 190 pounds; height 6 feet; graduate Georgetown University, Washington; registered with reciprocal privileges in several states; good habits; salary, \$75 and maintenance or \$125 without; gilt edge reference as to moral character; former teacher in Columbia University and clinic work; would especially accept position as ship physician and surgeon and recompense anyone helping me to get same; would also accept corporation or contract practice; would go almost anywhere; considerable experience in accident and emergency work; considerable laboratory experience, house surgeon, etc.; large experience in serological work and clinics; also extended neurological work. Add. 986, F. V. Kniest, Omaha, Neb. I

WANTED — SALARIED POSITION BY physician 30 years of age, married, one child; hospital experience, four years general practice; protestant, Mason, abstainer; graduate A+ school, 1911; ready in month's time, go anywhere; desire opportunity with salary later—thirty-day try-out; any information and references given; correspondence solicited. Add. 1040 I, % AMA.

WANTED — FIRST CLASS RADIOGRAPHER wants location; not a medical graduate; several years' experience; first class references as to ability and character; am of good appearance; can come at once; will locate anywhere; am familiar with operation of Coolidge as well as tungsten tube. Add. 1001 I, % AMA.

WANTED—POSITION AS HEALTH OFFICER or public, private or corporation sanitary work; special study made of health work and now engaged in public city health and sanitary work in New York City, but desire to make a change. Add. 988, F. V. Kniest, Omaha, Neb. I

WANTED—ASSISTANTSHIP WITH EYE, ear and throat surgeon; aged 30, single; A.B. and M.D. degrees; Class A school; 1½ years' hospital, 5 years' general practice; post-graduate course and house service in special hospital; can do laboratory work and Wassermann. Add. 991 I, % AMA

WANTED — POSITION AS ASSISTANT, locum tenens or contract practice in Wisconsin, Michigan, Montana or any western state, beginning about Oct. 15, 1916, by 1914 graduate; 18 months' internship at county hospital; if assistantship or locum tenens would prefer one with view of becoming permanently associated later if suitable to both; can give best of reference; will send photo on request. Add. 953 I, % AMA.

WANTED — POSITION BY COMPETENT woman physician, experienced in eye, ear, nose and throat work; do retinoscopy and surgery of specialty; anesthetist; prefer states reciprocating with Illinois. Add. 947 I, % AMA.

WANTED — SALARIED POSITION BY graduate A+ school; 1½ years' internship; four years' private and corporation practice; single, Protestant, best of health, habits and references; will consider good salaried position any where Western Hemisphere. Add. 974 I, % AMA.

WANTED—POSITION BY EXPERIENCED radiographer (physician); would consider position combining x-ray and laboratory work. Add. 948 I, % AMA.

(Continued on next page)

WANTED — EXPERIENCED GRADUATE
dietitian desires position with private family
to manage household. Add. 997 I, % AMA.

WANTED — POSITION AS ASSISTANT
physician in institution; young man, single;
graduate Class A-1 school; general hospital ex-
perience; of good character and can furnish
excellent references. Add. 925 I, % AMA.

WANTED — SALARIED POSITION OR
contract practice in South or West; would
like to assist good physician doing general
practice; aged 27, married, good health, good
habits; graduate of class A school; practiced
one year. Add. 693 I, % AMA.

WANTED—POSITION—AGED 39; SPEAK
enough Italian and some German and Eng-
lish; graduate Class A school, 1901; large con-
tract and corporation experience, also three
years' general practice; neither drink or
smoke; agreeable personality; moderate wages
asked; would also consider locum tenens, con-
tract practice or unopposed practice; high pro-
fessional standing, absolutely loyal as assistant
or employee. Add. 987, F. V. Kniest, Omaha,
Neb. I

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WANTED—MEDICAL BOOK SALESMEN
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of ability and energy to sell our medical and
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Blakiston's Son & Co., Publishers, 1012 Wal-
nut St., Philadelphia. JJ

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—A few active men; must have good per-
sonality, education and ability; work is solicit-
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position; unmarried, middle age; 22 years
experience; finest references from many insti-
tutions as to capability, training, executive
ability, management, courtesy and loyalty and
promoting the success of concern; able to fully
manage, superintend and teach nurses. Ad-
dress, giving full particulars of institution,
work required and remuneration, E. W., Box
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WANTED — BY A GRADUATE REGIS-
tered nurse, position as superintendent of
nurses, with or without student classes in
nursing, in medium or small hospital in Middle
West; willing to give best services to head
of hospital for the good of the institution; at
liberty October 15. Add. 1037 W, % AMA.

WANTED — REGISTERED NURSE DE-
sires position as office nurse or medical sten-
ographer; has had years of experience in
stenography, including medical; also consid-
erable experience in surgical or operating-room
work; good reference from last position, which
writer resigned, two months ago, because of
too close application to duty. Add. 905 W, %
AMA.

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tablished 1904. Gilt-edge references.

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pany of death of William Edward Goolsby,
second lieutenant 21st Infantry, U. S. A.,
1905. Standard Oil employee, New York City,
1913. Any information regarding his former
whereabouts will be greatly appreciated. Add.
H. M. Esterly, attorney and agent, Yeon
Building, Portland, Ore. J

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WANTED — A COMPLETE OPERATING-
room outfit, such as table, instrument cabi-
net, lavatory with foot pedal, bowl stands, also
one cautery knife which can be used on 110
circuit volt; please send condition and make
of material and lowest cash price. V. S.
White, Elkader, Ia. L

(Continued on next page)

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FOR SALE—CARL ZEISS JENA MICRO-scope, three high power lenses, mechanical stage and oil immersion, and finest adjustment. North Avenue Loan Bank, 517 W. North Ave., Chicago, Ill. Phone, Lincoln 5954. K

FOR SALE—FIFTEEN 30-INCH PLATE static and x-ray machine; cost owner \$350; full set electrodes, crown breeze, three sets Leyden jars, x-ray tube holder, fine fluoroscope; beautifully finished quartered oak cabinet, 64 inches high, 60 inches long, 40 inches wide; 12-inch fat spark; only \$95, packed f. o. b.; speak quick. E. B. Lambert, Port Jervis, N. Y. K

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WANTED—AUGUST, 1915, JANUARY AND February, 1916, *American Journal of Diseases of Children*; also January, 1916, *Archives of Internal Medicine*. We will pay 50 cents for each issue returned in good condition. Add. Am. Med. Assn., 535 N. Dearborn St., Chicago.

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FOR SALE — IN SUNNY SOUTH—\$2,500 practice; 9-room residence, 4 acres bearing pecan orchard; overflowing artesian well, waterworks, office and stock of drugs; good farming section; sawmilling; midway between Montgomery and Selma, Ala.; all for \$4,500 cash. James Tankersley, M.D., Autaugaville, Ala. N

FOR SALE — DENVER, COLO. — \$4,000 suburban residence with office and garage; general work; location established 13 years; must have \$1,000 cash; balance time if desired; am taking up special work. Add. 1054 N, % AMA.

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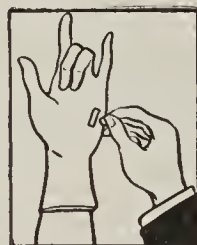
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FOR SALE—ILLINOIS—SURGICAL IN-struments, drugs, office and equipment, automobile and residence of the late Dr. E. C. Trout of Birds, Ill.; good location in an oil field and successor will have the good will of a large practice. Add. C. L. Petty, Administrator, R. F. D. 3, Lawrenceville, Ill. N

FOR SALE—ILLINOIS—\$3,600 PRACTICE, office fixtures and auto, all for \$500; come take possession, pay \$100 down and pay balance from practice; am now making \$10 per day and can turn entire practice to successor; investigate; this adv. appears but once. Add. 1033 N, % AMA.

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FOR SALE—CENTRAL ILLINOIS—\$3,000 or better practice, almost unopposed; \$325, about invoice; village of 400; rich farming district; oiled roads; nice rooms, brick building, if wanted, nice house, low rent; fine opportunity; other doctor, elderly, very unpopular; 7 to 12 miles to neighboring doctors. Add. 921 N, % AMA.

FOR SALE—ILLINOIS—DRUGS, INSTRU-ments and office furniture; rent reasonable; doctor's location 23 years; expenses from start; rich farming community; good schools, churches, light, water and sewer system; price, \$500; snap; will introduce purchaser; reason, health failing. Add. Doctor, Box 525, Grayville, Ill. N

FOR SALE—ILLINOIS—GENERAL PRAC-tice; practically unopposed; runs \$4,000 per year; little to buy; established 11 years; population 350; collections 98 per cent.; thickly settled, farm owners; several insurance appointments transferable; 4-room office; residence will sell or rent; get full particulars. Add. 990, F. V. Kniest, Omaha, Neb. N

(Continued on next page)

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—\$5,000 practice, in city of 18,000, free by purchasing equipment at one-half its real value; office hard wood finish, centrally located; drugs, electrical and surgical equipment complete; modern home to sell or rent a few blocks from office; this is worth your investigating; must quit practice on account of health. Add. 1044 N, % AMA.

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—town 3000, educational center and college; rich farming district; 22 factories, payroll \$10,000 monthly; two railroads, interurban line to city of 25,000 with excellent hospital facilities; three transferable appointments; medical and surgical practice; collections good; act quickly; this adv. appears but once; price, \$250 cash. Add. 1041 N, % AMA.

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FOR SALE—N. W. ILLINOIS—PRACTICE
and small drug store in a town of 400; good dairy country; American and German community; nearest physicians 6, 8, 10 miles; complete office equipment and fresh drugs, x-ray, driving outfit, garage; no property; collections 95 per cent.; reason for selling, post-graduate course. Add. 978 N, % AMA.

FOR SALE—SOUTHERN ILLINOIS—A
general practice, \$250 to \$350 per month; city of 10,000; excellent mining country; good roads, schools, churches, and collections; residence seven rooms, electric lights, bath; two lots two blocks from my office; practice, drugs, office, outfit and residence, \$4,000; competition just right; new hospital. Add. 1000 N, % AMA.

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coal field, excellent location for physician; practice \$3,000 to \$5,000 yearly; town 400 inhabitants in rich farming community thickly settled; other physicians 7, 10 and 20 miles; collections 98 per cent.; good dwelling, five rooms, barn and outbuildings and \$300 stock of drugs; price, \$1,300; going to city. Dr. J. E. Reed, Akin, Ill. N

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\$6,000 practice in thriving town of 1,000; cement factory at edge of town; will sell office building, a one-story cement structure; also residence if wanted; not much competition; reason for selling, health is failing; write for particulars. Add. 886 N, % AMA.

FOR SALE—IOWA—\$3,500 practice in town
of 1,800; can be increased by one doing own surgery; have small hospital; one other physician; am going to specialize; no real estate for sale. Add. 1043 N, % AMA.

FOR SALE—WESTERN IOWA—\$4,000 TO
\$4,500 practice for sale in town 450; good farming country and good roads; German and German-Catholic community; married man speaking German would do exceptionally well; automobile and office furnishings optional; not much cash necessary to swing deal; want to retire and take postgraduate work; a snap for some one. Add. 968 N, % AMA.

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(Continued on next page)



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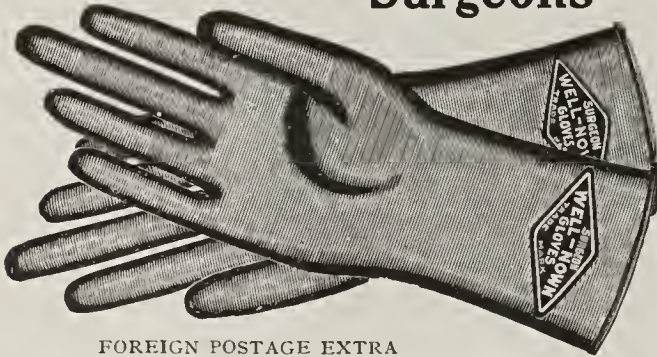
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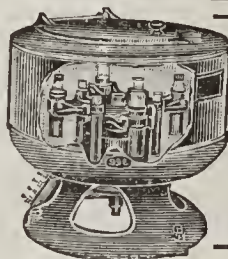
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FOR SALE — CENTRAL KANSAS—\$3,000
cash practice; growing town 850; city water; 24-hour current; progressive American community; good churches; accredited high schools; large territory; no doctors here doing surgery or specialties; railroad and other appointments; modern new 6-room bungalow, complete stock of drugs and office furniture, \$4,500; part time. Add. 1059 N, % AMA.

FOR SALE—CENTRAL KANSAS — \$2,500
practice in prosperous town of 250 population in wealthy community; good farming region; no other physician; two railroads; collections 95 per cent.; will thoroughly introduce if desired; \$800 for practice, complete office fixtures and prescription stock of drugs, \$500 cash. Add. 975 N, % AMA.

FOR SALE—KENTUCKY—PROPERTY OF
Dr. M. C. Dunn, deceased, eye, ear, nose, throat; yearly income, \$6,000; one-half owner, jointly with general practitioner, of two-story brick building in downtown section of town of 20,000, containing two seven-room apartments and offices for two; completely equipped, including furnace, value \$12,000; will sell half or all; complete office equipment, including furniture, library, office files, instruments, invoice \$2,000; three passenger 1916 model Studebaker automobile, run three months. Add. Dr. Silas Griffin or Mrs. C. C. Dunn, 231 North Main St., Henderson, Ky. N

FOR SALE — LOUISIANA — EASTERN
central; \$2,500 unopposed country practice; collections A1; thickly settled farming community; good roads, high school, church; 6-room house, office attached, 3 acres land, good barn; driving outfit optional; failing health; going west; introduction; price, property alone, \$2,000; half cash, balance easy payments. Add. Physician, Monterey, La. N

FOR SALE — MAINE — \$3,000 PRACTICE
in town of 900, to purchaser of my large, modern, \$4,000 residence, barn and garage, with acre of land adjoining; summer resort town; good churches; one of best high schools in the state; competition light; adjoining town of 700, no physician; price, \$3,000 cash. Add. 1042 N, % AMA.

FOR SALE, EXCHANGE OR RENT —
Northeast Mexico—Town, 700; practice, \$2,500; one other physician; four-year high school; telephone, water and sewer system; fees high; an easy practice for a semi-invalid, in an unsurpassed climate; going to city; seven rooms and bath; two-room office building. Add. 1002 N, % AMA.

FOR SALE—MICHIGAN — \$3,500 UNOP-
posed practice, 60 miles Chicago; pleasantly located; comfortable 10-room house, 2-room office attached, fully equipped; prosperous community; village population 650; good roads, schools, electric lights, etc.; nearest physician 8 miles; two railroad appointments; price for practice, residence, office and equipment, \$3,500. Add. 1048 N, % AMA.

FOR SALE — MICHIGAN — BEST PRACTICE
in farming and factory city of 7,000; will sell residence or practice separate; a good man can do \$6,000 the first year as I did; best offer takes it; come quick, as I take opening in large city with group doctors. Add. 760 N, % AMA.

FOR SALE — MICHIGAN — \$3,000 PRACTICE
in a well-to-do locality, twenty miles from a city of 50,000; good roads, part stone and gravel; collections, 95 per cent.; price, \$2,500, part down and terms; seven-room house, bath, electric lights, city water, three-room office connecting; large barn and garage; competition light. Add. 799 N, % AMA.

FOR SALE—EASTERN MICHIGAN—\$5,000
unopposed practice, near Detroit, to purchaser of my ten-room modern residence and office, barn and garage; prosperous farming community, railroad and other appointments; \$2,000 cash required, balance in annual payments; auto, buggies and harness optional. Add. 874 N, % AMA.

FOR SALE — MICHIGAN — UNOPPOSED
\$3,500 practice, including office furniture, drugs, instruments, driving outfit; village 300; ten miles north of Jackson; interurban and two steam roads; electric street and house lights; collections, 95 per cent.; good introduction; \$500 cash; investigate. Add. 821 N, % AMA.

GENTLEMEN — MY LITTLE \$1.75 ADV.
brought me 25 replies and I sold my practice for \$4,200 in less than one week. How's that for results?

(Continued on next page)

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posed practice that will pay better than \$5,000 a year in one of the best towns in southern Minnesota; 350 inhabitants; city water, electric lights and thoroughly up to date; large territory of rich American farmers; collections 98 per cent. plus and prompt; priced for a quick sale. Add. 1050 N, % AMA.

FOR SALE — MONTANA — HAVING
formed partnership in East, have for sale immediately a \$3,000 cash practice; town of 500 people in mountains; fine fishing and hunting; county seat; only doctor in 20 miles; can turn over county physician, health officer and local surgeon for C. M. & St. P. R. R. and N. P. R. R.; price, \$600 cash; this is a bargain. Add. 922 N, % AMA.

FOR SALE — MISSOURI — \$3,000 UNOP-
posed practice in excellent farming community; collect 98 per cent.; 20 miles west of Springfield; town consists of four good stores, bank, three churches, mill, canning factory, etc.; price, \$2,500 for six-room residence and store building; \$1,000 drug stock at invoice; terms, half cash. S. M. Clark, Halltown, Mo. N

FOR SALE—MISSOURI—OFFICE EQUIP-
ment consisting of fixtures and medicines, equipment more than average; will stay three months to introduce; have practiced 40 years in county, 20 of which in Maryville, 17 years in present office; reason for selling, age and physical condition; no partnership. Add. Lock Box 105, Maryville, Mo. N

FOR SALE — WESTERN MISSOURI —
Office and general practice; town of 1,000; near large city; electric lights; four elevators; five churches; three garages; six large general stores; good schools; main line two railroads; thickly settled, farming and stock country; invoice; no real estate; money from start; retiring account disability. Add. 945 N, % AMA.

FOR SALE—NORTHWEST MISSOURI
location—town 550, three churches, high school; twelve minutes to good hospital; good collections; Mason and hospital man will do best; competition medium; real estate for sale or will rent; wife's health compels me to change location. Add. 985 N, % AMA.

FOR SALE—NORTHEAST MISSOURI—
\$3,000 general practice; railroad town 600; electric lights; good school, high school, churches and roads; large and rich surrounding territory; competition right; large stock and grain shipping center; \$300 cash; white steel equipment, drugs and accessories; building and auto optional; will bear closest inspection; don't write unless you mean business; domestic troubles. Add. 909 N, % AMA.

FOR SALE—NEW YORK STATE — FOR
\$300 I will thoroughly introduce competent physician to \$4,000 cash practice; will include some drugs, some office furniture, cozy cab, cutter, harness, etc.; large amount office work; rent 10-room house with barn; village 700; good school and roads. Add. 1062 N, % AMA.

FOR SALE—MONGAUP VALLEY, SULLI-
van County, N. Y.; fine unopposed practice in small growing town, radius over 10 miles; good farming section; summer resort; on state road, 5 miles from county seat; sell or rent drugs, drug store and office fully equipped; sell horse and equipment; practice made vacant by doctor's death. Add. Mrs. Steele, Mongaup Valley, N. Y. N

FOR SALE—NEW JERSEY—TOWN OF
1,200, 25 miles from Camden, in rich, thickly populated country, 10-room residence, 2-room office, all modern conveniences, barn, garage; good roads, high school; \$7,000 practice established 20 years; collections good; price, \$8,000, part cash; owner independent, retiring. Add. 1036 N, % AMA.

FOR SALE—NORTH CAROLINA—\$3,500
practice in a growing town of 300 people with no other physician; this is a manufacturing town on railroad; fine farming section; good school and churches; nine stores, etc.; price, including drugs, \$800 cash. Add. 1039 N, % AMA.

FOR SALE—NEBRASKA—\$8,500 PRAC-
tice in town of 1,500 in fine irrigated country; pleasant climate, use autos all year; fees high; money from start; congenial competition; two men retire from this practice to specialize in another city after introducing successor; selling at a sacrifice at \$500 cash. Add. 1028 N, % AMA.

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FOR SALE—OHIO—PROPERTY IN GOOD
town with main roads piked; population 800, town and township; house with bath and hot-water heat; good barn; practically no competition; going to city to practice; if you wish a good location write for particulars. Dr. A. L. Garrison, Sullivan, Ohio. N

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practice and residence containing elegant offices, by physician in general practice, ready to retire at 48 years of age; practice still increasing; excellent property in first class condition; large garage on premises; inspection will convince you; write for address, then come and see. Add. P. O. Box. 32, Sta. A., Cincinnati, Ohio. N

FOR SALE — SOUTHEASTERN OHIO —
\$2,750 practice; town of 800 on B. & O.; fees good; collections 98 per cent.; no real estate; practice, office equipment, books, instruments, drugs, horse and driving outfit, \$700; rent cheap; fine place for young man to get experience and make money; will introduce. Add. 996 N, % AMA.

FOR SALE—OHIO—EYE, EAR, NOSE AND
throat practice; competition nil; live growing city; 50,000 people to draw from; good business; money from start; will sell at invoice of equipment; terms to suit; business increasing; good hospitals; support of profession and business people; best of reasons; will leave state. Add. 893 N, % AMA.

FOR SALE — OKLAHOMA — PRACTICE;
established 13 years, in small town; pays \$3,500 per year; am specializing and moving to larger place; want good man of some experience to locate before I leave. Add. 949 N, % AMA.

FOR SALE—SOUTHEASTERN PENNSYL-
vania; \$3,000 practice; town of 500; rich farming district; railroad terminus; high school, churches, machine shop, bank, electric lights; competition slight; \$500 for drugs and office equipment; roadster optional; money made at start; can double practice; reason, health. Add. 1052 N, % AMA.

FOR SALE—PENNSYLVANIA—A LARGE
established country medical practice, located in and around a thriving borough on the main line of the Penn. R. R. in York County; 8 miles from York and 45 miles from Baltimore; railroad surgeon; no competition in vicinity; or physician to substitute for me for three months; wishing to go South on account of health. Add. 1047 N, % AMA.

FOR SALE—NORTHEASTERN PENNSYL-
vania—General practice; established 30 years; population 800; nearest city 40 miles; prosperous farming community; good roads, schools and railroad facilities; modern house and garage; insurance work; competition right; opening for good physician; immediate possession. Add. 926 N, % AMA.

FOR SALE—NORTHEASTERN PENNSYL-
vania; \$4,500 practice; town of 8,000 inhabitants in thickly populated district; good roads and all conveniences; price, \$1,250; with my introduction this will be an unopposed practice for Catholic physician with good obstetrical training; leaving to specialize. Add. 892 N, % AMA.

FOR SALE—SOUTHEASTERN PENNSYL-
vania—\$3,500 village and country practice; no competition; long-established doctor's location; valuable property worth more than price asked; collections good; fine roads; thickly settled, rich farming community; exceptional opportunity for active man; good reason for selling; introduction; price, \$5,000. Add. 786 N, % AMA.

(Continued on next page)

FOR SALE—SOUTH DAKOTA—SOUTH-
eastern part; one of the best \$4,000 general
practices in a town of 700; established 12
years; major surgery will greatly increase prac-
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try practice; house, 7 rooms, galleries and
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cow; 4 acres; good climate; high, dry; price,
\$2,500, terms; specializing; will introduce.
Add. P. O. Box 283, Cuero, Texas. N

FOR SALE—WEST VIRGINIA—CON-
tract and general practice; \$1,800 contract
and \$1,800 private practice; coal town; popu-
lation 1,000; water, electric lights, good school,
churches and roads; large surrounding terri-
tory; competition light; price, \$1,000; terms
\$500 down and \$50 per month until paid; sale
includes beautiful horse, stock of drugs and
office furniture. Add. 1058 N. % AMA.

FOR SALE—WISCONSIN—UNOPPOSED
village and country practice in rich farming
and mining community; 98 per cent. Protestant
Americans; good roads; fees and collections
good; village 450; nice residence and office
combined; will sell drugs, office fixtures and
property for \$2,500; easy terms; practice has
run \$4,450 in one year; going to specialize.
Add. 956 N. % AMA.

FOR SALE—WISCONSIN, WEST OF
Green Bay—A \$3,000 practice; can be in-
creased to \$4,000; one of the best farming
sections of the state; charges good; collections
almost 100 per cent.; competition easy; nice
residence, including office, \$4,000; easy terms;
or will rent on two years' contract. Add.
923 N. % AMA.

FOR SALE—WISCONSIN—A \$3,000 UN-
opposed country practice in an up-to-date
inland town (electric lighted), 350 inhabitants;
rich dairy country; collections good; will
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large house, modern improvements, barn, ga-
rage, large garden; price, \$4,000; will accept
hankable notes. Add. 771 N. % AMA.

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pital, fully equipped and thoroughly estab-
lished surgical practice in good Illinois city;
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selling; would also consider partnership propo-
sition. Add. 924 O. % AMA.

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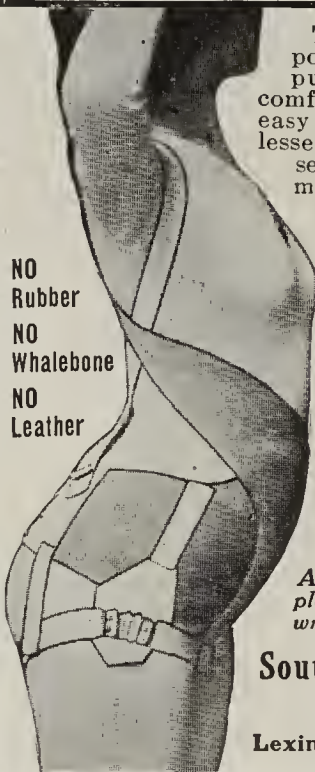
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1049 P. % AMA.

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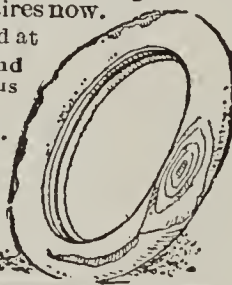
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lish the adv. (see clipping) in a recent issue of your valued Journal, received a whole stack of replies, and found a successor in due time. Out of all replies, I could answer only FOUR letters. It seems to me that when a person spends over \$4 in an adv. that those replying should not answer until they have fully read the adv. and complied with its requirements. It does not surprise me that some of those answering advs. write to you, complaining that they do not receive replies, when they do not go to the trouble of answering fully or properly. In my adv. I was rather particular whom I desired to succeed me, and asked for fullest information regarding my successor. This is what I got in most of the replies: "Am interested, where are you?" "State fully where YOU graduated." "Why do you want to leave?" "Is the fishing and hunting good?" etc. etc. I am sure that these fellows wonder why their letters are not answered, and that they unjustly accuse the JOURNAL of not bringing results.

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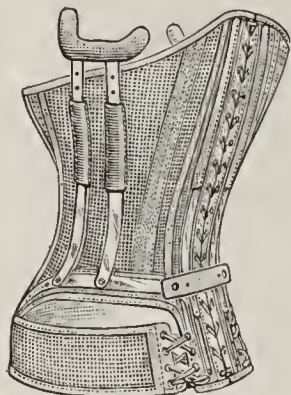
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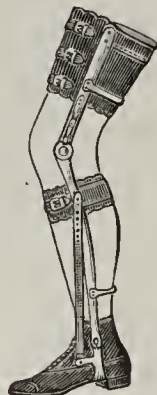
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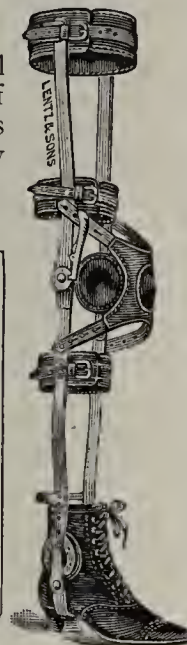
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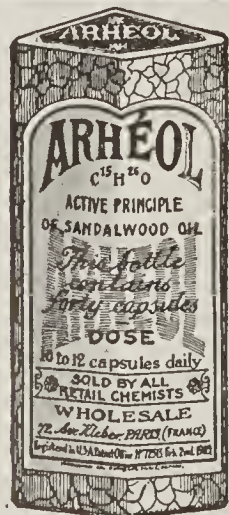
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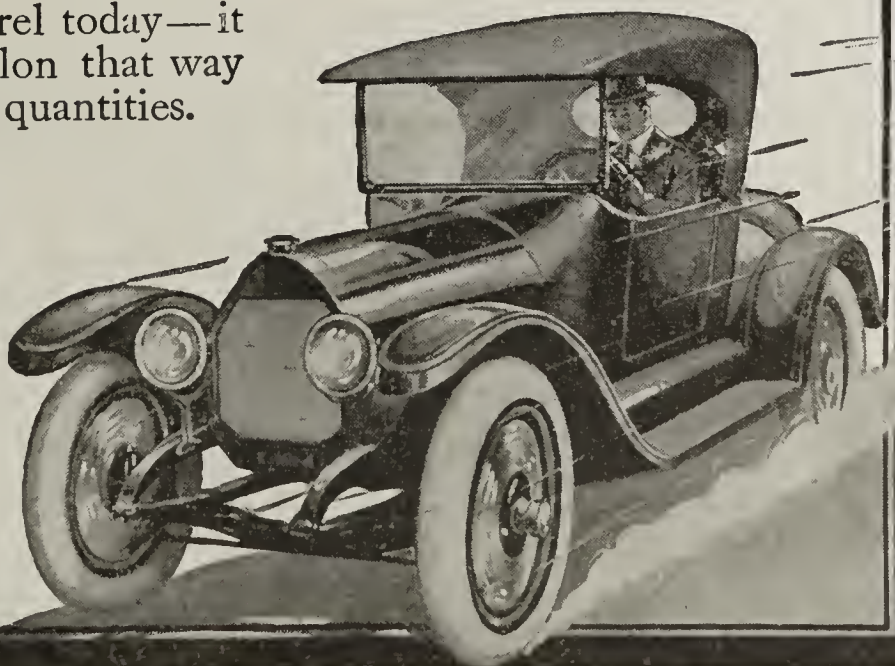
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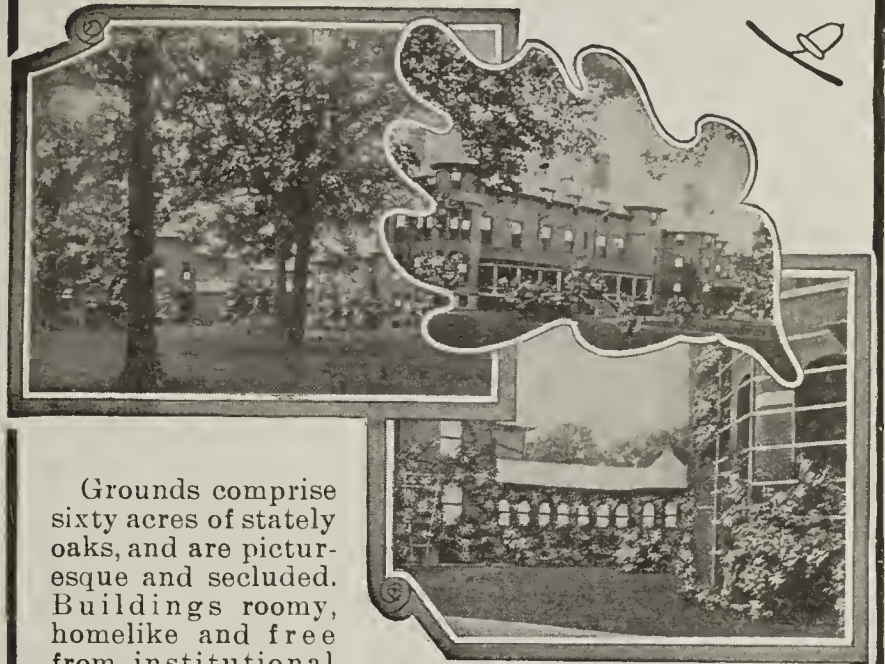
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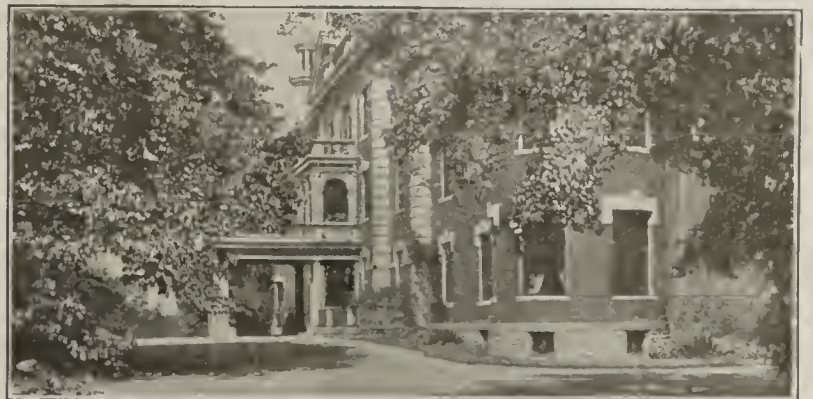


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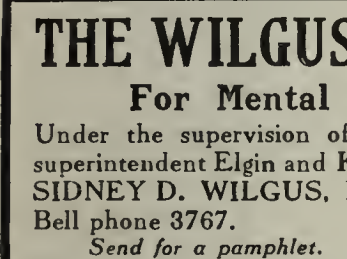
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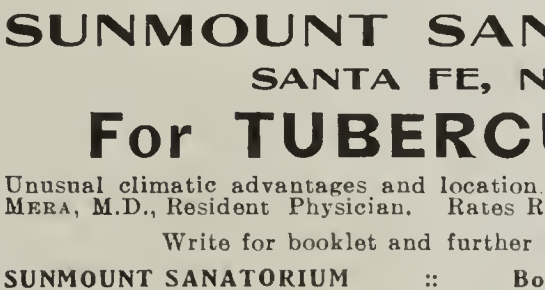
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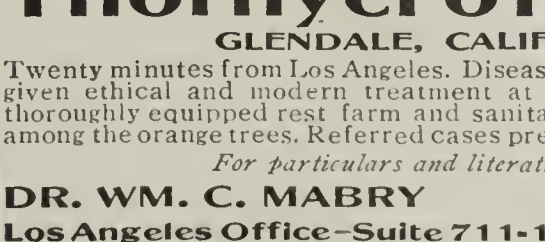
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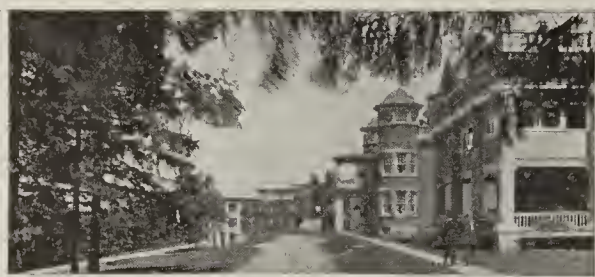
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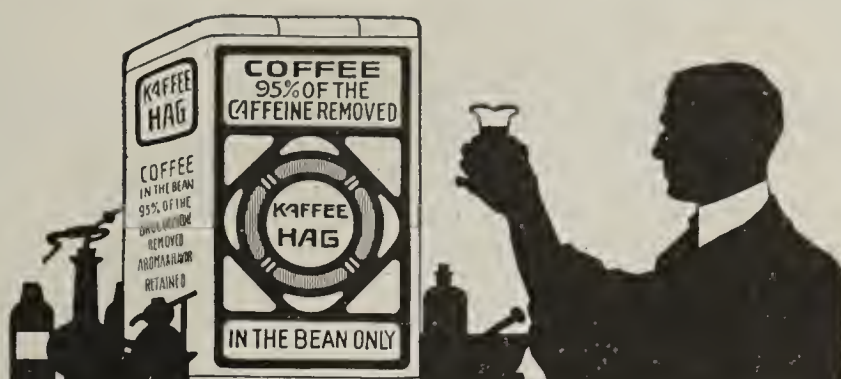
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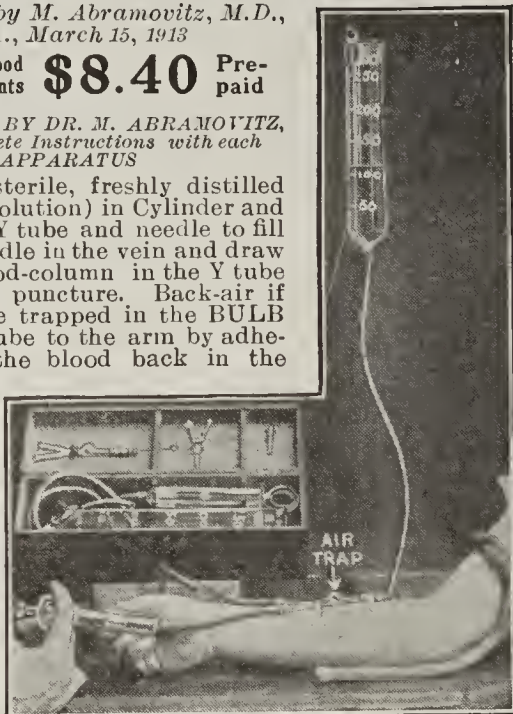
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THE UNIQUE ADVANTAGES: ONE PERSON APPARATUS, no assistant needed. CONTINUOUS FLOW, clotless. AIR TRAPPING. "Gravity" or "Syringe" AT WILL. ALL GLASS. SIMPLE, COMPACT, PORTABLE and VERY REASONABLE.

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De Luxe,
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PRICE COMPLETE with any three electrodes selected from our catalog, excepting Nos. 14 and 15 **\$35.00**

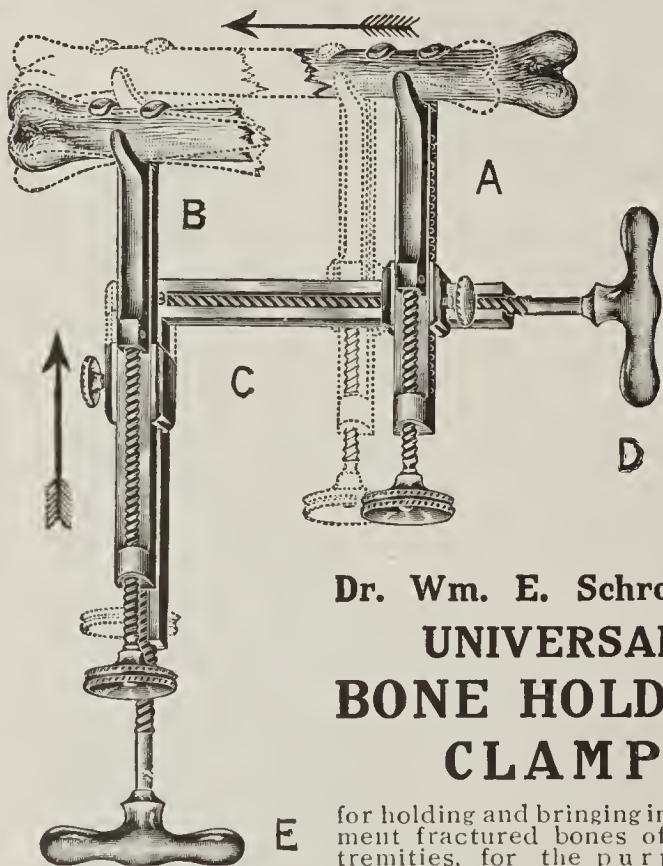
A Portable High Frequency outfit extremely compact and highly efficient. The coils are mounted in a carrying case measuring $11\frac{1}{4} \times 8\frac{1}{4} \times 5$ inches. The case is bound in leather, lined with velvet, and is reinforced with nickel plated metal corners. Ample space is provided for seven electrodes and the handle and connecting cord, which are detachable.

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BONE HOLDING
CLAMP**

for holding and bringing into alignment fractured bones of the extremities, for the purpose of applying bone plates, splints of absorbable material, human bone grafts, etc. (See Journal A.M.A., issue of June 26, 1915, page 2132.)

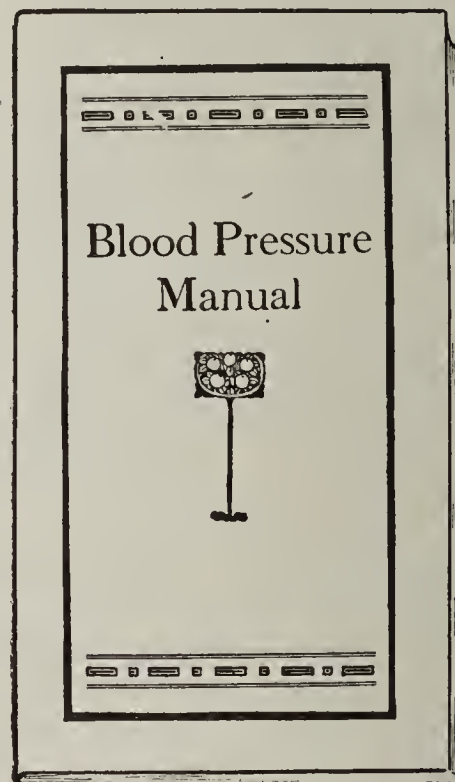
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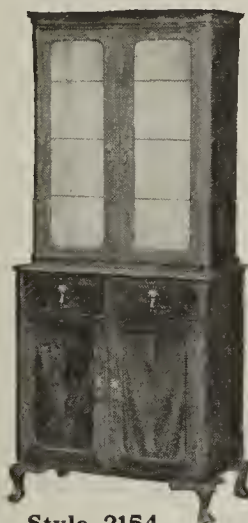
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X-RAY AND
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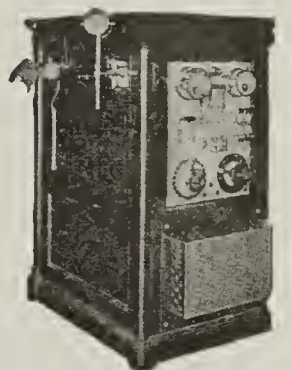
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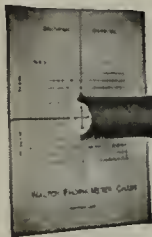
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Complete With Directions
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This instrument can be used in examining a child or illiterate with as
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It also has the advantage that in using it the correction in the trial
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Our little booklet "Blood-Pressure" contains a complete description of this instrument. We'll be glad to send you a copy along with a pamphlet on the Clinical Significance of Diastolic and Pulse Pressure. Free for the asking.

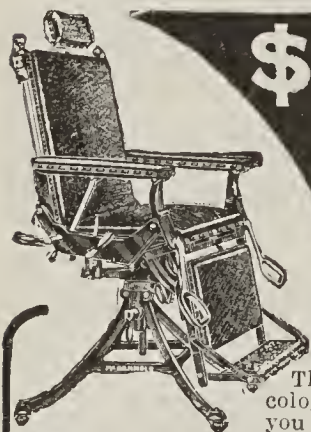
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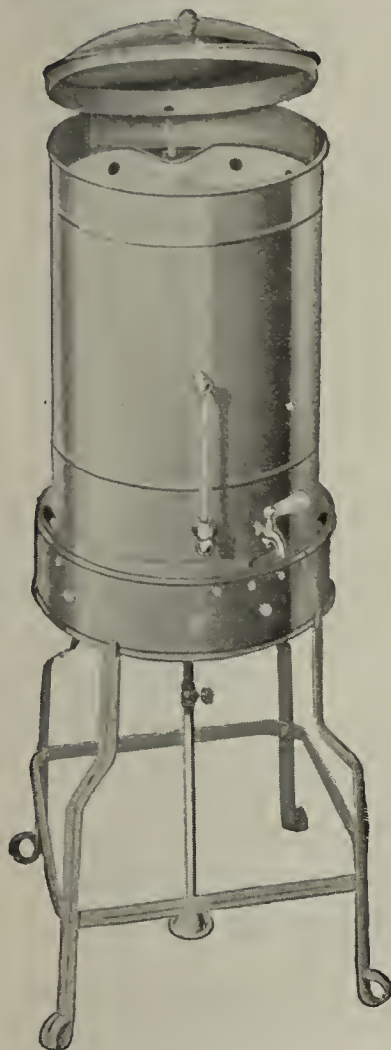
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INTESTINAL STASIS

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We should like to send you some X-Ray photos, doctor, showing a degree of intestinal uplift that will interest you.

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All the vaccines usually employed in the treatment of infectious diseases marketed in specially devised aseptic antiseptic bulk packages insuring absolute safety in withdrawing contents.

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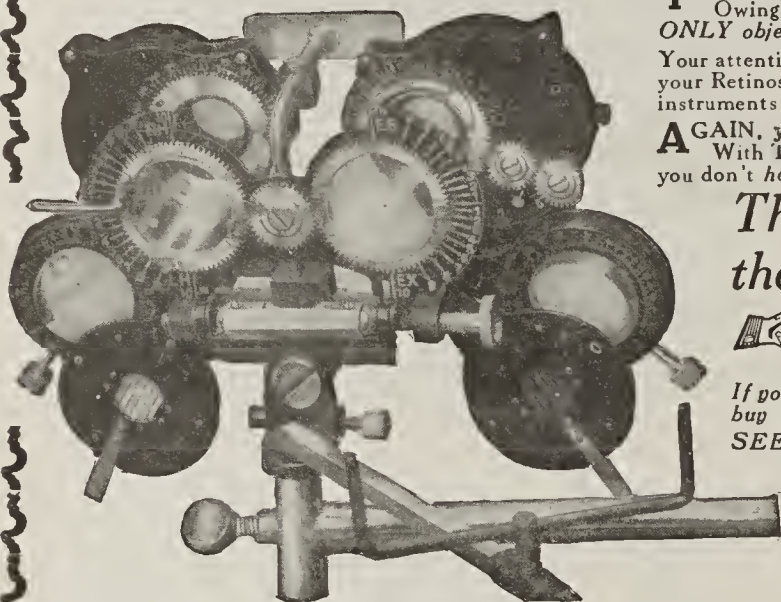
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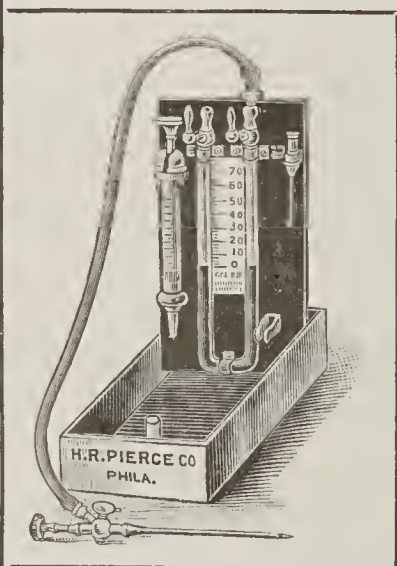
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For the Positive Determination of the Cerebro-Spinal Pressure



An invaluable aid to the physician and to the surgeon in the diagnosis and prognosis—as well as a guide in the treatment—of affections of the central nervous system, specially tumors, meningitis, epilepsy and fractures of the skull.

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Full of valuable information and advice. It explains thoroughly how to take Blood Pressure, so essential to the intelligent practice of medicine. This book included free with every instrument sold.

between the engraved scale markings, enables the instant and accurate reading of pressure to the fraction of a millimeter.

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Adaptability

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Specials

The pressure bag can be easily removed so that the sleeve may be thoroughly sterilized. Instrument is unaffected by atmospheric or temperature changes. Easy to use; its great adaptability is shown if applied when a patient is in the midst of muscular excitement, such as convulsions, or during the exercise test to determine heart efficiency. It is the same as in a high grade watch. It eliminates errors due to friction and oxidation of bearings and insures accuracy.

We furnish the Tycos Sphygmomanometer complete with dial and felt case, bulb, adjustable sleeve, pressure bag, all in a fine, black genuine Morocco leather case.

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10 Days' Free Trial

Upon receipt of \$2.50 we will send you the complete Dr. Rogers Tycos Sphygmomanometer in a neat Morocco case, as easy to carry about as a pocket handkerchief. Use it ten days. Satisfy yourself that it is indeed all we claim for it. Should you, for any reason, not wish to keep it—return the outfit to us and we will cheerfully refund your money—no questions—no quibbling.

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Let us have your "Sent-On-Approval" order today.

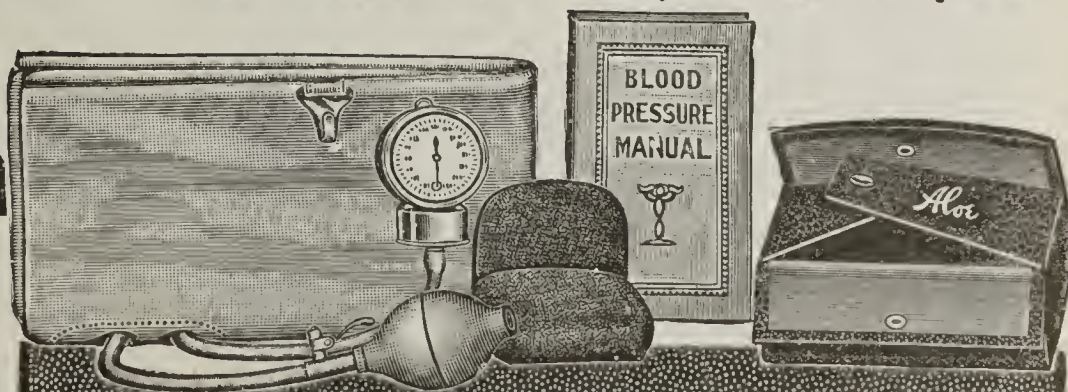
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Our Iron Clad Guarantee We guarantee this Blood Pressure Instrument to be accurate—to be very simple to operate and we also guarantee it against all mechanical defects.

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Glance at the illustration. You will notice that when not under pressure and perfectly balanced the hand rests exactly in the middle of the oval under this condition your reading will be correct. The movement of the accurately balanced hand directly over the wide spaces



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Name

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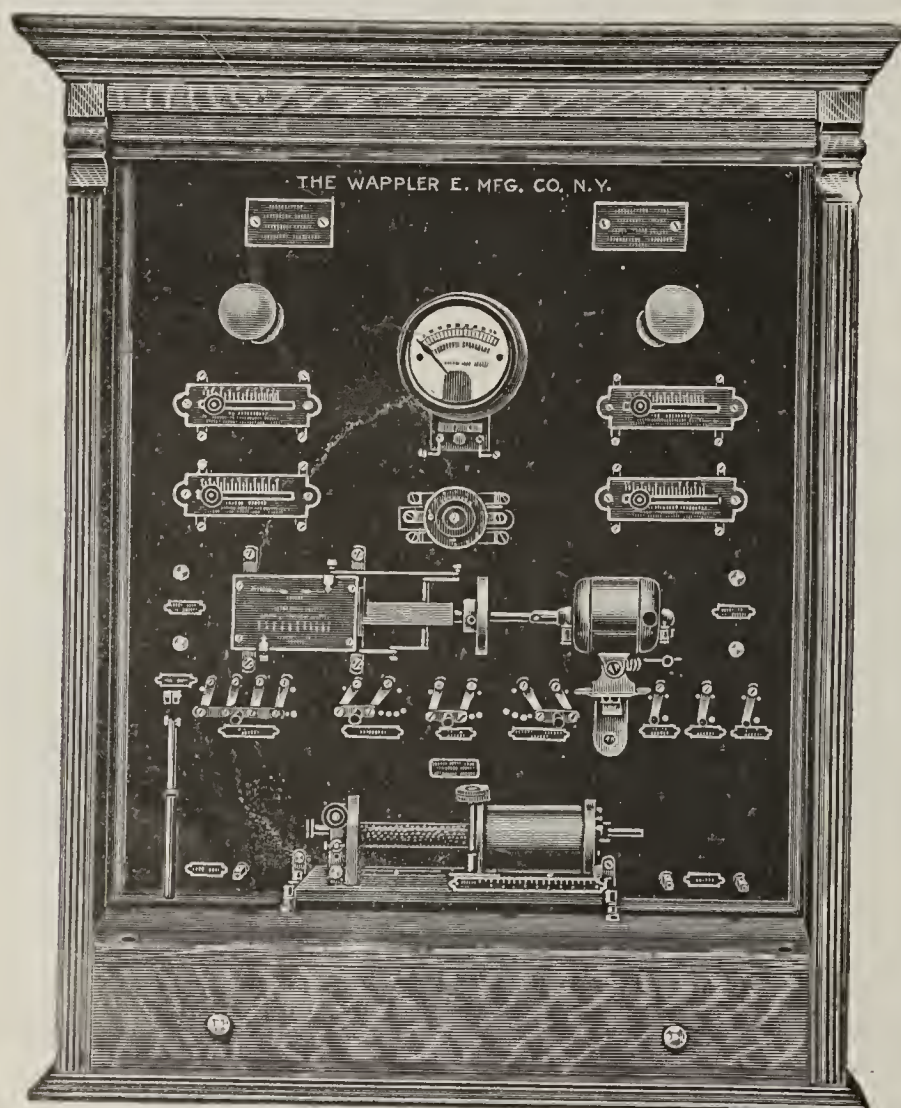
A Distinctive Feature of The LÜER SYRINGE is This— “Spring Plunger Holder”

The only device that will automatically hold the Plunger stationary at any point of graduation—whether the Syringe is filled or empty. It also allows instant removal of the plunger without manipulation of the holder itself.



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STANDARD NO. 2, WALL CABINET

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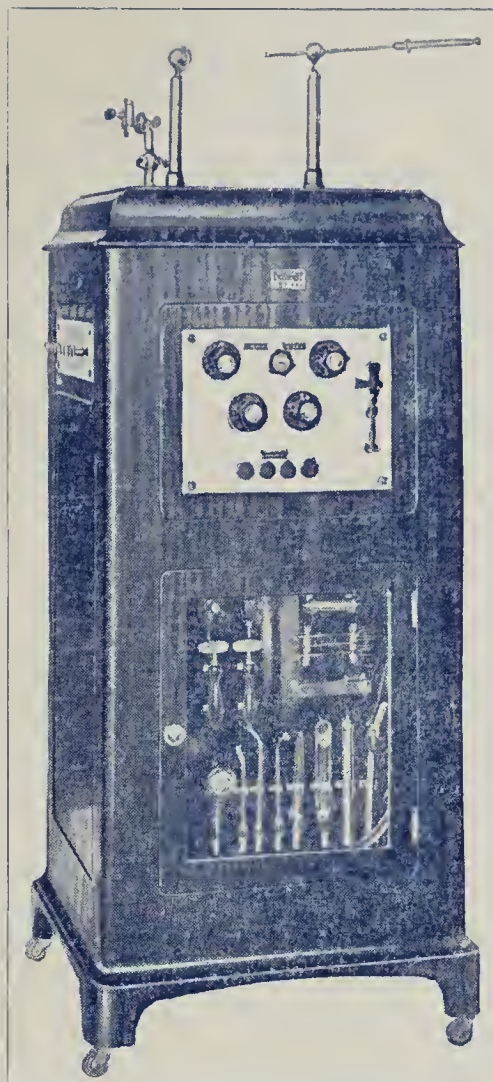
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